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# The U.S. Household Debt Overhang

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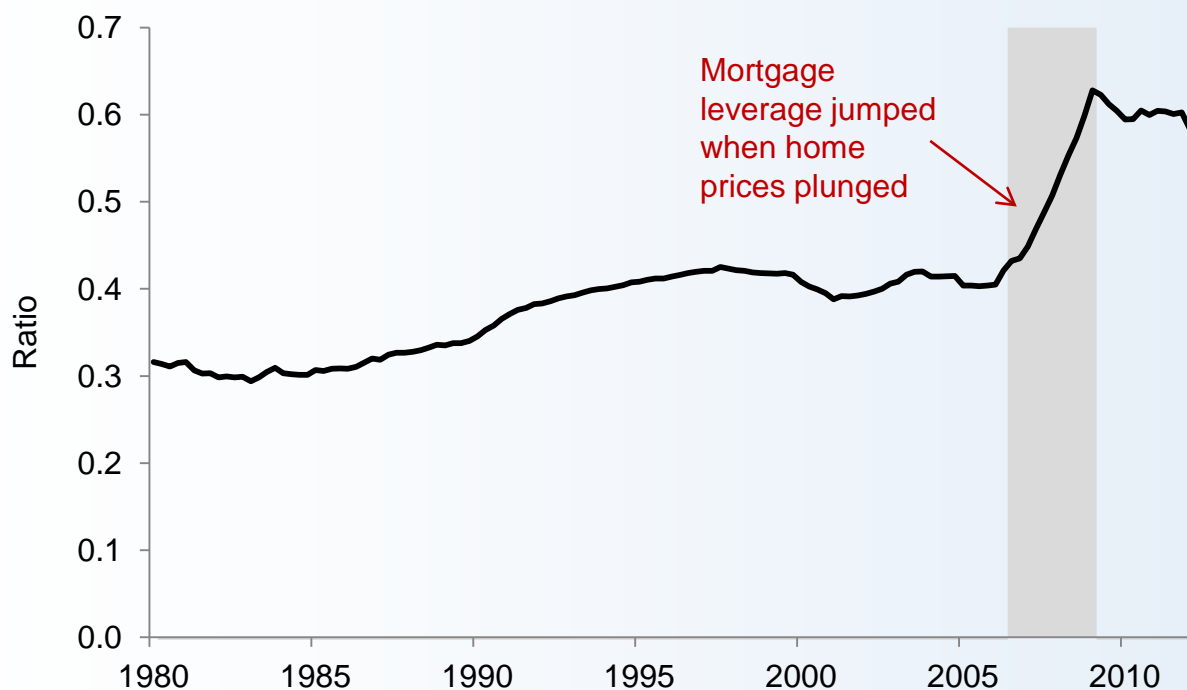
Brookings Institution

These slides were prepared for the 15<sup>th</sup> Annual DNB Research Conference, “Household Finances and Behavior in Times of Crisis,” in Amsterdam, The Netherlands on October 25-26, 2012.

# Popular interpretation of what has been going on ...



“Debt overhang” refers to high levels of leverage that resulted from housing bust



Note. Ratio of U.S. home mortgage debt to the value of U.S. residential real estate. Shaded area denotes period of rapid home price declines. Data from the U.S. flow of funds accounts. Last value is 2012:Q2.

# **The Causes of the U.S. Household Debt Overhang**

# Underpinnings of the mortgage debt boom

- **Strong U.S. housing demand in early 2000s:**
  - » Solid economic fundamentals
  - » Low interest rates
  - » Increased prevalence of “affordable” mortgage products
- **Boom became self-reinforcing:** the more prices rose, the more eager homeowners were to buy, the more willing lenders were to lend, the more willing investors were to supply funds
  - » Neither regulators nor market discipline put a check on the cycle

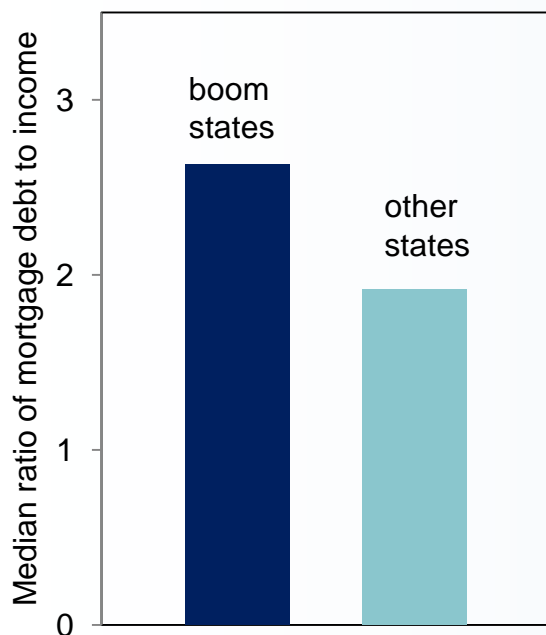
# Look more closely at the debt buildup using the Panel Study of Income Dynamics

- PSID background:
  - » Longitudinal household survey launched in 1968
  - » Currently done once every two years; most recently released full wave is for 2009 (8000 interviews)
  - » Preliminary balance sheet data for 2011
- Key concepts from Dynan (2012):
  - » Highly leverage homeowners = those in top quintile of mortgage leverage as of 2007
  - » Housing boom states = those in the top quartile of home price appreciation, 2000-2006
  - » Consumption = nonhousing consumption

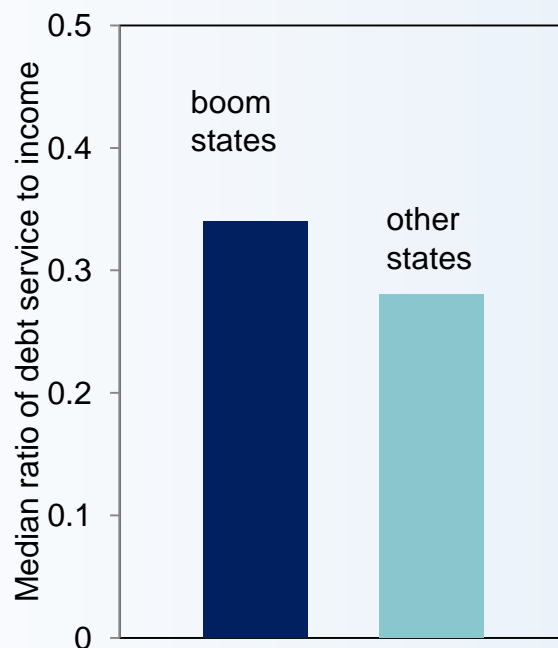
# Rapid house price appreciation was integral to the build-up of risk

As of 2007, highly leveraged homeowners in housing boom states had ...

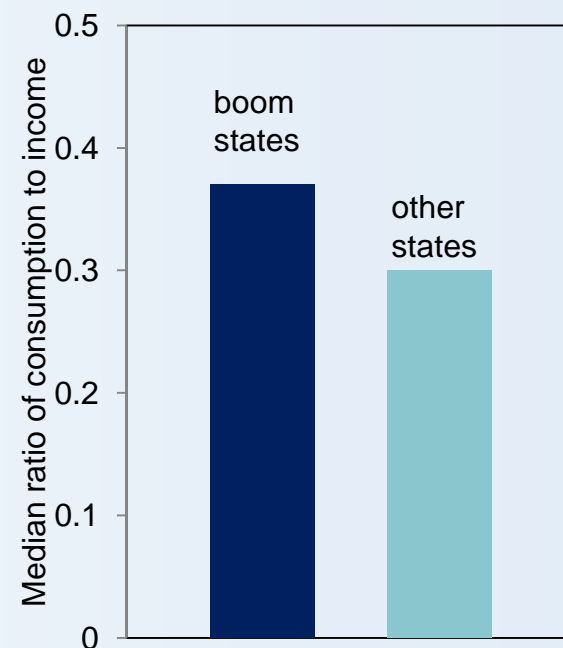
... more debt



... more debt service



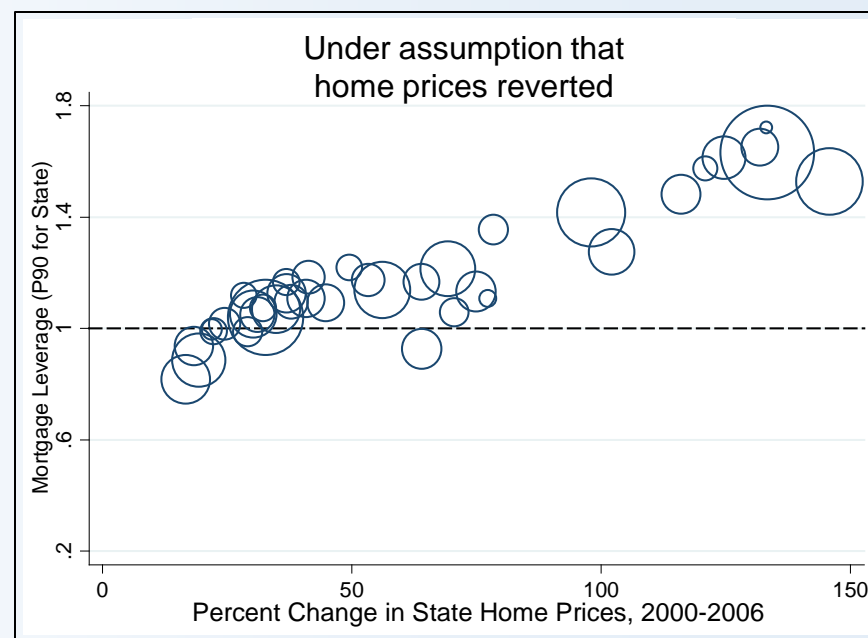
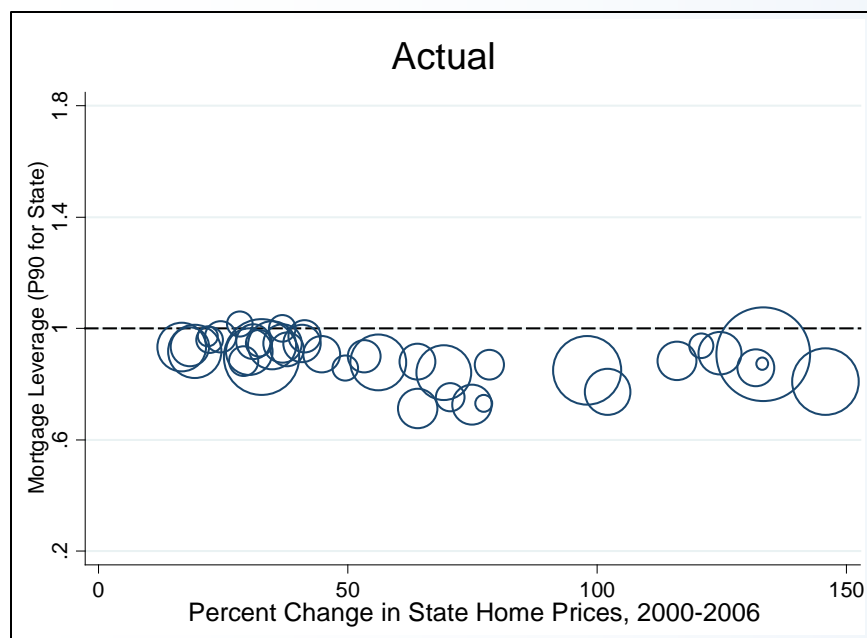
... higher consumption



Source: Dynan (2012)

# Did it look risky? Depends on odds one attached to home prices reversing

## 90<sup>th</sup> Percentile of 2007 Mortgage Leverage, by State



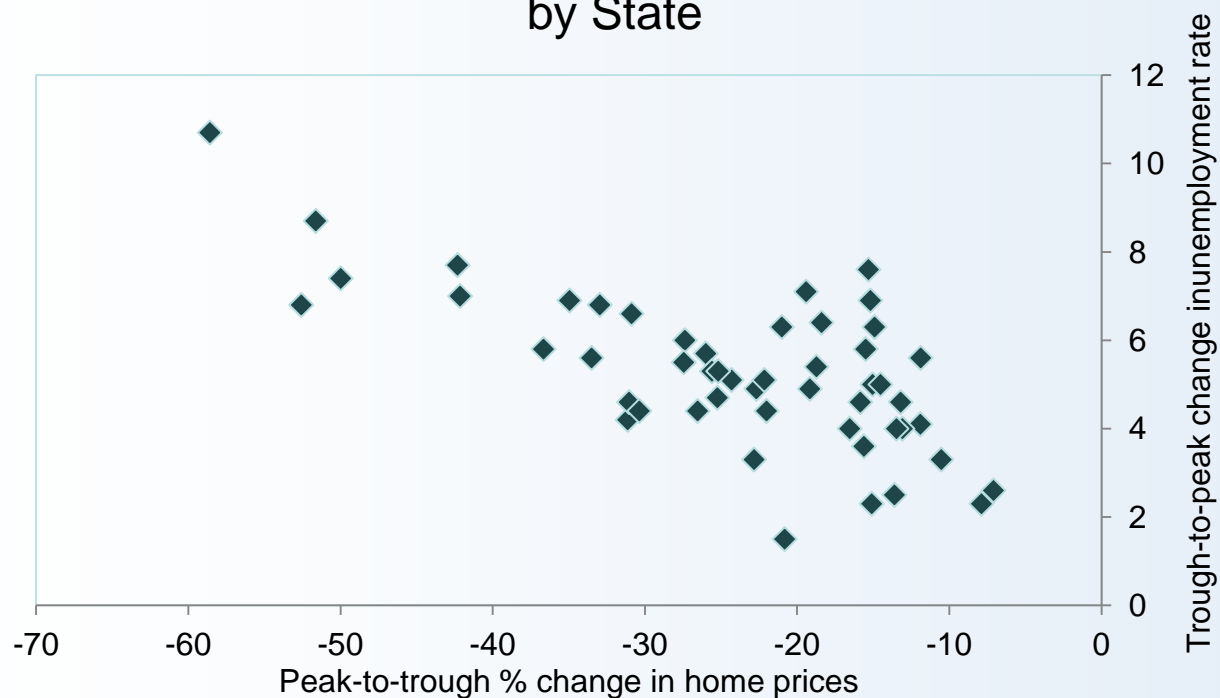
Source: Dynan (2012).



# **The Effects of High Leverage on Consumer Spending**

# Clear that U.S. regions with larger housing busts had deeper recessions

Changes in Unemployment and Home Prices  
by State



Source: First American Corelogic and U.S. Department of Labor.

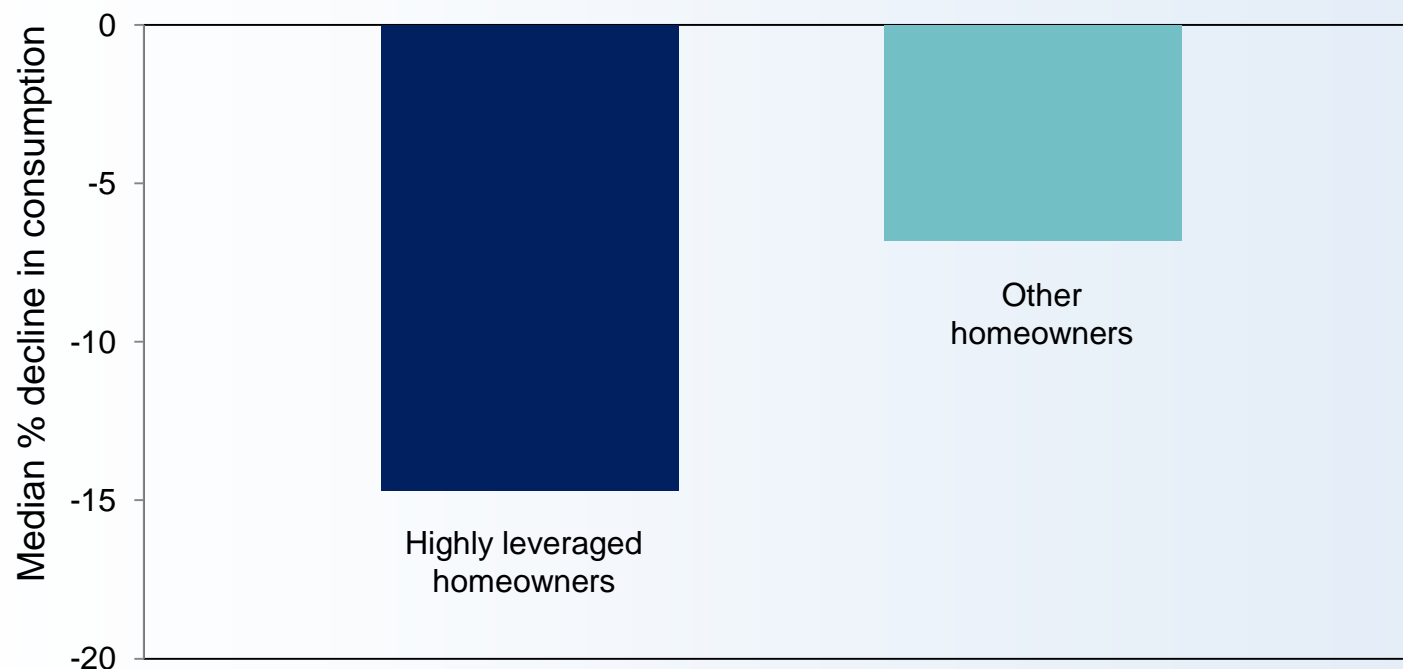
## But what was the role of leverage?

- The simplest models of consumption:

$$C_i = f(Y_i, W_i, r_i, \text{preferences, uncertainty, etc})$$

- » But debt and leverage typically do not enter.
- Reasons to think high leverage *might* matter:
  - » Households may be uncomfortable with leverage beyond a certain level
  - » Financial institutions may be less willing to lend to and or refinance loans for high leverage (or high debt burden) households

# Highly leveraged homeowners had a larger decline in consumption ...

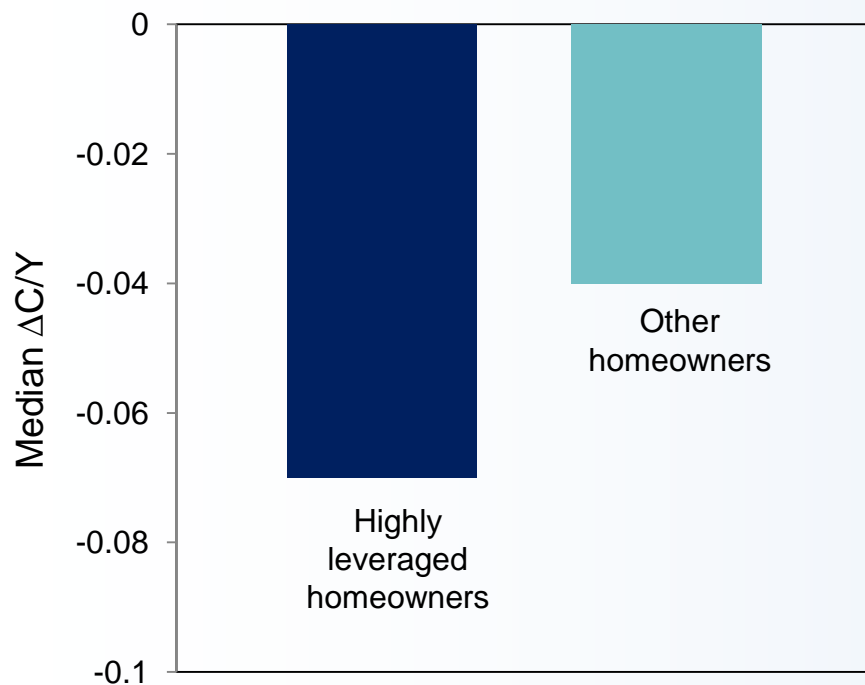


Note: Sample restricted to boom states.

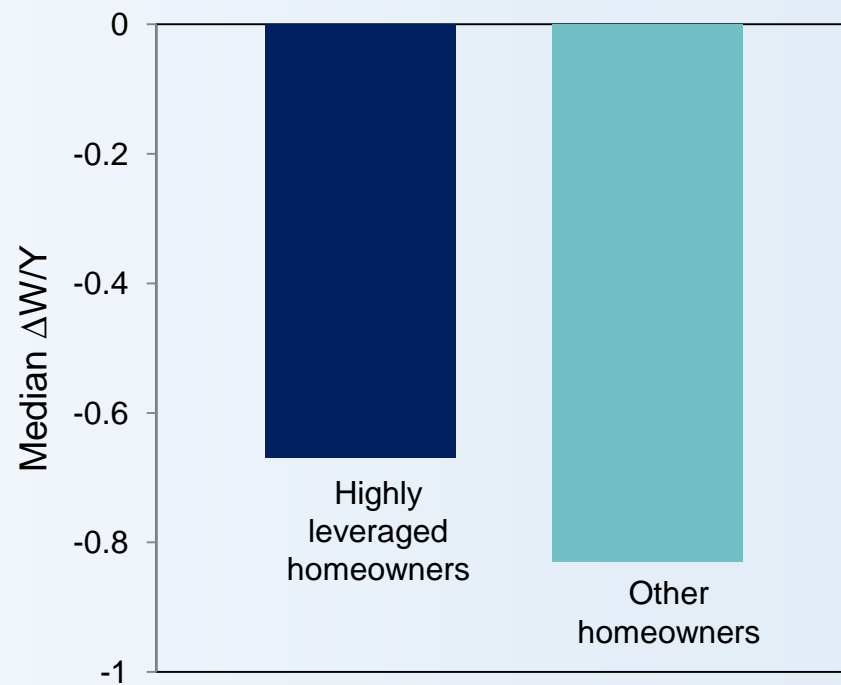
Source: Dynan (2012).

# A larger decline in consumption ...

... even controlling for income



... and notwithstanding a *smaller* decline in wealth



Note: Sample restricted to boom states.

Source: Dynan (2012).

## To formalize, I estimate:

$$\Delta C_{i,09} = \alpha + \beta_W \Delta W_{i,09} + \beta_Y \Delta Y_{i,09} + \beta_{lev} D/A_{i,07} + \gamma X_{i,09} + \varepsilon_{i,09}$$

### Notes:

- Use ex ante leverage because ex post leverage might be endogenous (also tried instrumenting ex post)
- Focus on mortgage leverage only because of incomplete information about non-mortgage debt
- Downweight large values by applying the inverse hyperbolic sine transformation

## Selected regression results

Dependent variable = change in nonhousing consumption

	Estimated for 2007-2009 change				Pooled sample: 07-09 & 05-07 changes
	Baseline	Boom states	Non-boom states	Ex post leverage (IV)	
$\Delta$ State unemployment rate	-.01 (1.77)	3.52 (5.51)	-1.11 (2.66)	.11 (1.78)	-.42 (1.21)
$\Delta$ Income	.11** (.02)	.12** (.05)	.05* (.03)	.11** (.02)	.11** (.01)
$\Delta$ Wealth	.02** (.00)	.01 (.01)	.03*** (.01)	.02** (.01)	.02** (.00)
<b>Mortgage leverage</b>	<b>-6.07*</b> <b>(3.25)</b>	<b>-11.60</b> <b>(9.17)</b>	<b>-4.62</b> <b>(5.30)</b>	<b>-7.80*</b> <b>(4.11)</b>	<b>-5.40**</b> <b>(2.27)</b>

\*Significant at 10 percent level, \*\*Significant at 5 percent level.

Note. Standard errors in parentheses.

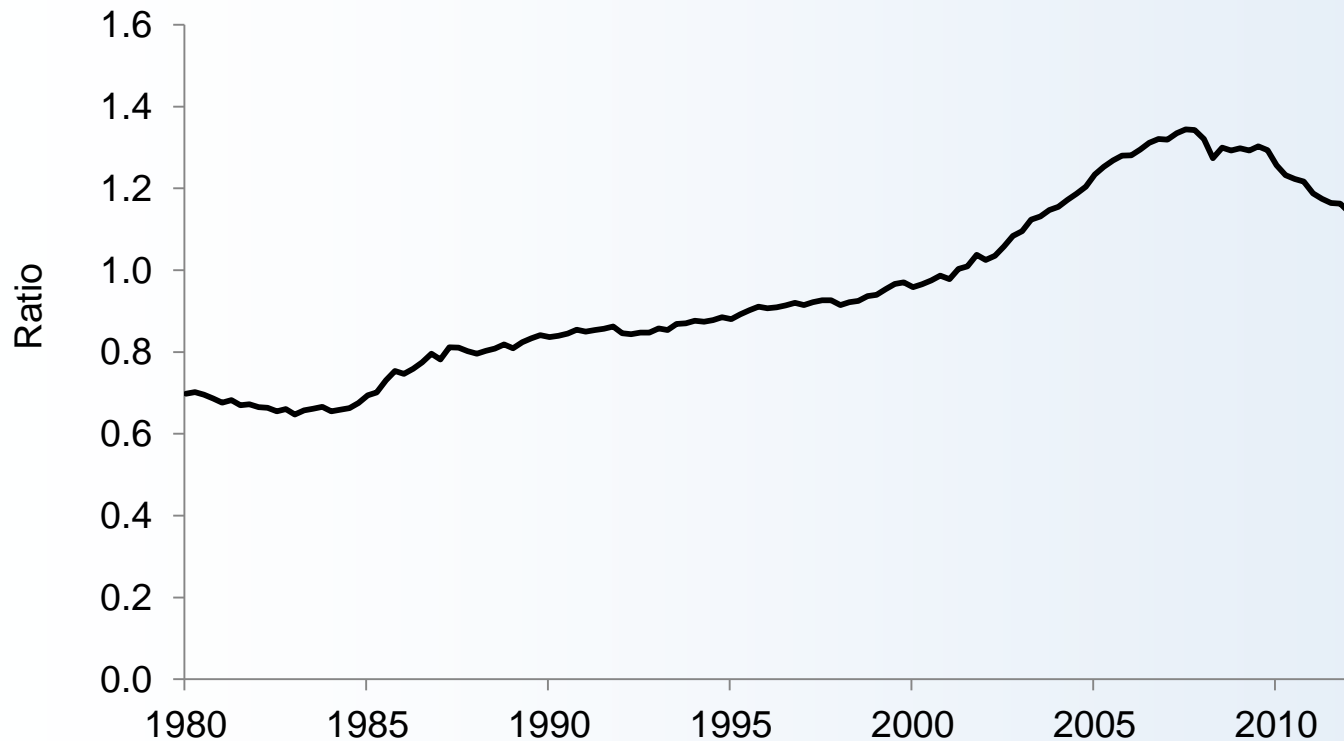
# Implications for the U.S. Economy



## Quantifying the macro effects

- At face value, point estimates suggest high leverage might be holding back aggregate consumption growth by  $\frac{1}{4}$  to  $\frac{1}{2}$  percentage point per year
- But lots of caveats:
  - » Measurement error could be attenuating coefficients
  - » There might be nonlinearities in the relationship
  - » The effects may have changed as conditions have evolved
  - » Cannot tell for sure whether it's leverage that matters or debt service, which has moved differently

## U.S. household debt has declined

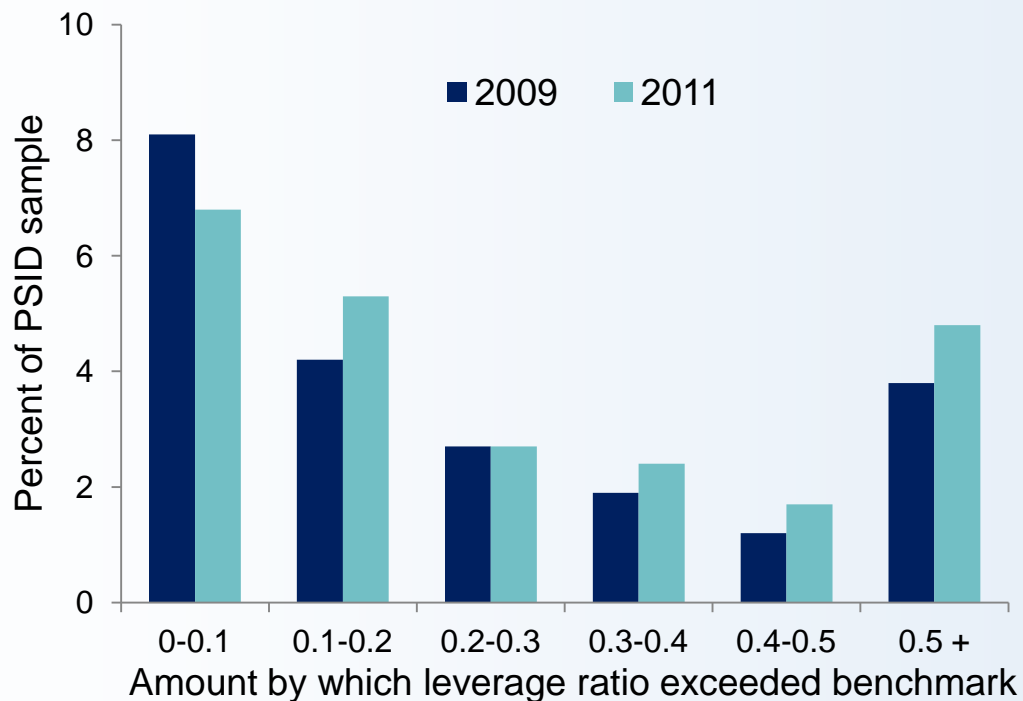


Note: Plot shows ratio of U.S. household debt to disposable personal income. Last value is 2012:Q2. Data from U.S. flow of funds accounts and U.S. national income and product accounts.

## But, the decline in aggregate debt has been very uneven

- A large share has been accounted for by defaults
- Another substantial share has been accounted for by reduced new borrowing
  - » First-time homeownership has fallen to extremely low levels by historical standards
- The implication is that defaulters and would-be borrowers have much less debt than they otherwise would

## Many other households made little progress deleveraging between 2009 and 2011



Note. Benchmark is 2005 leverage, except for new homeowners, whose benchmark is assumed to be 0.9. Source: Dynan (2012).

# **Policy Challenges Related to Balance Sheets**

# To save or not to save



## Is debt forgiveness the solution?

- Debt forgiveness or “principal writedown” programs could lead to an immediate strengthening of balance sheets—good for the short run and for the long run
- But lenders not likely to do this on their own
  - » Unprofitable to write down loans for the large numbers of underwater borrowers that are still current
  - » Writedowns for just delinquent borrowers would encourage others to stop paying
- Obstacles to using tax payer dollars to incentivize
  - » Politically controversial
  - » Opportunity cost of the money

# Lessons and directions for future research

- Research suggests that high leverage is holding back U.S. economic activity. But need more work on:
  - » Quantitative importance of high leverage
  - » Channels through which it is affecting consumption
- Experience of last few years has implications for tools used by policy analysts
  - » Need better tools for detecting buildups of risk (especially in the tails)
  - » Need to recognize the limits of macro models and complement with micro analysis



## References

Dynan, Karen. 2012. “Is a Household Debt Overhang Holding Back Consumption?” *Brookings Papers on Economic Activity Spring 2012*. Available at:

[http://www.brookings.edu/~media/projects/bpea/spring%202012/2012a\\_dynan](http://www.brookings.edu/~media/projects/bpea/spring%202012/2012a_dynan).