

# Financial Instability and Crisis: *A Minsky Perspective*

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# 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
  - Narrative model: validation and fragility
  - Some thoughts about formal implementation of Minsky theory
- Relevance to recent events
  - US household debt boom; seeds of the Great Recession
  - Recent research on the role of inequality

# MICROFOUNDATIONS: FIRM INVESTMENT AND FINANCE

Part 1

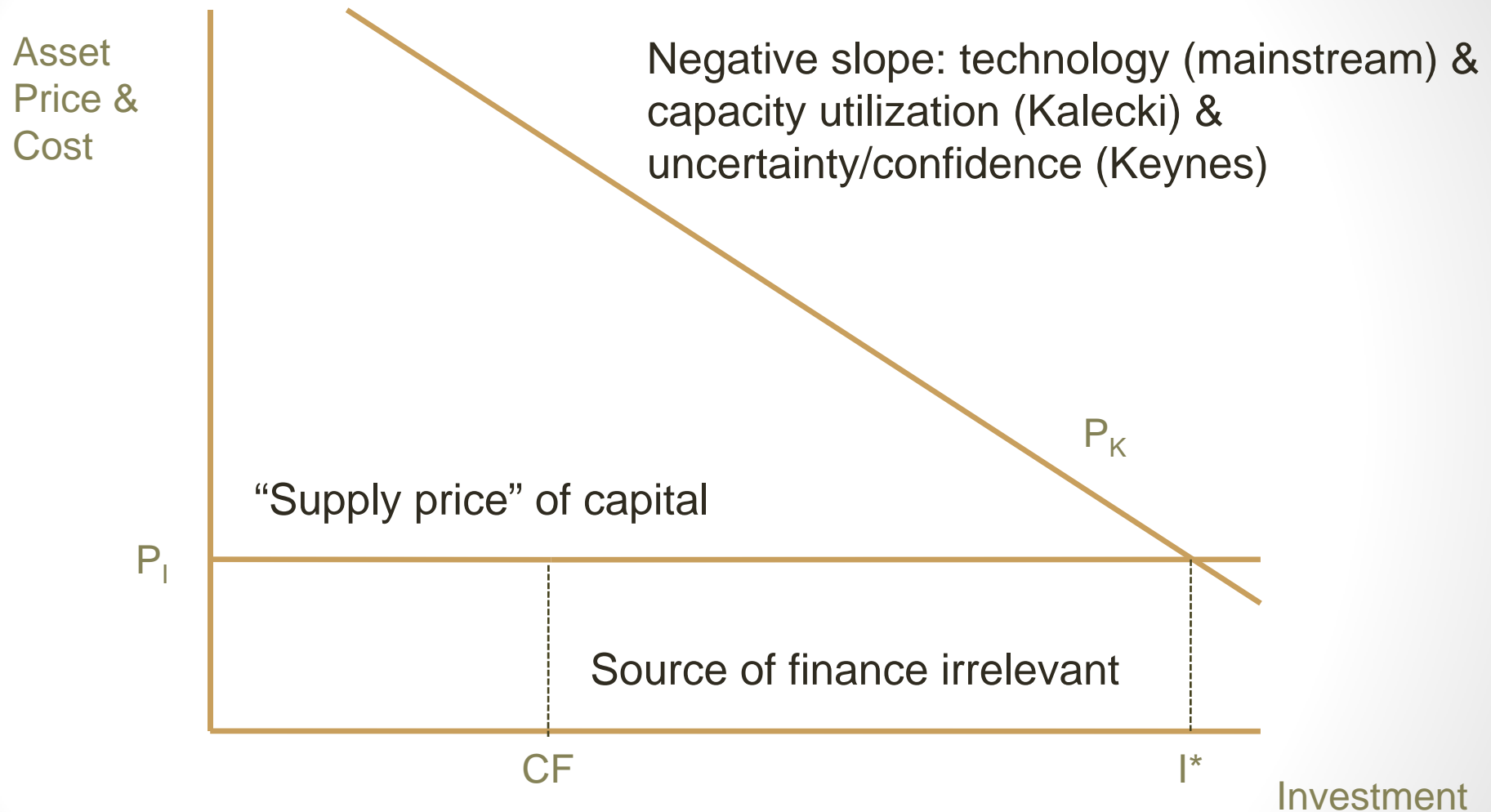
# Thoughts on “Microfoundations”

- Microfoundations: macro results linked to individual behavior
- Phrase emerges following the Lucas critique
  - Very narrow meaning in mainstream
- But behavior is important, heterodox economists should engage these ideas
  - Keynes and uncertainty; Kalecki and increasing risk; Eichner and mega-corps; Davidson and liquidity preference ...
- General principles
  - Uncertainty as fundamental
  - Linkages flow from behavior to macro results and from macro to behavior
  - Behavior evolves in a social context

# Spending Behavior and Finance

- Keynesian environment: demand drives production and employment
- Does finance matter for spending?
- Start with business investment (Keynes and Minsky); then move to households

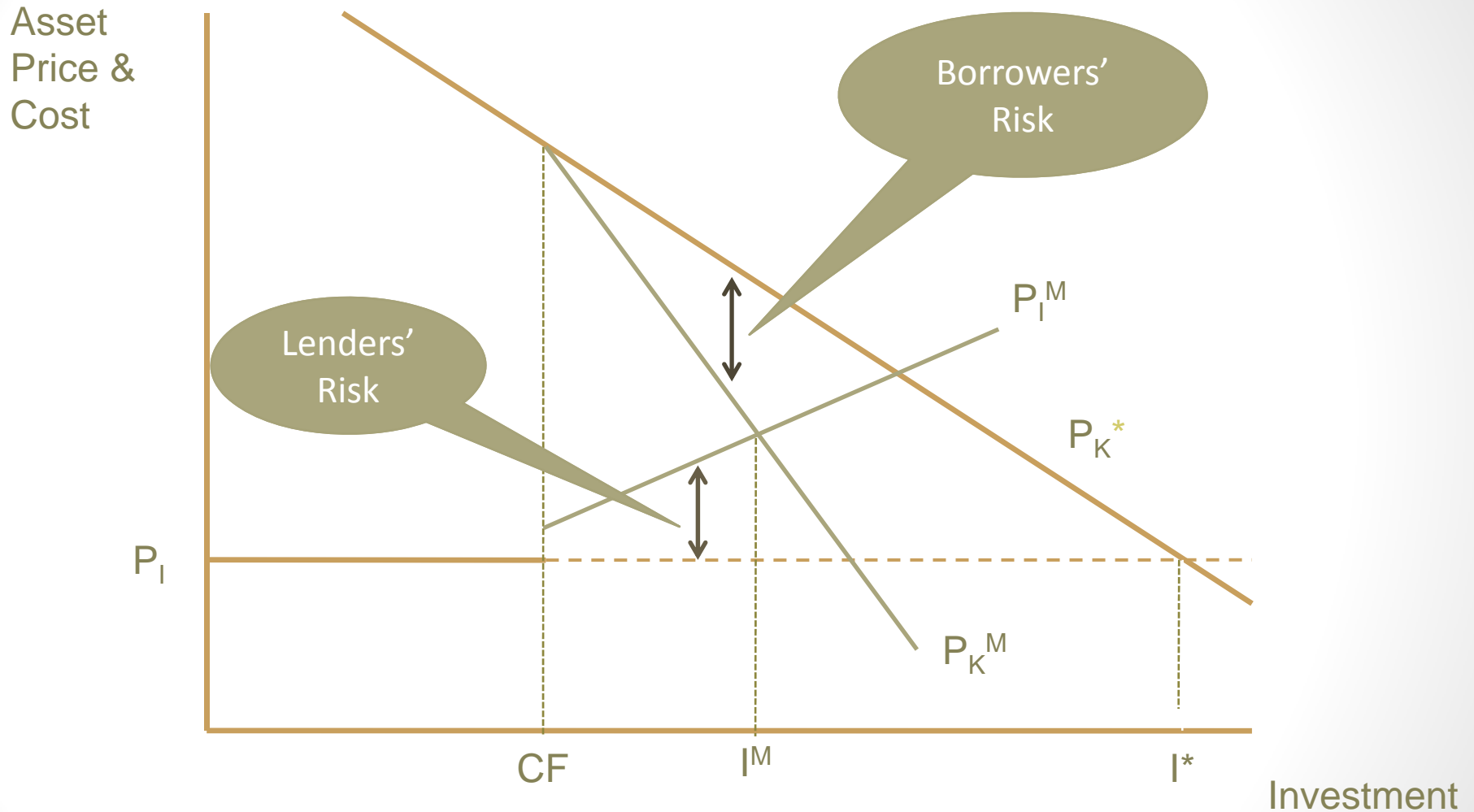
# Investment Model without Finance



# Introduce Finance

- Keynes: emphasis on financial markets in determination of expectations and investment
- 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 investment)
- Evolving conditions of finance
  - Changes in cash flow (link to Bhaduri-Marglin ...)
  - Confidence and borrowers' risk (Kalecki)
  - Confidence and lenders' risk
- 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 (reverse causation with investment “shocks”)
  - Ndikumana (JPKE, 1999)
- Credit channel (macro)
  - Bank lending; implicit in focus on “stress tests,” etc.

# Contrast with Mainstream

- Modigliani-Miller: what does it mean?
  - Theoretical exercise transformed into reason for ignoring finance
- Asymmetric information models & evidence
- Issue largely settled in mainstream?
  - Financial constraints “respectable” in mainstream models; but some resistance
  - Fama & Shiller joint Nobel, an interesting anecdote

# 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
  - Destabilizing innovation to avoid financial regulation
  - Contrast with mainstream view of financial innovation: improve information; enhance efficiency
- Importance of uncertainty and liquidity
  - Debates about AI in heterodox discussions (Fazzari-Variato)
- Macro dynamics of finance: systematic tendency to fragility (vs. equilibrium driven by shocks to financial technology)

# MICRO TO MACRO: FINANCIAL CONSTRAINTS IN A KEYNESIAN CONTEXT

Part 2

# Micro to Macro: Finance and Saving

- Micro: finance constrains investment
- Macro: 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 “loanable funds” theory that assumes full employment
- Investment not constrained by aggregate saving (with under-utilized resources)

# Where do Finance Constraints Come From?

- Scarcity of finance arises from assessment of “creditworthiness”
  - Micro-level decisions to finance capital expenditure
  - Also household lending decisions (massive evolution prior to Great Recession)
- Investment financed at micro level
  - Source of finance is endogenous money
- Level of investment assessed as worthy of finance will generate matching level of saving

MICRO FINANCE DECISIONS → ENDOGENOUS MONEY →  
SPENDING AND INCOME CREATION (MULTIPLIER) →  
SAVING CREATION THAT MATCHES INVESTMENT

# MACRO DYNAMICS: MINSKY'S FINANCIAL INSTABILITY

Part 3



# Macro Financial Dynamics of Instability

- 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 concepts: validation and fragility

# Validation: Minsky is a Keynesian

- More aggressive finance => spending↑ => income↑ to help “validate” financial practices
- Keynesian demand effects
  - Kaleckian models: investment generates profits
  - Minsky adopted this way of thinking explicitly
- Asset prices and collateral value
- Proximate constraint on output (most of the time) is demand
  - Contrast with mainstream New Keynesian nominal rigidity
  - Investment / Finance validation process works through demand creation that proceeds for years; not just “short run”

# Fragility

- Validation => try more aggressive strategies
  - With past success, probe new opportunities for profit (finance capitalism)
- What does financial “fragility” mean?
  - Higher leverage; less liquidity; shorter financing; more liberal lending standards; less intensive credit evaluation; greater reliance on risky asset prices & collateral (rather than cash flow); innovate around regulation ...
  - Hedge / speculative / Ponzi progression
  - Decline in perceived borrowers’ risk & lenders’ risk, outward shift of supply and demand curves in micro investment diagram
- 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”
- Fundamental direction of instability is upward
  - Contrast with common emphasis on crisis and collapse
  - Aggregate tendency, not a guarantee for individual projects

# Uncertainty & Financial 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
  - Broadly adaptive behavior

# 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?
  - Minsky, 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.”
  - Keynes (and Crotty): importance of convention

# Are We Sure About Rising Fragility?

- What prevents validation from dominating dynamics indefinitely? (Lavoie and Seccareccia, among others)
  - More debt => 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
  - Answered definitively for US household finance boom prior to 2007

# The “Minsky Moment”

- End of the boom (Paul McCulley)
- Why?
  - Rising interest rates
  - Capacity constraints limit validation
  - Increasing fragility of confidence & expectations
- Crisis trigger hard to predict; historically specific
- Unsustainable processes won't be sustained



# Crisis and Financial Cleansing

- Keynesian demand-driven recession
  - Investment collapses, Keynesian demand effects
  - Cash flow declines; confidence
- (Brutal) “cleansing” of finance during crisis
  - Investment collapses, Keynesian demand effects
  - Cash flow declines; confidence shaken
  - Minsky follows Schumpeter’s “creative destruction”
  - Restores conditions for upward movement (after some time)

# Formal Minsky Models

- Attempts to capture interesting cyclical financial dynamics in mathematical structure
- Much focus on debt ratios ( $D/Y$  or  $D/K$ ) as measures of financial fragility
  - Appropriate context to explore Lavoie-Seccareccia question about the relative effects of validation and fragility
- But Minsky predicts qualitative change and feedback from validation to rising fragility
  - Largely missing in formal models

## Example: Fazzari, Ferri, Greenberg, JEBO, 2008

- Investment, accelerator (utilization), and cash flow

$$I_t = \eta_0 Y_{t-1} + \eta_1 \hat{g}_t Y_{t-1} + \eta_2 \left( \frac{1}{p_t} \right) \widehat{CF}_t.$$

- Connect interest rates and debt to cash flow

$$\widehat{CF}_t = p_t \hat{Y}_t - \hat{W}_t - R_t D_t,$$

- Accounting identity for beginning-of-period debt

$$D_t = D_{t-1} + W_{t-1} + p_{t-1} I_{t-1} + R_{t-1} D_{t-1} - p_{t-1} Y_{t-1}.$$

- Philips curve for inflation and nominal interest rates => higher nominal debt service in boom

# Minsky-Like Results

- Cycles with cash flow effects; no cycles if cash flow coefficient zero ( $\eta_2 = 0$ )
- Positive shock stimulates demand, cash flow, and investment (validation)
- Higher output and utilization raise interest rates increasing debt service (fragility)
- Debt-to-income rises in boom and leads the cycle in output
  - See graph; simulated result (not analytical)
- We argue that the cyclical fluctuations generated by the model are “fundamentally financial.”

# Simulated D/Y and Output Growth

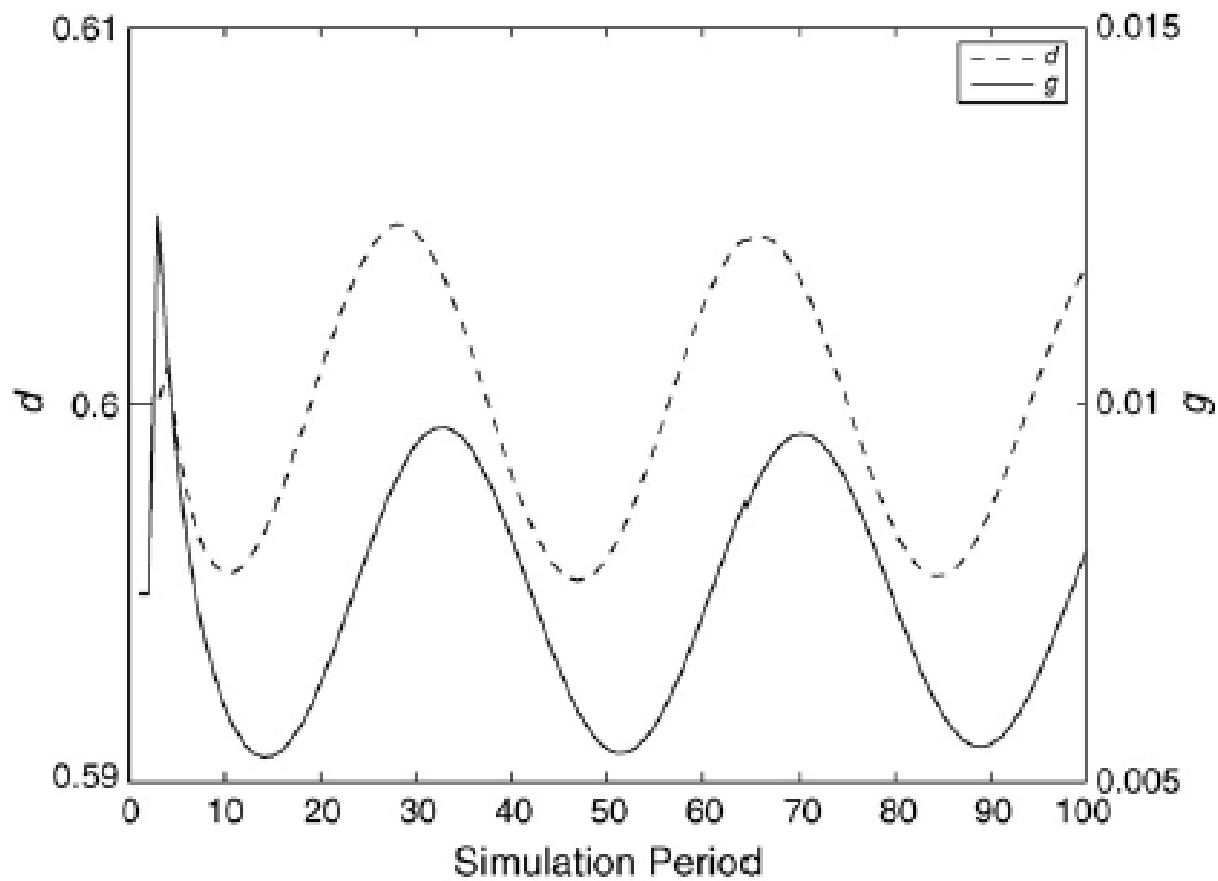


Fig. 1. Real growth following an investment shock.

# Limitations of Formalism

- Useful attempts to explore results of alternative parameters and specifications (see section 5.3)
- Missing borrowers' risk and lenders' risk
  - Other literature includes, but often at the cost of clarity
  - Also difficult to calibrate empirically (cash flow effects well known)
- No endogenous financial innovation

# Minsky and History

- Efforts to formalize Minsky theory, but theory not fully captured
  - Not criticism of formal work; often illuminate important aspects of the ideas
  - But recognize limits of formalism and complementary value of historical analysis
- Minsky dynamics are likely historically specific
  - Detailed case studies of historical periods to explore how general Minsky features did (or did not emerge)
  - Minsky's own method
- Formal models can help identify the “family resemblance” between historical cycles, but we need to do the history!

# FINANCIAL INSTABILITY AND THE US GREAT RECESSION

Part 4



# Minsky Framework and US Financial Instability since 1980

- Most significant financial crisis since 1930s in 2008-2009
- Clear that household debt and consumer spending played a significant role
- Macro dynamics that caused the US Great Recession fit broad outline of Minsky theory
  - Finance as a clear source of instability

# Shift of Focus: Firms to Households

- Keynes emphasis on investment: consumption largely passive
  - The “consumption function”
  - Expectations and uncertainty linked to business investment
- Minsky: finance active in business sector
  - Household finance reasonably stable; housing in the postwar period
- Possibly wrong to ignore household finance in 1920s; can’t be ignored in recent decades

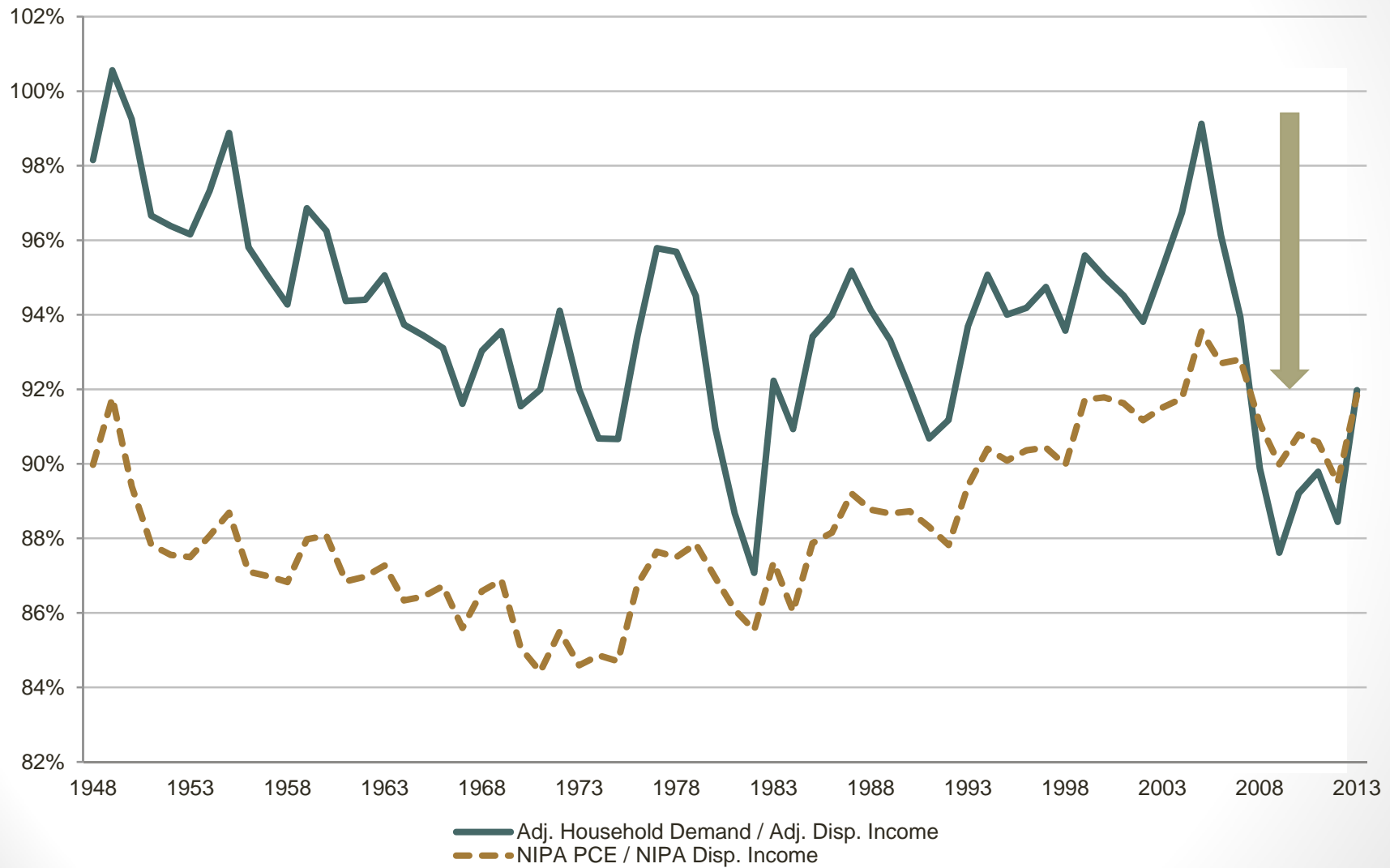
# Notes on Measurement

- Key question: demand from the household sector?
- Problem of housing measurement
- New Cynamon-Fazzari work (ROIW, 2015)
  - Get rid of implicit owner-occupied components
  - Replace with residential construction
  - Medical care: who pays?
- Consistent framework for measuring demand
- Practical integration of consumption and residential construction

# The Consumer Age

- Strong positive trend of American household spending: mid 1980s to 2007
  - Real personal consumption spending grows 40 percent more than rest of GDP
- Collapse of the Great Recession
  - Much more evident in housing-adjusted data
- Look at some basic data ...

# Household Demand to Disp. Income: NIPA and Adjusted

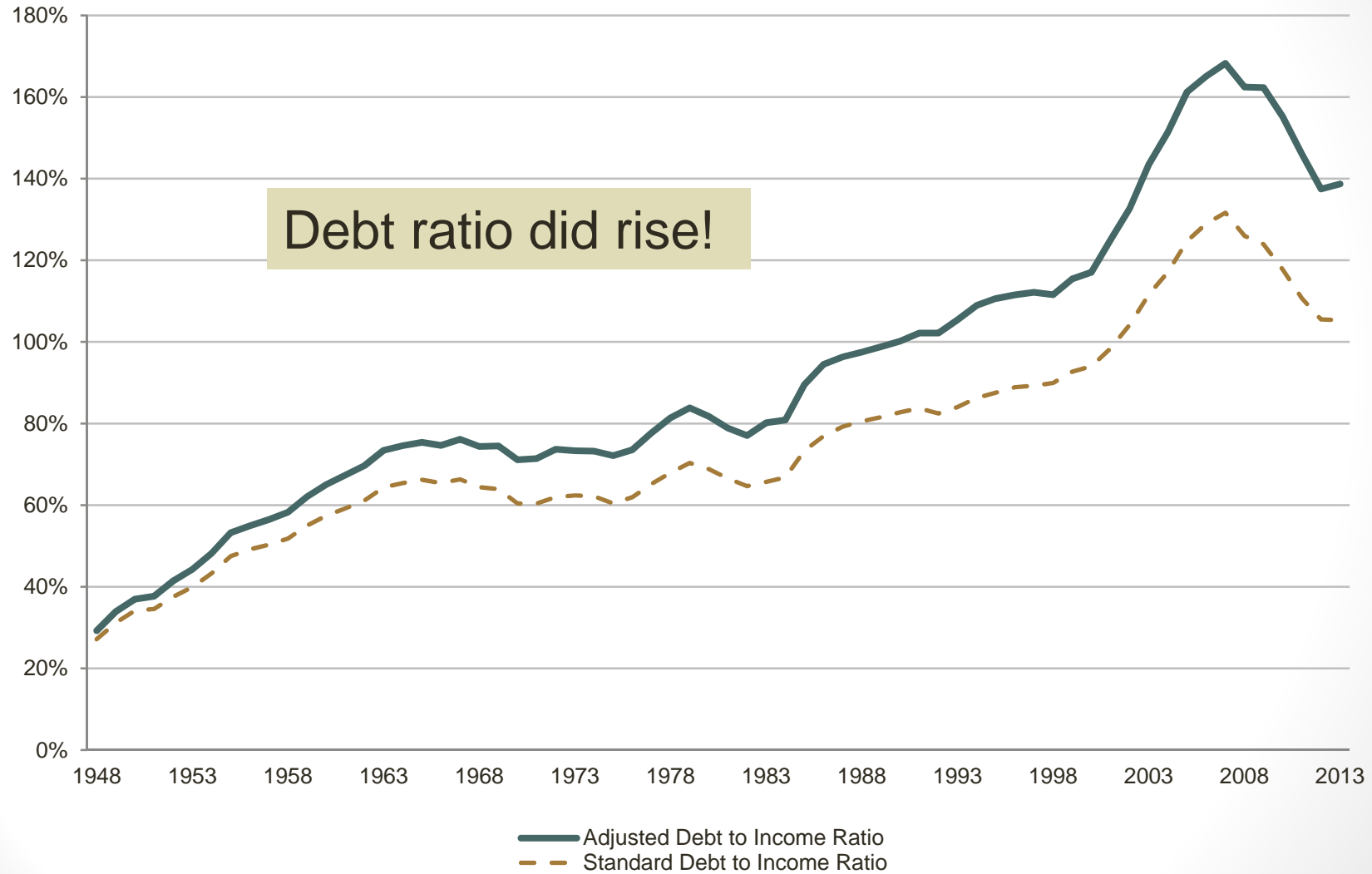


# How Did They Pay?

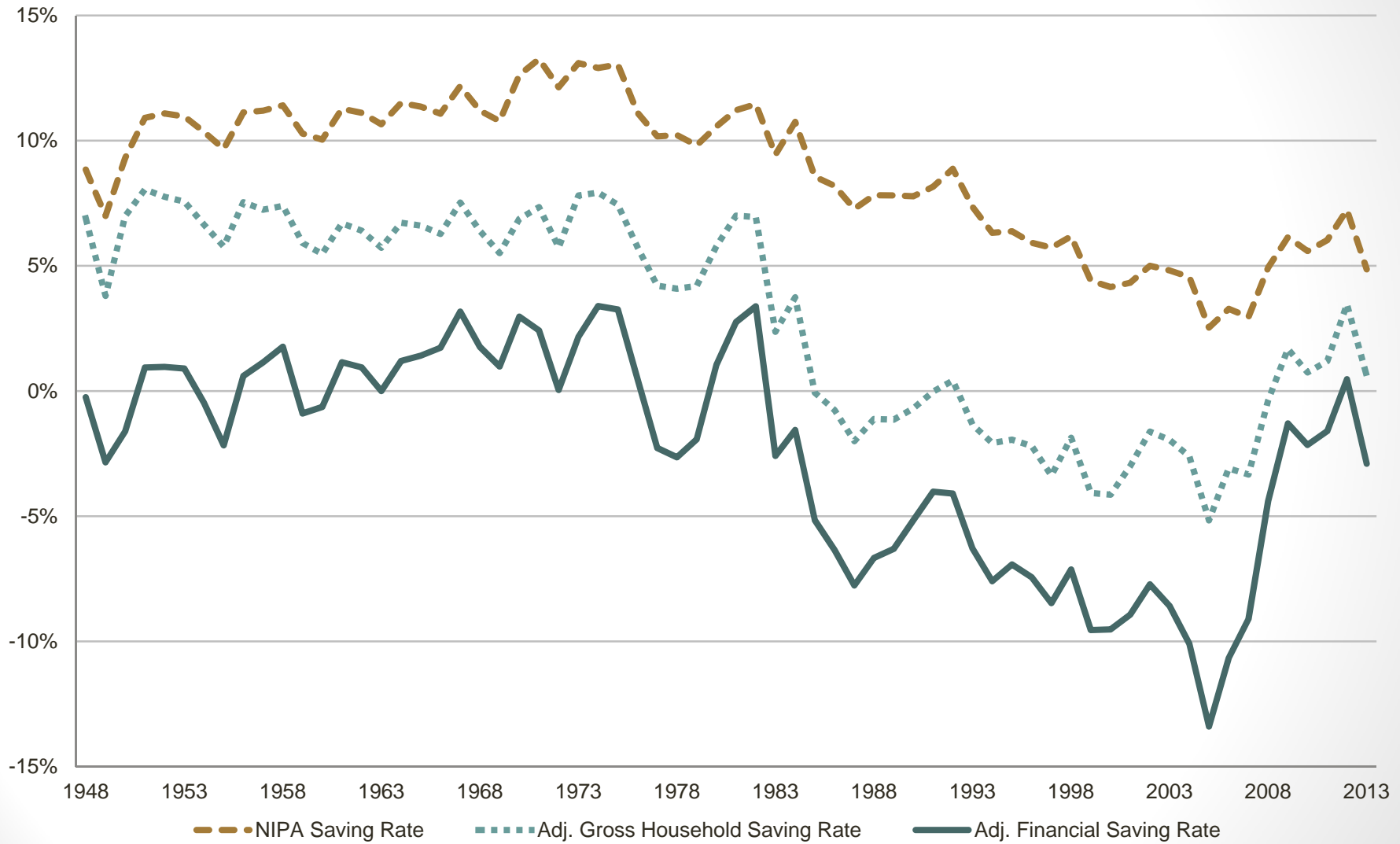
- Incomes stagnating (rising inequality)
- Rising borrowing; use the home as collateral

# Household Debt/Disp. Income

(Two Measures)



# Measures of Household Saving Rate





# The Message

- Household spending dynamics central to shift from Great Moderation to Great Recession
  - Critical period is “Consumer Age”: mid 1980s – 2007, sowed the seeds of its own destruction
- Finance played central role
  - Strong consumption growth as important engine of demand => validation; much of it externally financed
  - Rising fragility in the household sector
  - Debt to income; saving rate; credit terms ...
- 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

- Finance stimulates demand
- Strong demand drives incomes
  - Great Moderation and “mild recessions”
  - Partial result of consumption-debt engine
- Consumption and housing: big quantitative effects
  - PCE + Residential Construction (68% to 74% of GDP since 1990)
  - Compare with business investment (11% to 14% of GDP since 1990)
- Asset prices (mostly houses)
  - Wealth effects on spending
  - Collateral and borrowing
  - Expectations and confidence
- Consistent with Minsky validation process for investment

# Rising Financial Fragility

- Success => more aggressive lending & borrowing
- Shift toward short-term financing
  - Teaser rates; expectation of refinance (speculative)
  - Borrowing to pay interest (Ponzi)
  - Irrational? Refinancing into low-rate markets worked for two decades, validating convention in uncertain world
- Stress test metaphor
  - When test item doesn't break, provides validation
  - But addition of stress leads to more fragility
  - Process continues until the test item breaks; it must break

# Dynamics of Lenders' Risk

- Financial innovation breeds fragility
  - Credit-scoring technology
  - Confidence in housing as collateral (not enough attention to cash flows)
  - 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

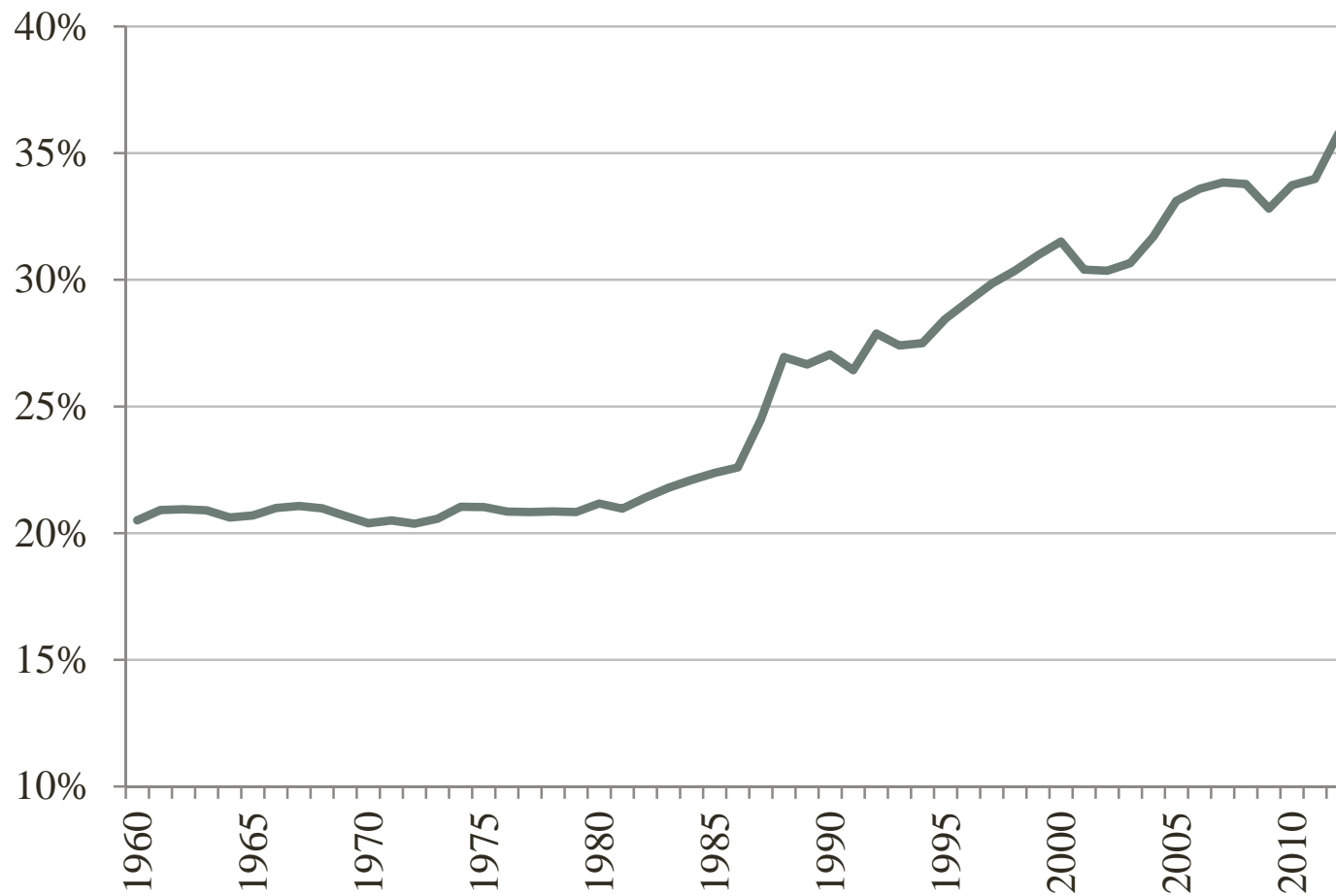
# The Minsky Moment

- Rising short-term interest rates (2004-2006)
  - Fear of inflation
  - Effects on refinancing
  - Plateau of home prices compromises validation
  - Shift from refinance to sale: macro contradiction
- Massive drop in household spending; Keynesian demand effects
- Some deleveraging



# Role of Inequality

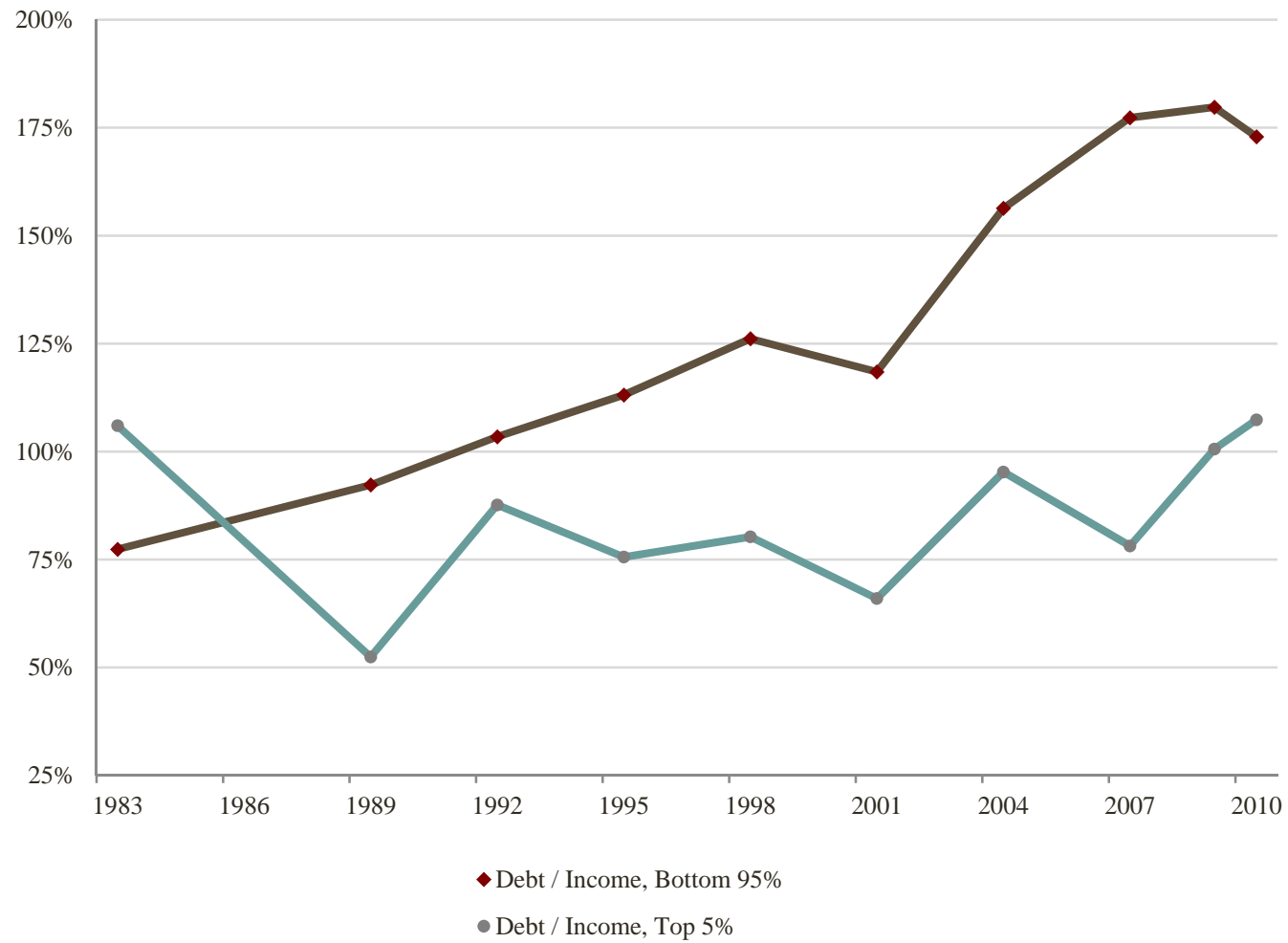
(Share of top 5% --World Top Incomes Data with Capital Gains)



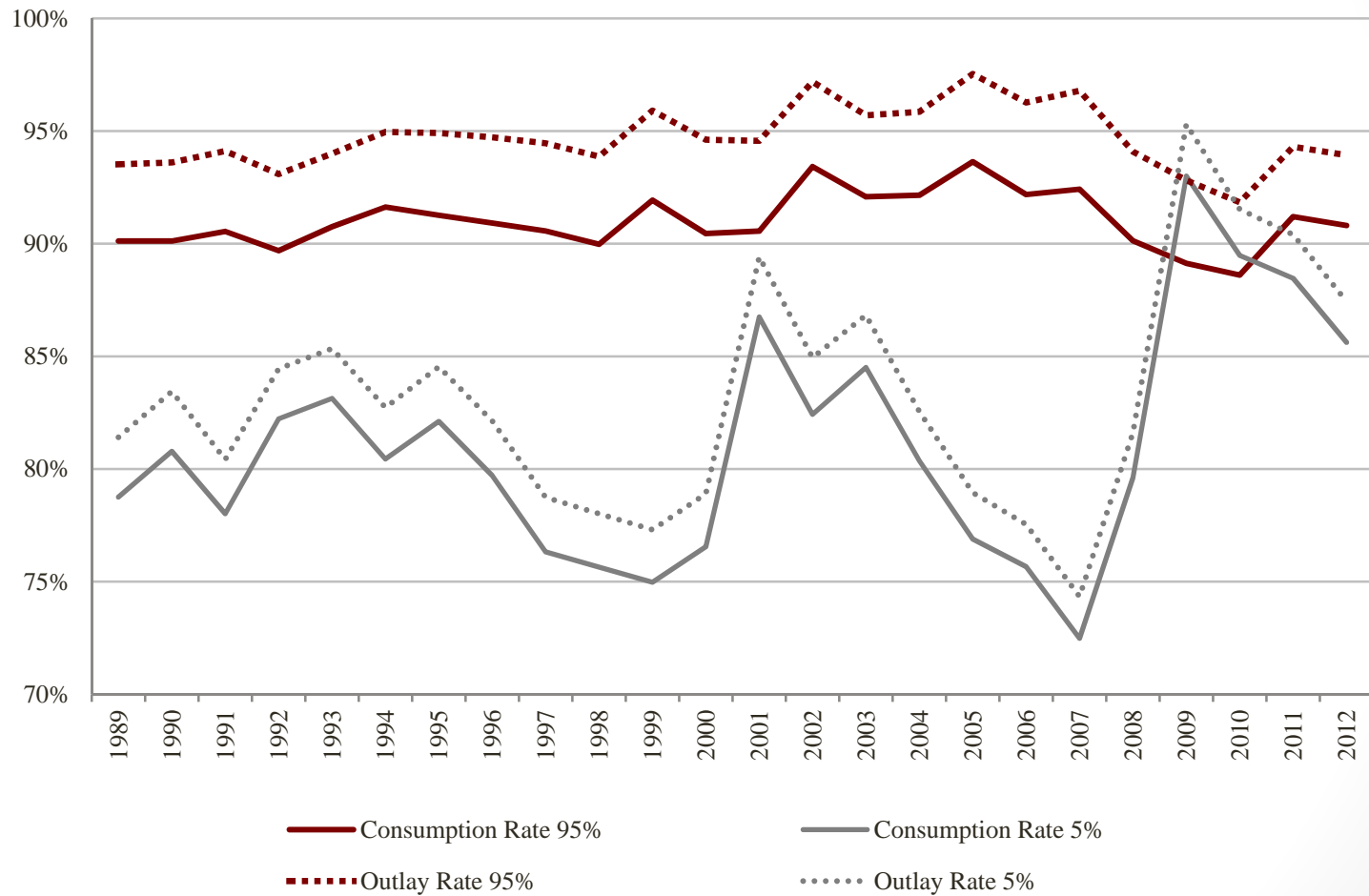
# Paradox: Strong Consumer Spending with Rising Inequality

- 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) Household Debt / Disposable Income



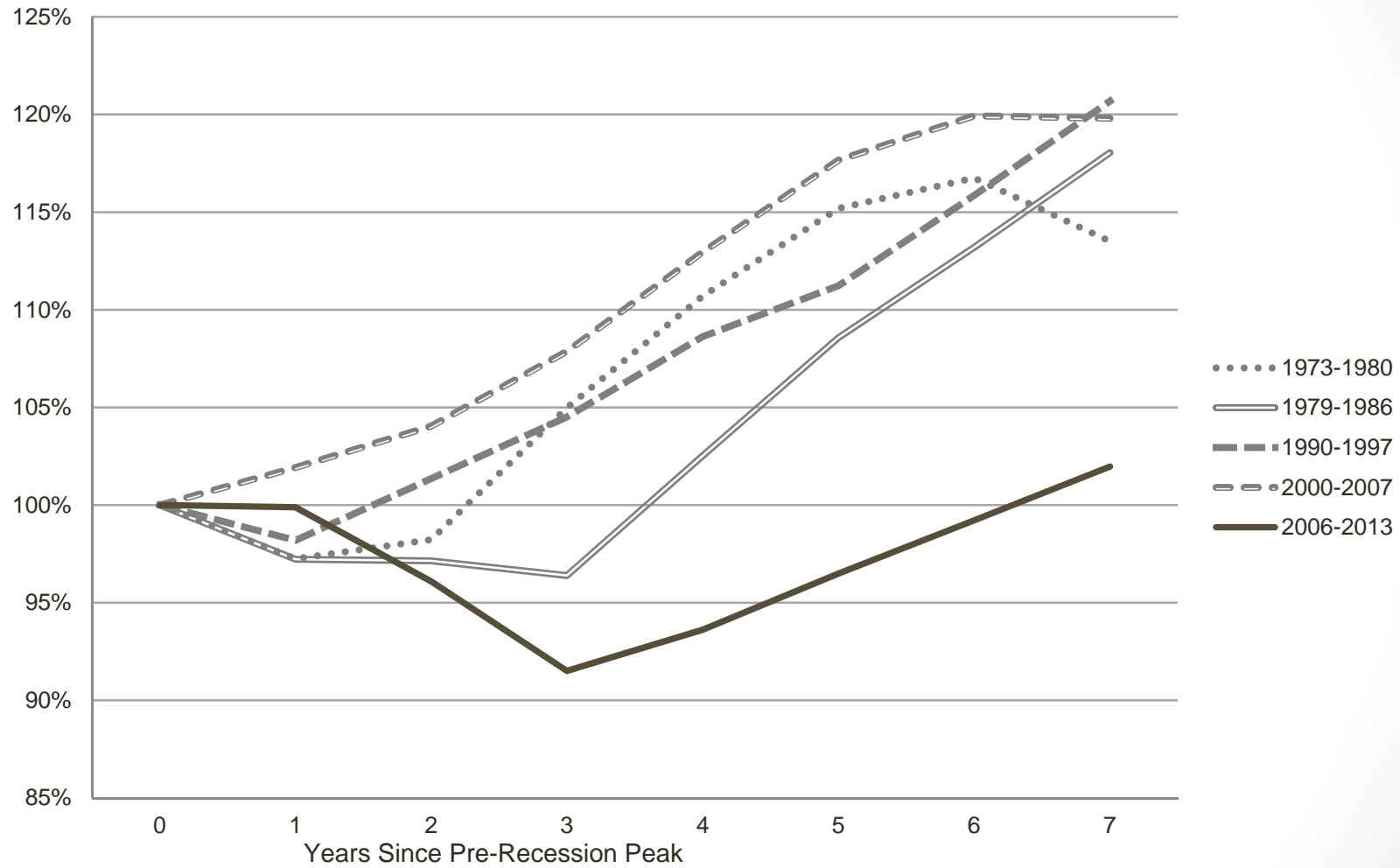
## Disaggregated Demand and Outlay Rates (Credit Crunch vs. Consumption Smoothing)



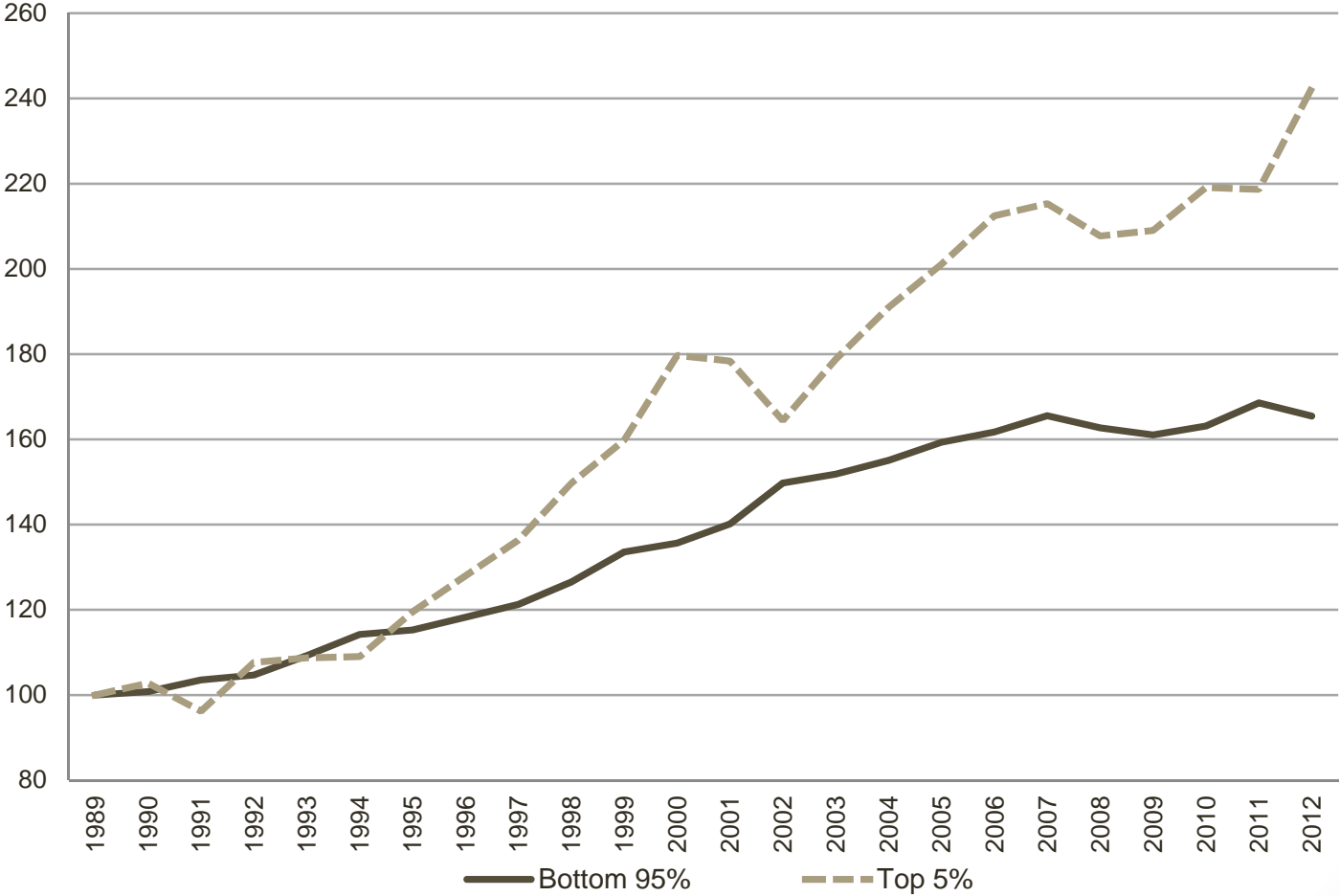
# Collapse of Demand Generation Process

- Loss of debt-financed spending by the middle class
- Deep recession / stagnant recovery
- Two perspectives ...

# Weak Consumption and the Stagnant Recovery



# Economic Democracy?



# Assessing the Minsky Crisis Model

- Consumer Age – Great Recession – Aftermath
  - Historical case study
- Core dynamics consistent with Minsky theory
  - Validation through Keynesian effects
  - Rising financial fragility eventually destroys demand growth process
  - “Minsky Moment” clearly tied to financial crisis
- Probably most consistent history in post-Great Depression decades



# Challenges Going Forward

- Compromised aggregate demand generating process
  - Deleveraging level effect and loss of consumption-led growth
- Minsky “cleansing” stage 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 rescued than if AIG or JP Morgan is bailed out?
- Problem of rising inequality: structural impediment to demand generation