

'House Prices Can't Fall': Do Beliefs Affect Consumer Spending and Borrowing Cycles?

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A Narrative of Deleveraging

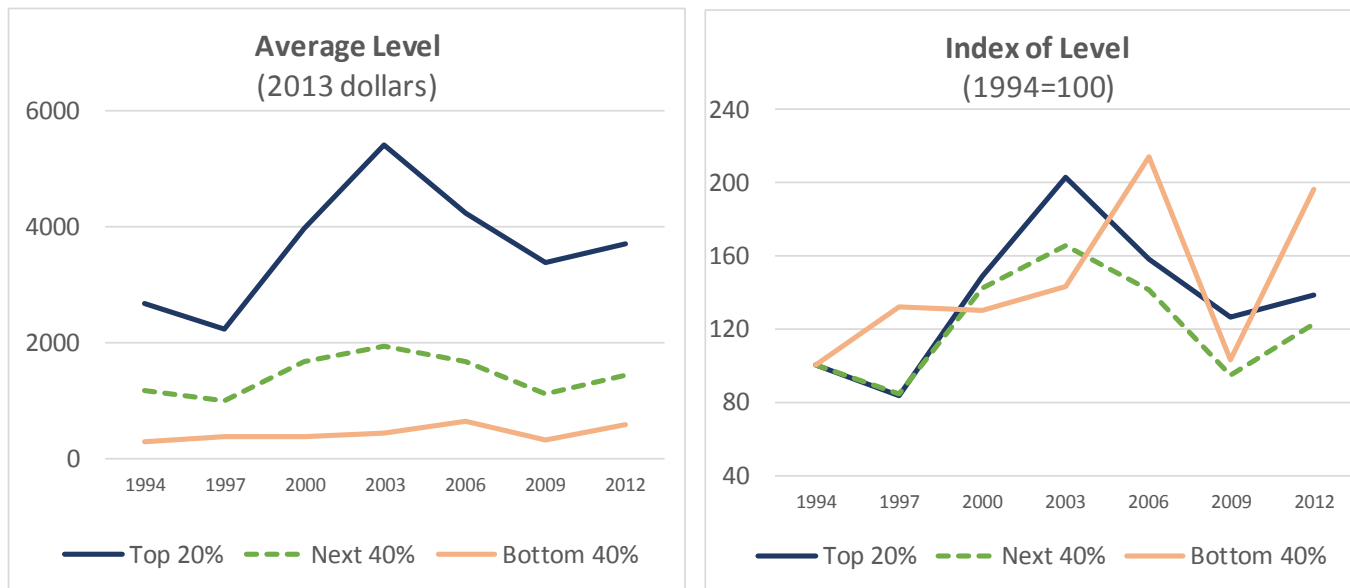
- Reason for deep recession/slow recovery (Dyran 2012, Mian & Sufi 2013).
- Growing empirical support for balance-sheet repair (Sahm, Shapiro, Slemrod 2015), many open questions:
 - Why did households lever up?
 - (De)leveraging: narrow or broad based?
 - Why hasn't leverage risen in recovery?

Unpack “deleveraging” further ... we focus on beliefs

- Build on earlier work Attanasio et al (2009), De Nardi et al (2012), Pence et al (2014)

Spending Cycle Widespread

Real Outlays on New Cars by Income Group

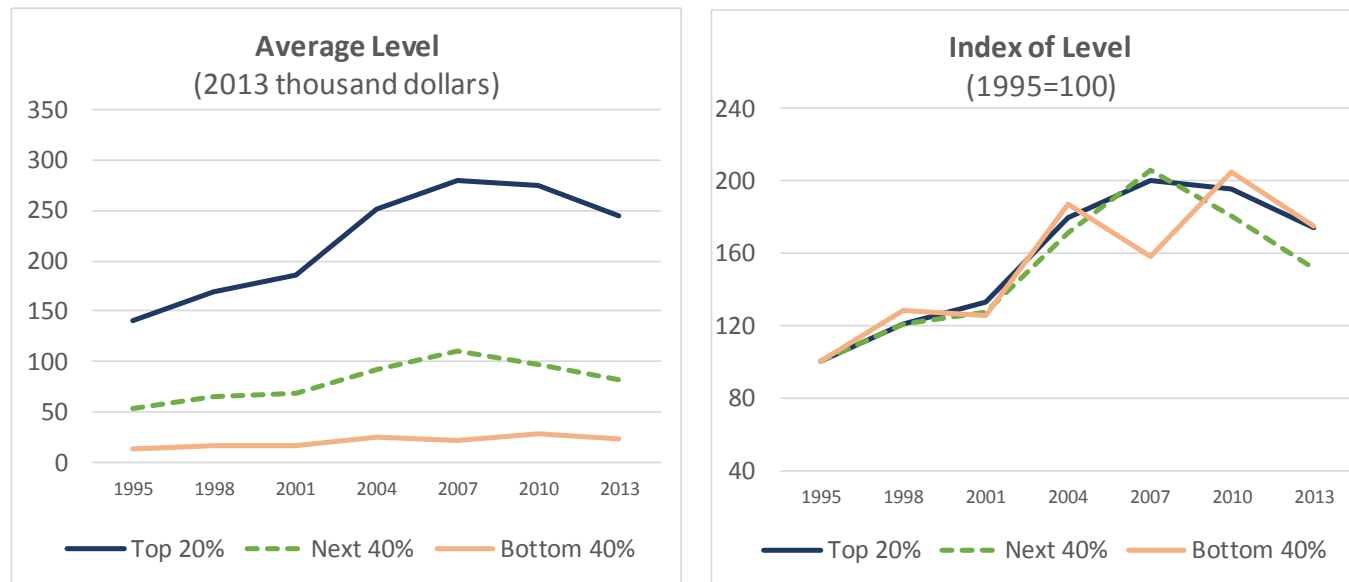


Source: Survey of Consumer Finances. Averages include those who spent zero dollars. Income groups by "usual" income.

- High-income households largest swing in spending levels
- Percent changes comparable across income groups

Likewise, Debt Cycle Widespread

Total Debt by Income Group



Source: Survey of Consumer Finances. Averages include those with zero debt. Income groups by "usual" income.

- All income groups levered up and then delevered
- Differences in timing but pattern broad based

What Factors Can Help Explain These Cycles?

- Changes in credit supply impact liquidity constrained households, more so than high income/wealth households
- Changes in current net worth and income, alter resources, collateral

Recovery disappointing conditional on standard factors

- Shifts in beliefs can help explain recent spending and debt cycle

Contribution: study the role of beliefs

Approach of Our Paper

- Use **surveys**, not ex-post realizations, to measure expectations
- Follow deleveraging literature, but not on expectations:

“... households in the zip codes that most aggressively borrowed and spent out of rising home values *ex post* had *lower income growth and spending* ... suggest some skepticism of the view that households in these zip codes expected high future income.” Mian and Sufi (2014)
- Quantify household-level elasticities and aggregate impact

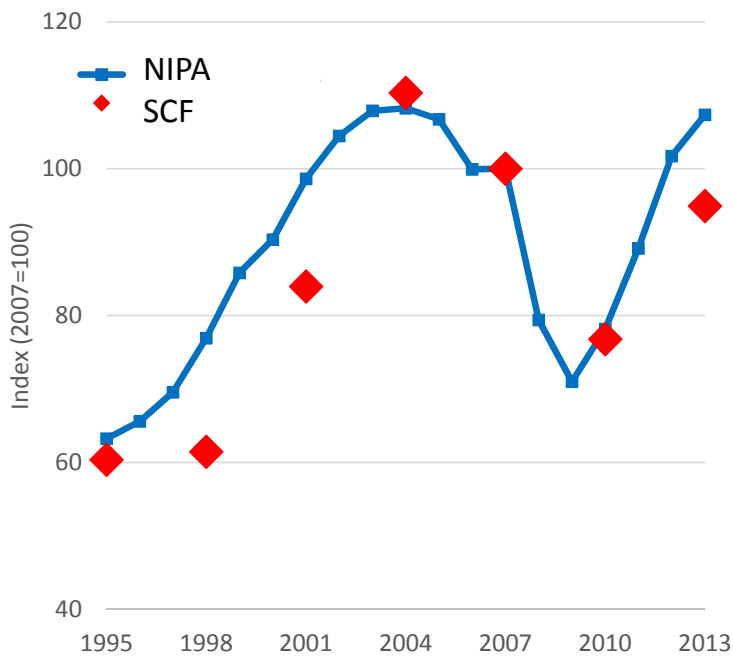
Our Data: Survey of Consumer Finances



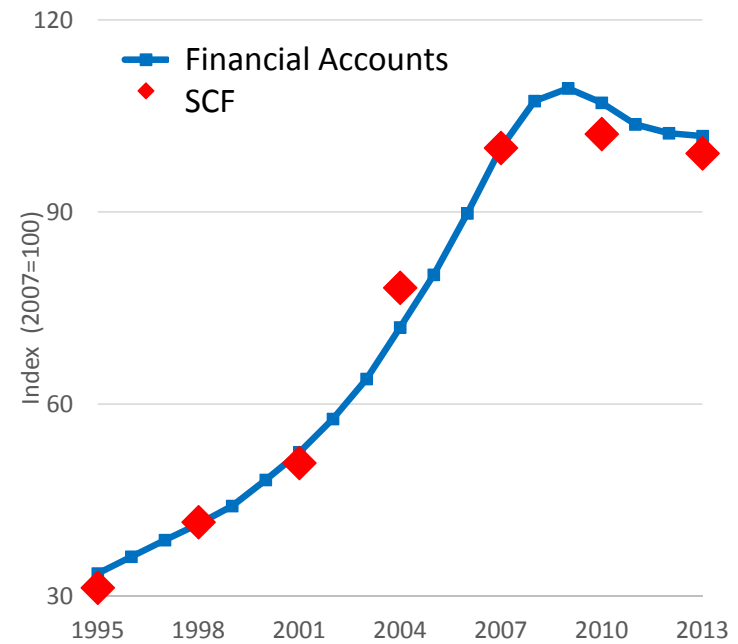
- 7 SCF surveys over 19 years: 1995-2013
- Spending, income, and debt, line up with aggregates
- Survey beliefs (expected, recent) income growth
- Zip-code identifiers to match house prices

Survey: Externally Valid Spending and Debt

Real Outlays on New Autos

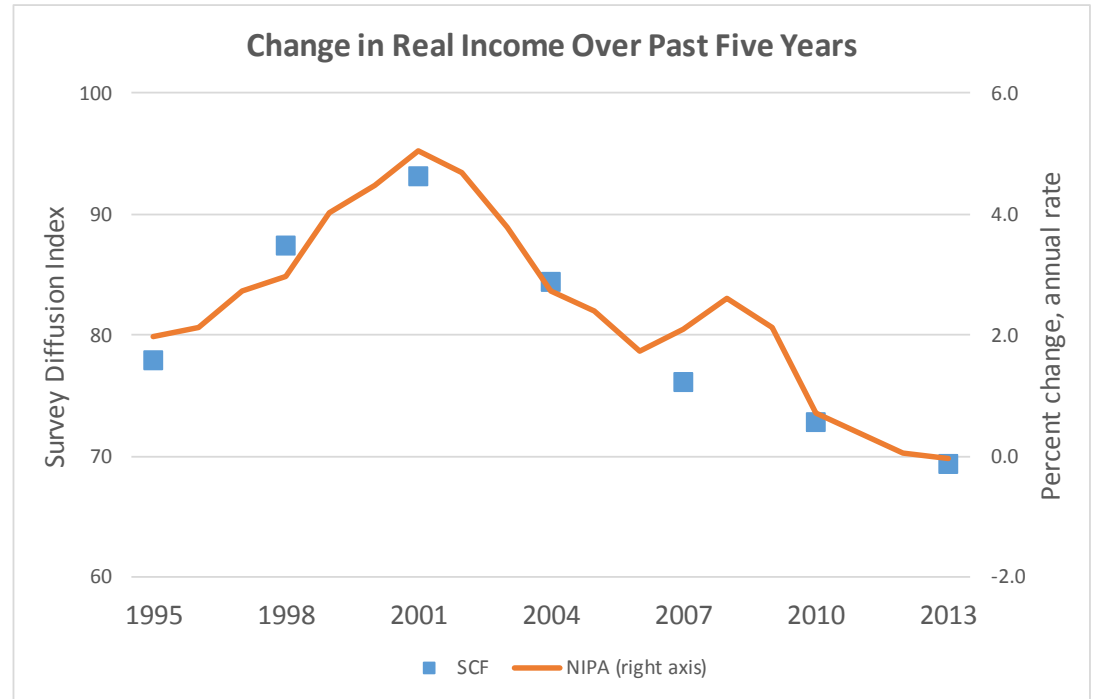


Total Household Debt



Can We Measure Beliefs?

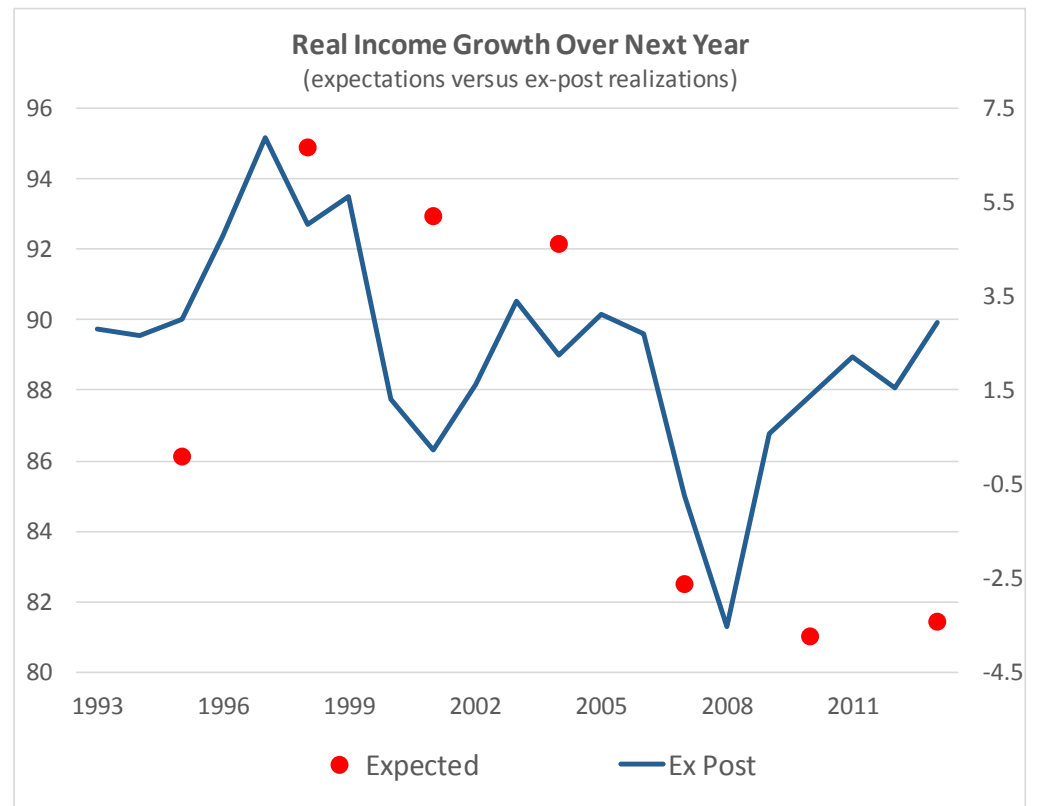
- Households accurately perceive recent income changes
- “Over the past five years, did your total family income go up more than inflation, less than inflation, or about the same as inflation?”
- Diffusion index = % Up More - % Up Less + 100



Source: Real income is self-reported in SCF and real aggregate compensation in NIPA.

Can We Measure Beliefs?

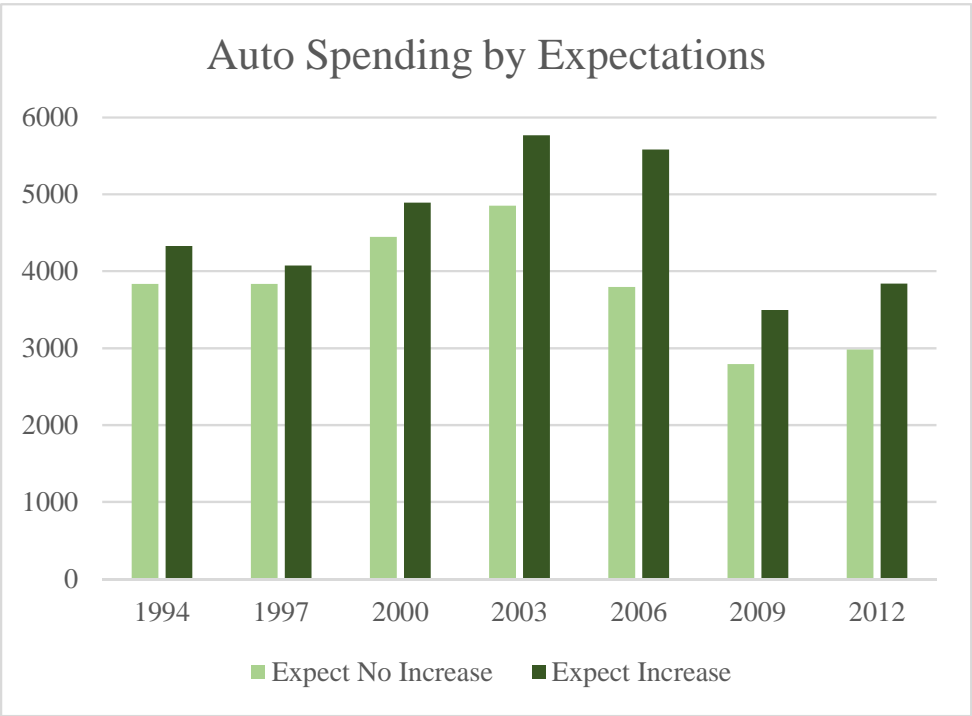
- Optimism (relative to outcomes) in 2000, pessimism in 2007
- “Over the next year, do you expect your total family income to go up more than inflation, less than inflation, or about the same as inflation?”



Source: Expected is SCF. Ex Post is real aggregate compensation in NIPA.

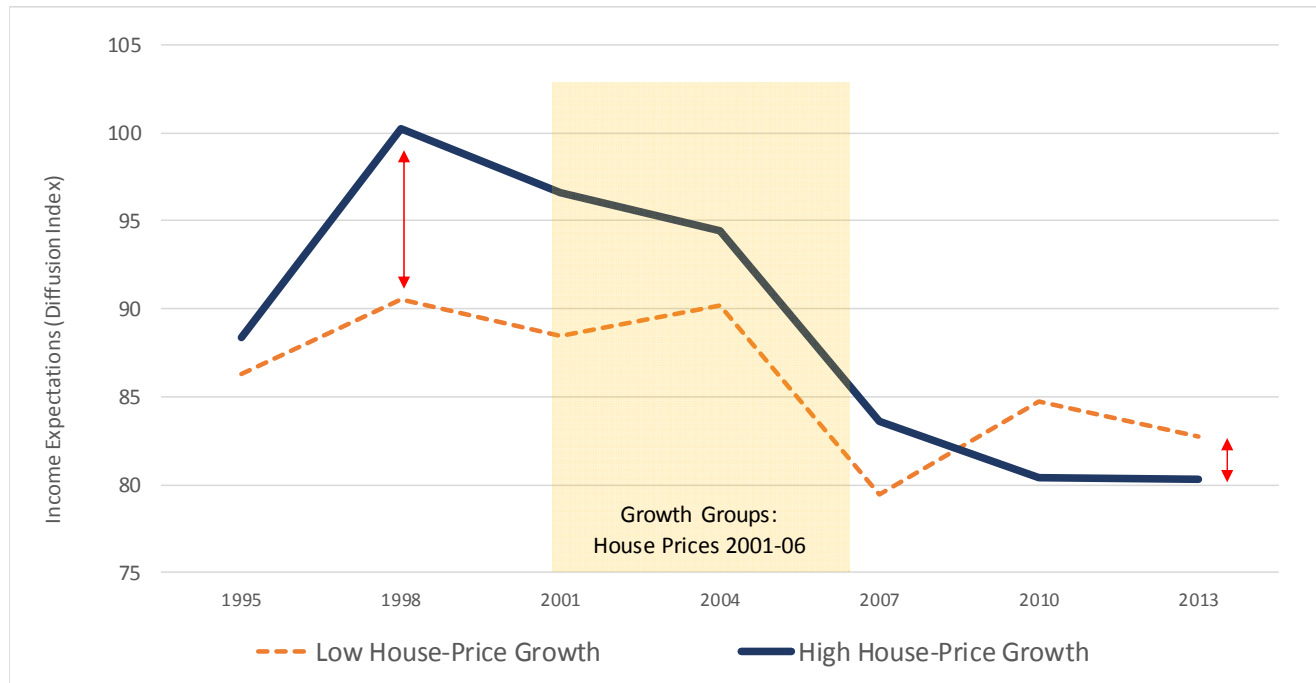
So what do we learn from beliefs? ...

Expect Income Increases → Spend More



- In 2006, large gap in average spending by expectations

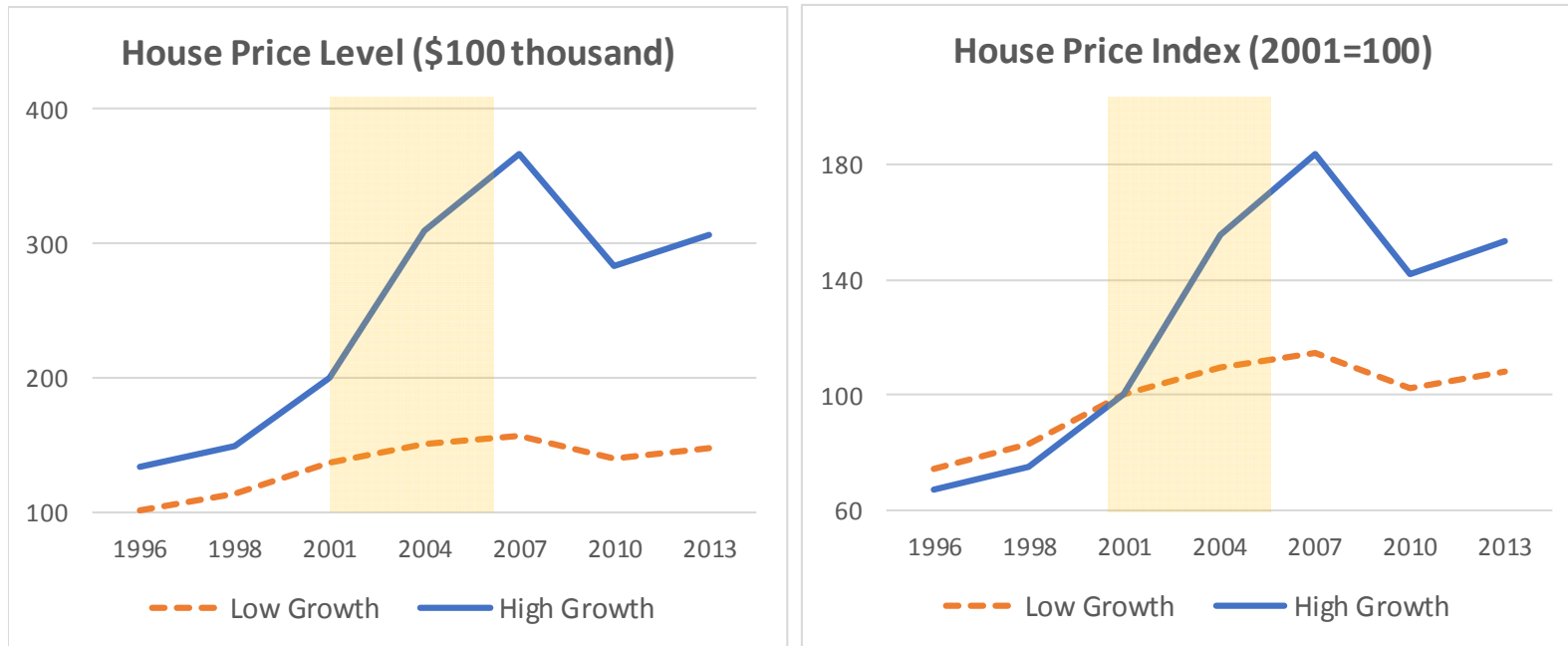
Income Expectations Led the House Price Bubble



Source: Survey of Consumer Finances, Corelogic, Zillow. High is prices up more than 50% in 2001-06 and Low is prices up less than 20%.

- More likely to expect income growth in bubble areas, even *before* the bubble

Yet, House Prices Before the Bubble Similar



Source: Zillow. Values are the average of median house prices in each zip code for the group.

- Beliefs, not house prices, distinguish areas before the bubble

Expectations Unusually Pessimistic in the Recovery

Expect Increase (%)	
2004-07	21
2010-13	17
Predicted (w/ Income)	
2010-13	20

- Pessimism not simply the usual effect of worse economic conditions
- Unusual pessimism in 2010-13 equivalent to 1% lower income

What Do Beliefs Add To Understanding of Spending & Debt?

- Multivariate analysis: with home value (level, change), other wealth, liquidity constraints, income, job characteristics, demographics
- Quantify full variation, no instruments
- Households with positive beliefs:
 - Spent more, took on more debt
 - Spent more, took on more debt when house price increased
 - Reacted more to house prices only pre-recession

Beliefs: Use Expectations to Interpret Recent Experience

Over Past 5 Years	Over Next Year		
	Decrease	No Change	Increase
Increased	0	+	+
Unchanged	-	0	+
Decreased	-	-	0

- **Positive:** after increase (or unchanged) expect more increases
- **Neutral:** expect “mean reversion”
- **Negative:** after decrease (or unchanged) expect more decreases

In spirit of permanent-income hypothesis but we let households subjectively define transitory vs permanent income shocks

Positive Beliefs, Spend More on Cars

	Levels	Semi-Elasticity
Positive Beliefs	486	0.14
	(174)	(0.05)

Bold is stat diff from zero at 5% level. Inverse hyperbolic sign to address zero/negative values. Includes other controls.

- Those with positive beliefs, on average, spent almost \$500 (or 14 percent) more on new cars in 1995-2013 period
- Meaningful fraction of the \$3200 average spending on new cars

Spending Reacts More to House-Price Changes If Positive Beliefs

Positive Beliefs:	1999-06		2009-12	
	Yes	No	Yes	No
Change in House Prices	0.06	0.01	0.01	0.004
	(0.02)	(0.01)	(0.01)	(0.004)

Bold is stat diff from zero at 5% level. Inverse hyperbolic sign to address zero/negative values. Includes other controls.

- Before recession 1 percentage point higher house-price growth implies **6% higher car spending if positive beliefs**, only 1% if non-positive
- After recession, response to house prices changes small for both.

Mortgage Debt Also Responds More to House Prices if Positive Beliefs

Positive Beliefs:	2000-07		2010-13	
	Yes	No	Yes	No
Change in House Prices	0.06	0.01	-0.003	0.01
	(0.02)	(0.01)	(0.01)	(0.01)

Bold is stat diff from zero at 5% level. Inverse hyperbolic sign to address zero/negative values. Includes other controls.

- Mortgage debt shows a similar pattern, responsiveness to changes in house prices greater among those with positive beliefs, pre-recession

Relationship Shows Through to Total Debt

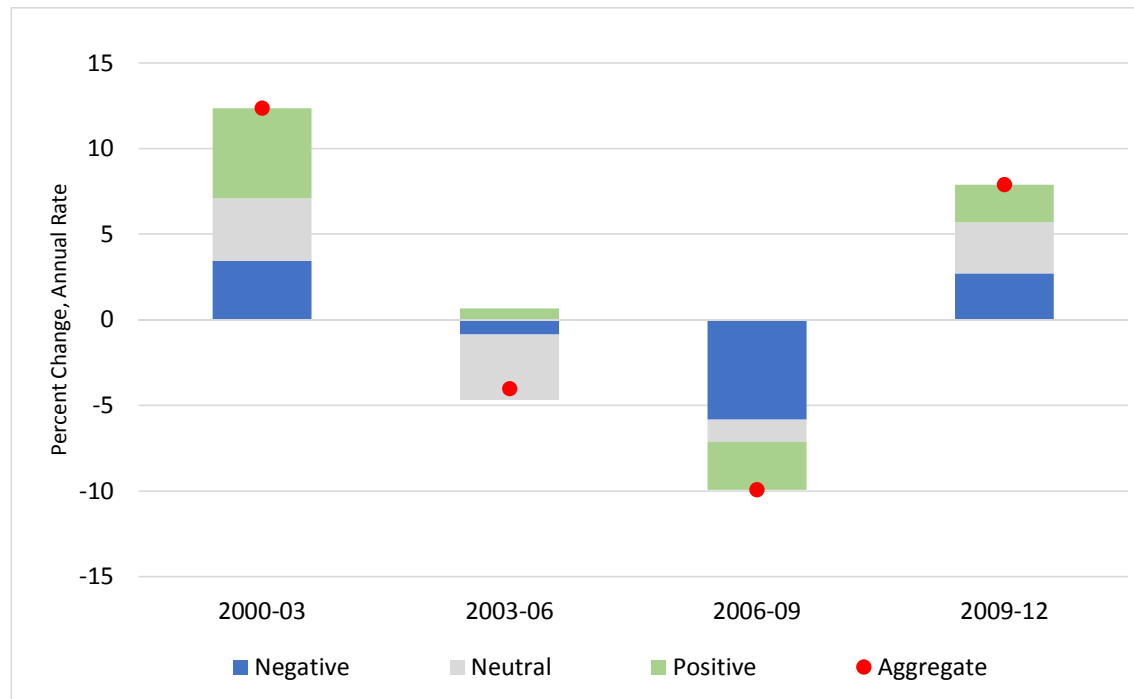
	2000-07		2010-13	
Positive Beliefs:	Yes	No	Yes	No
Change in House Prices	0.05	0.01	0.001	0.01
	(0.02)	(0.01)	(0.01)	(0.005)

Bold is stat diff from zero at 5% level. Inverse hyperbolic sign to address zero/negative values. Includes other controls.

- Adding other types of household debt (credit card, student loans, etc.) does not change results
- Beliefs help explain spending and debt ... and reaction to house price changes

Do Beliefs Matter for Macro?

Contributions to Growth in Aggregate New Car Spending



- Positive beliefs larger contribution to growth pre-recession, smaller drag in recession, but no extra contribution in recovery

Conclusions

- Beliefs can be measured, do not need to rely on ex-post realizations
 - Combine survey and administrative data
 - May be particularly useful in “unusual” times or at turning points
- Beliefs can help unpack changes in spending and debt in recent cycle:
 - Led the house price bubble
 - Altered impact of house price changes
 - Smaller effect early in recovery

