Housing, Stability and the Macroeconomy: International Perspectives

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Discussion of

Explaining House Price Dynamics:

Isolating the Role of Nonfundamentals

Kevin J. Lansing, FRB San Francisco

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Discussion of "Explaining House Price Dynamics: Isolating the Role of Nonfundamentals" by D. Ling, J. Ooi, and T. Le

Kevin J. Lansing[1]
FRB San Francisco

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[1] Any opinions expressed here do not necessarily reflect the views of the management of the Federal Reserve Bank of San Francisco or of the Board of Governors of the Federal Reserve System

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  ⇒ Evidence of self-reinforcing feedback.

Some related findings in the literature.

Bubble dynamics and extrapolative expectations:

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Self-reinforcing feedback:

- House prices rose faster in areas where lending standards were weakest, as measured by the prevalence of subprime/exotic mortgages or LTV of first-time home buyers. (Tal 2006, Wheaton and Nechayov 2008, Mian & Sufi 2009, Pavlov & Wachter 2011, Duca, Muellbauer & Murphy 2012).

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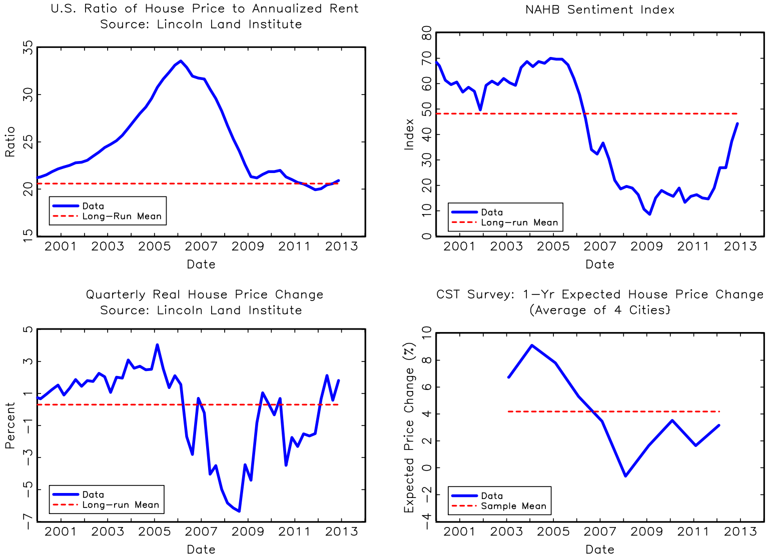
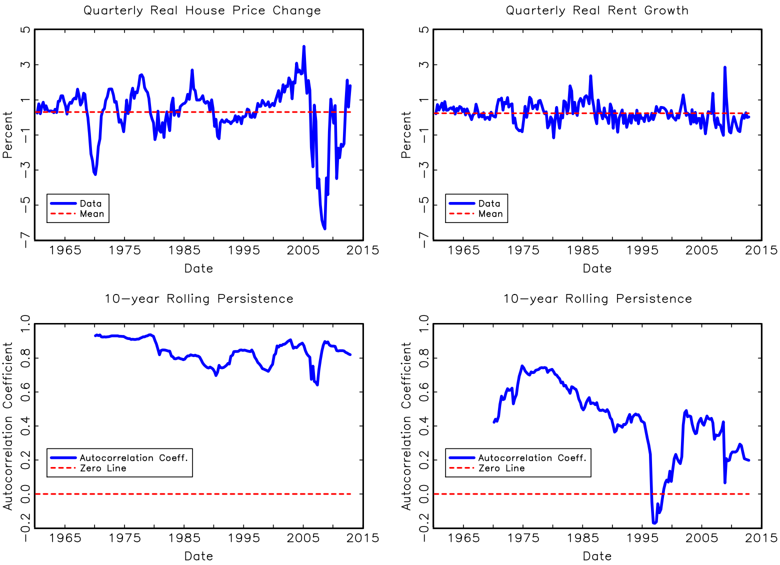
- Past house price appreciation in a given area had a significant positive impact on subsequent loan approval rates in area. (Dell'Ariccia, Igan, & Laeven 2011, Goetzmann, Peng, & Yen 2012).

Co-movement of U.S. house prices & sentiment.



Comparing U.S. house price growth to rent growth.

Data source: www.lincolninst.edu, 1960.Q1 to 2012.Q4.



Bubbles versus rationally low risk premiums.

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$$\frac{p_t}{d_t} = \frac{1}{r-g}, \qquad \text{provided } r > g.$$

A high p-d ratio can be justified by fundamentals if expected return (r) is low because risk premium is low.

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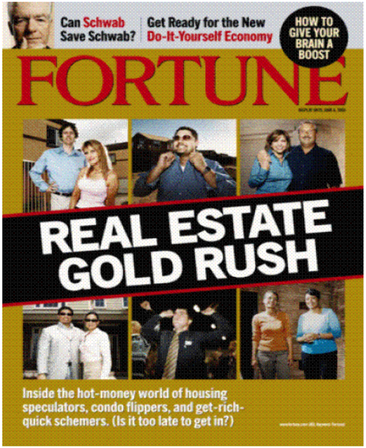
Problem with this story: Survey evidence reveals that expected returns are high when p-d ratios (or price-rent ratios) are high.

Did housing investors expect low future returns in 2005?

Rational model predicts low expected returns at market peaks.



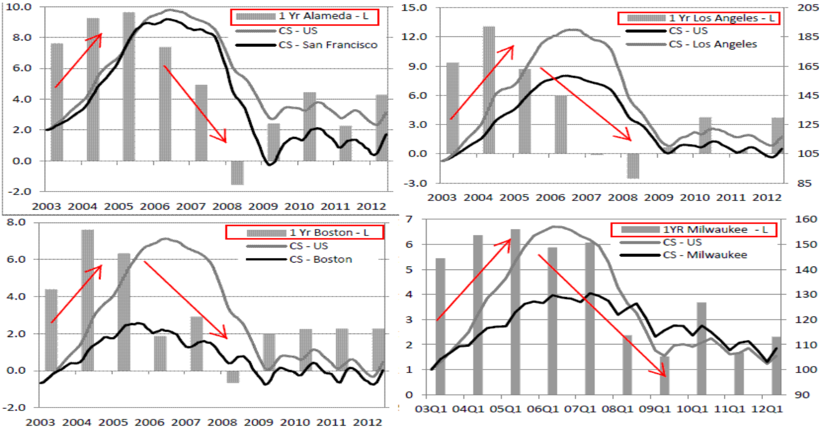
June 6, 2005

June 13, 2005

House prices and investor expectations in four U.S. cities.

Source: Case, Shiller, and Thompson (2012), NBER Working Paper 18400.

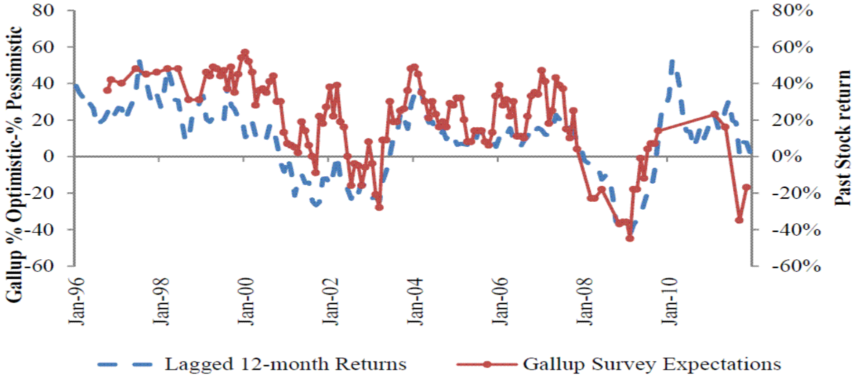
"12-month expectations are fairly well described as attenuated versions of lagged actual 12-month price changes."



Expected returns for the U.S. stock market.

Source: Greenwood and Shleifer (2013), NBER Working Paper 18686.

"Our evidence rules out rational expectations models in which changes in market valuations are driven by the required returns of a representative investor."



A typical empirical model of house prices.

Source: IMF WEO 2004, Chapter 2, "The Global House Price Boom"

Are these fundamental explanatory variables?

Table B2.1. What Determines House Prices in Industrial Countries?

(Summary of empirical results, 1971–2003)

Explanatory Variables	Dependent Variable: Real house price (growth)
Lagged dependent variable	
Lagged real house price (growth)	0.521 [0.030]*
Reversion	
Lagged housing affordability ratio	–0.144 [0.021]*
Fundamentals	
Real disposable income (per capita, growth)	0.530 [0.119]*
Short-term interest rate (percent)	–0.507 [0.109]*
Real credit (growth)	0.109 [0.036]*
Lagged real stock price (growth)	0.033 [0.009]*
Population growth	1.754 [0.623]*
Bank crisis	–2.426 [0.952]*
Memorandum	
Number of observations	524

Comment: bubbles can be driven purely by fundamentals.

References: Froot & Obstfeld (AER 1991) and Lansing (Economic Journal 2010).

$$p_t = d_t + E_t\left(\frac{1}{1+r}\right) p_{t+1}, \qquad \frac{d_{t+1}}{d_t} = 1 + g + \varepsilon_{t+1}$$

$$p_t = p_t^{\mathrm{f}} + p_t^{\mathrm{b}}$$

$$\left.\begin{aligned} p_t^{\mathrm{f}} &= \frac{d_t}{r-g} \\ p_t^{\mathrm{b}} &= p_{t-1}^{\mathrm{b}} \exp\left(\lambda\, \varepsilon_{t+1}\right) \end{aligned}\right\} \Rightarrow p_t = \mathrm{f}\left(p_{t-1}\right)$$

$$\lambda = \pm\sqrt{\frac{2\log(1+r)}{Var(\varepsilon_{t+1})}}$$

$\Rightarrow$ Authors' methodology may not detect this type of bubble.

Comment: Map to Campbell-Shiller return identity.

$$R_{t+1} = \frac{p_{t+1} + d_{t+1}}{p_t} = \frac{\left(p_{t+1}/d_{t+1} + 1\right)\left(1 + g_{t+1}\right)}{p_t/d_t}$$

$$\log\left(p_t/d_t\right) \simeq \kappa_0 + \kappa_1 \log\left(p_{t+1}/d_{t+1}\right) + g_{t+1} - \log\left(R_{t+1}\right)$$

$$\simeq \kappa_0 + \sum_{j=1}^{\infty} \left(\kappa_1\right)^j \left[g_{t+j} - \log\left(R_{t+j}\right)\right]$$

$$Var\left[\log\left(p_t/d_t\right)\right] = Cov\left[\log\left(p_t/d_t\right), \sum_{j=1}^{\infty} \left(\kappa_1\right)^j g_{t+j}\right] - Cov\left[\log\left(p_t/d_t\right), \sum_{j=1}^{\infty} \left(\kappa_1\right)^j \log\left(R_{t+j}\right)\right]$$

$\Rightarrow$ Price-rent ratio must predict either future rent-growth or future returns. This motivates the form of forecasting regressions.

Forecasting U.S. housing returns with the price-rent ratio.

Authors use composite sentiment index to forecast future housing returns.

$$\text{Return}_{t \to t+j} = \widehat{b}_0 + \widehat{b}_1 \log\left(\frac{\text{Price}_t}{\text{Rent}_t}\right) + u_{t+1}$$

	1960.Q2 to 2012.Q4	2000.Q1 to 2012.Q4
Forecast Horizon	$\widehat{b}_1$	$\widehat{b}_1$
$j = 2$	-0.079*** (0.013)	-0.099** (0.043)
$j = 4$	-0.180*** (0.024)	-0.258** (0.043)
$j = 8$	-0.405*** (0.040)	-0.736*** (0.143)

$\Rightarrow$ Higher price-rent ratio predicts lower realized returns. But survey evidence shows that investors fail to take this relationship into account when forming their expectations.

Summary

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Lessons for policy:

- To guard against costly housing bubbles, regulators should enforce prudent mortgage lending standards.
- Debt-to-income limits represent a more prudent lending criteria than loan-to-value limits. (Lim et al 2011, Gelain, et al. 2013)