

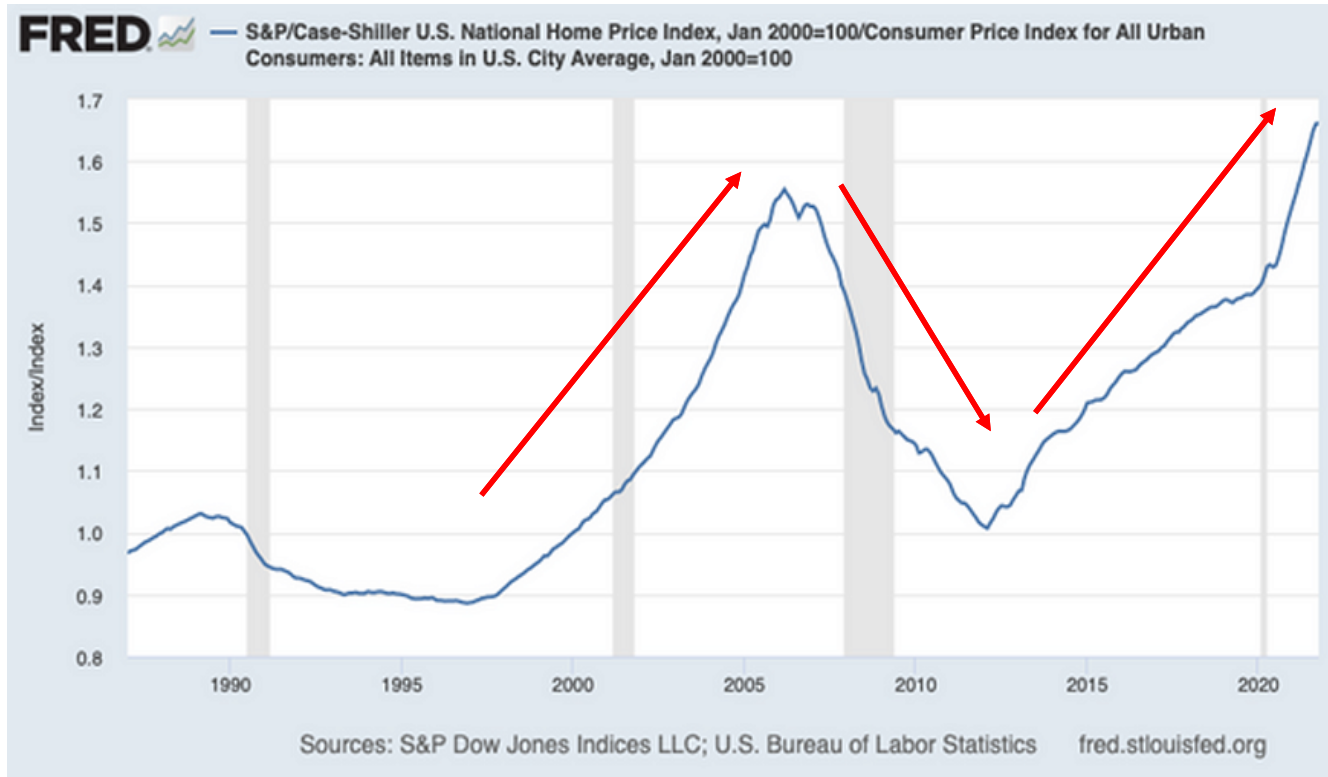
Housing Market Cycle and Bubbles

RE420: URBAN AND REGIONAL ECONOMICS

Introduction

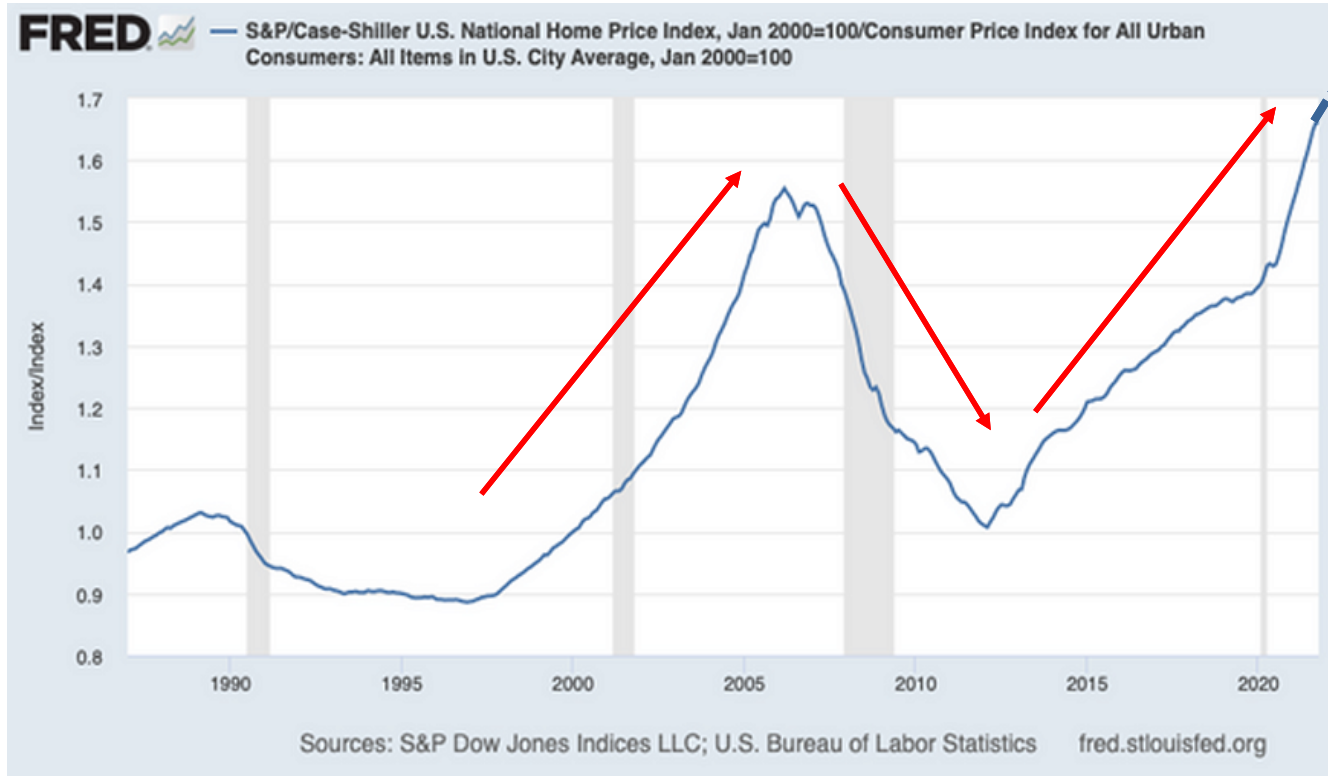
- Previously, we have studied, and practiced, how to measure general house price changes using the House Price Index
- By examining HPI trends, we discovered that the U.S. housing market experienced significant price booms (bubbles) and busts, particularly between 2000 and 2012

Introduction



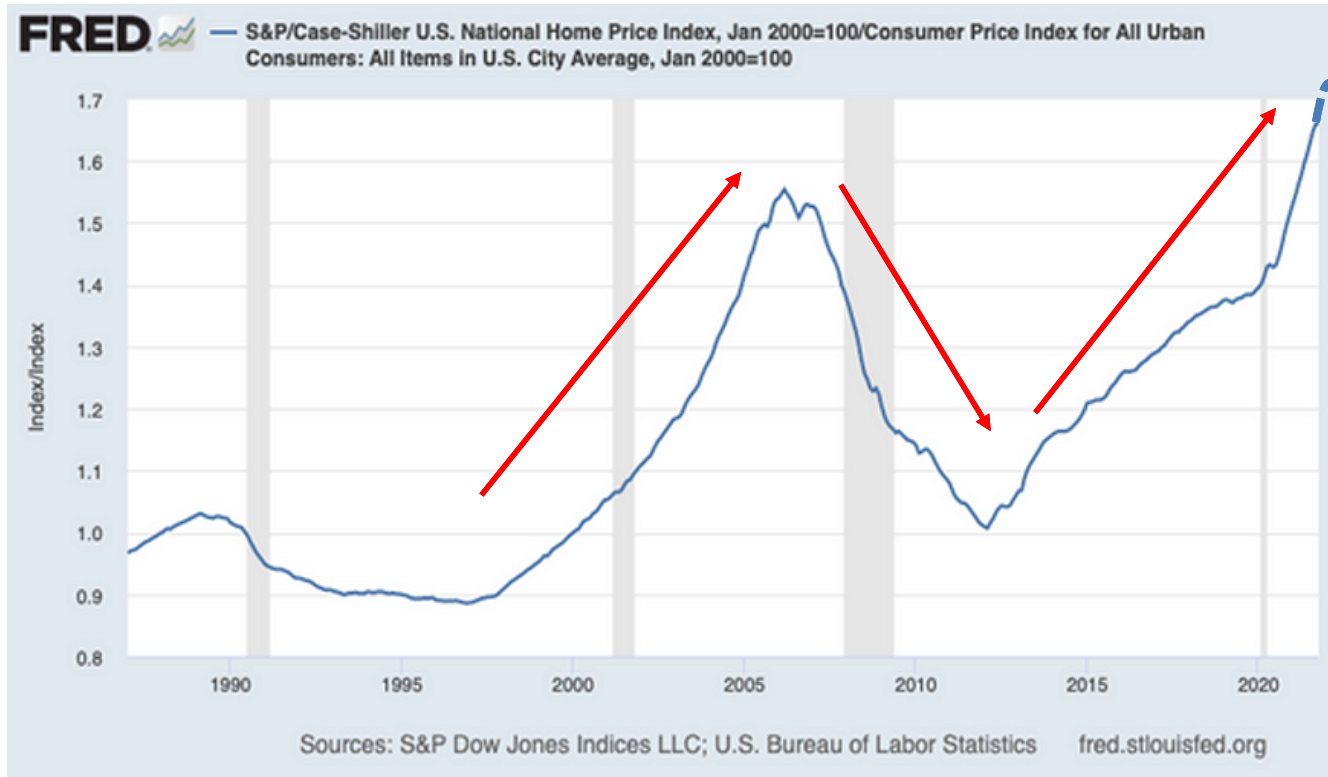
What's next?

Introduction



What's next?

Introduction



What's next?

Introduction

- To be better prepared for the next possible collapse, we need to deepen our understanding of the nature of housing boom-bust cycles
- Thus, today's discussion will cover:
 1. Past history of housing bubbles and their stylized patterns
 2. Theories that explains housing boom-bust cycles
 3. Methods for measuring housing bubbles

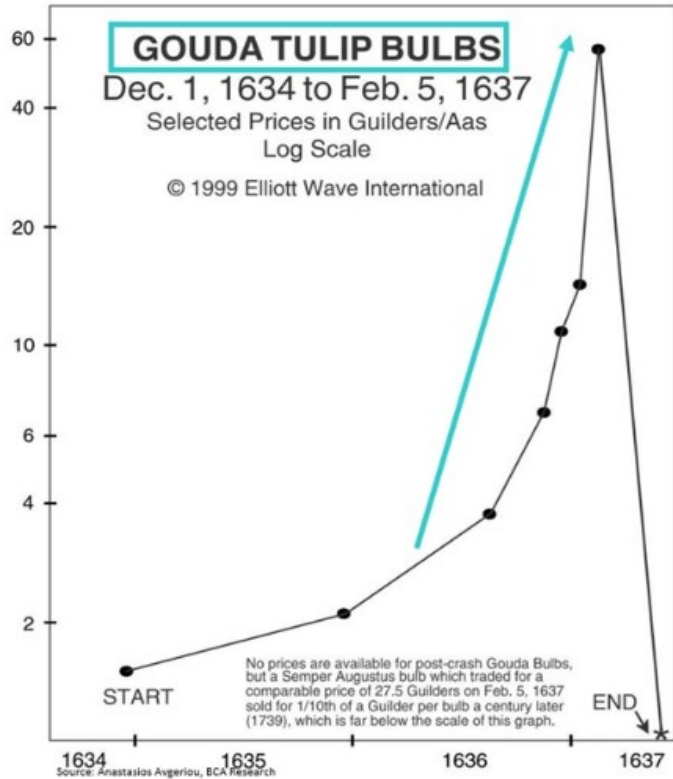
What is a Bubble?

Definition of Price Bubble

Stiglitz (1990) “Symposium on Bubbles.” Journal of Economic Perspectives 4(2), pp. 13-18

- “If the reason that the price is high today is only because investors believe that the selling price is high tomorrow—when ‘fundamental’ factors do not seem to justify such a price—then a bubble exists. At least in the short run, the high price of the asset is merited, because it yields a return equal to that on alternative assets”

First Recorded Bubble in History: Tulip Mania



- The first tulips arrived in Western Europe in the late 1500s from Turkey
- In the 1630s, tulip mania swept over Holland, and tulip bulbs were traded at public exchanges in much the same way that shares of stock are traded today
- Many Dutchmen sold everything they owned and then borrowed as much money as they could in order to speculate on tulip shares and tulip bulbs
- A Dutchman paid *two wagon loads of wheat, four loads of rye, four fat oxen, eight fat swine, twelve fat sheep, two hogheads of wine, four barrels of beer, two barrels of butter, 1,000 pounds of cheese, a marriage bed with linens, and a sizable wagon* for just one tulip!
- When tulip mania came to an end, the end came quickly, and it was painful.

History of Real Estate Bubble in the US

- The Panic of 1837
 - “The speculation in Maine timber lands was the first in order, the most extravagant and irrational, and the most ruinous to those engaged in it (Hildreth, 1840).”
- Nationwide Real Estate Bubble in 1921-1926
 - “In the 1920s, Florida was the site of a real estate bubble fueled by easy credit and advertisers promoting a lifestyle of sunshine and leisure (Grebler, Blank, and Winnick, 1956)”
 - “The housing price downturn in 1926 led to a rise in the foreclosure rate (Historical Statistics of the US)”

Source: A Century of Financial Crises, Harvard Business School (<https://www.library.hbs.edu/hc/crises/>)

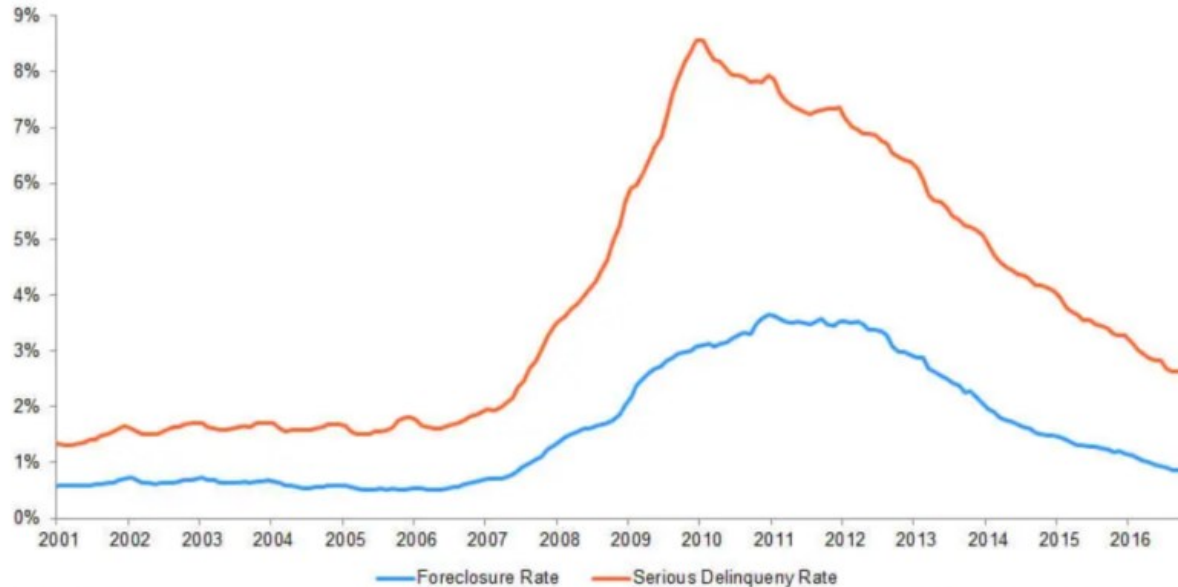
History of Real Estate Bubble in the US

- Subprime Mortgage Crisis in 2007-2010 (Duca, 2013)
 - In the early and mid-2000s, high-risk mortgages became available from lenders who then sold mortgages to investors. It was possible because the credit enhancement techniques created low-risk financial products out of high-risk mortgages.
 - The resulting demand bid up house prices, more so in areas where housing was in tight supply. When house prices peaked, selling homes became less viable means of settling mortgage debt and mortgage loss rates began rising.
 - In April 2007, New Century Financial Corp., a leading subprime mortgage lender, filed for bankruptcy. Shortly thereafter, large numbers of PMBS and PMBS-backed securities were downgraded to high risk.
 - Lenders stopped making risky mortgages. This lowered the demand for housing, leading to sliding house prices.

History of Real Estate Bubble in the US

- Subprime Mortgage Crisis in 2007-2010 (Duca, 2013)

< Foreclosure and Serious Delinquency Rates >



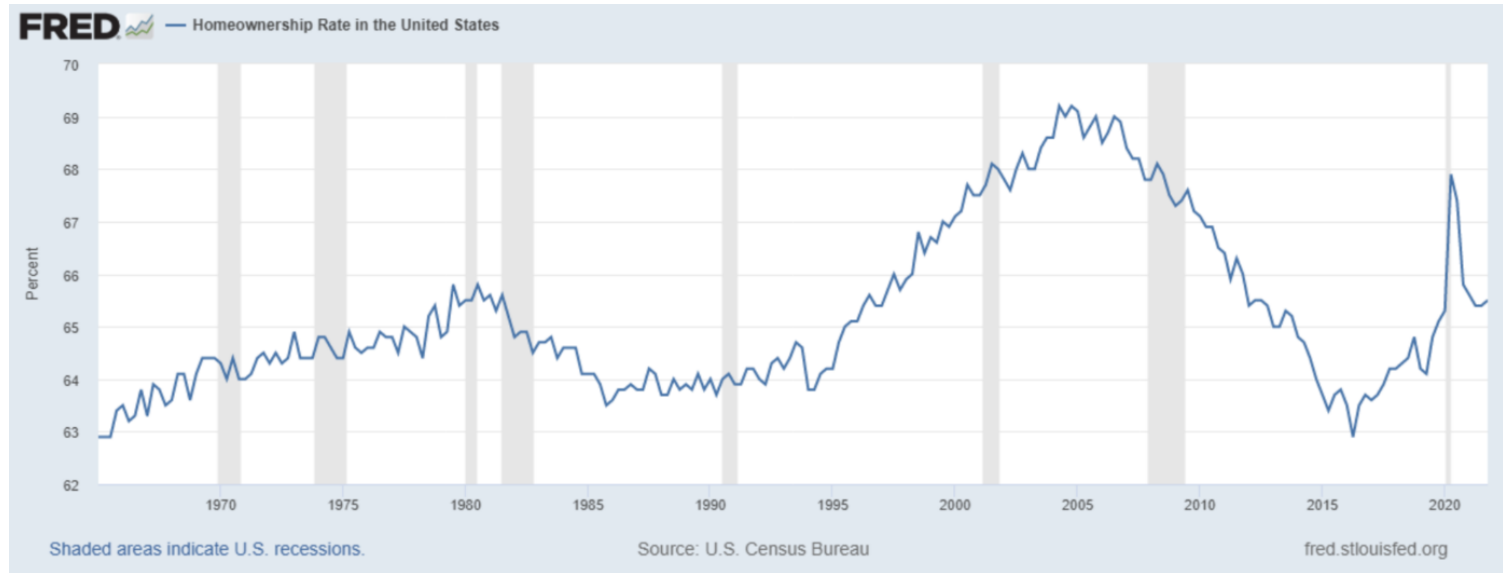
Source: CoreLogic

©2017 CoreLogic, Inc. All rights reserved

History of Real Estate Bubble in the US

- Subprime Mortgage Crisis in 2007-2010 (Duca, 2013)

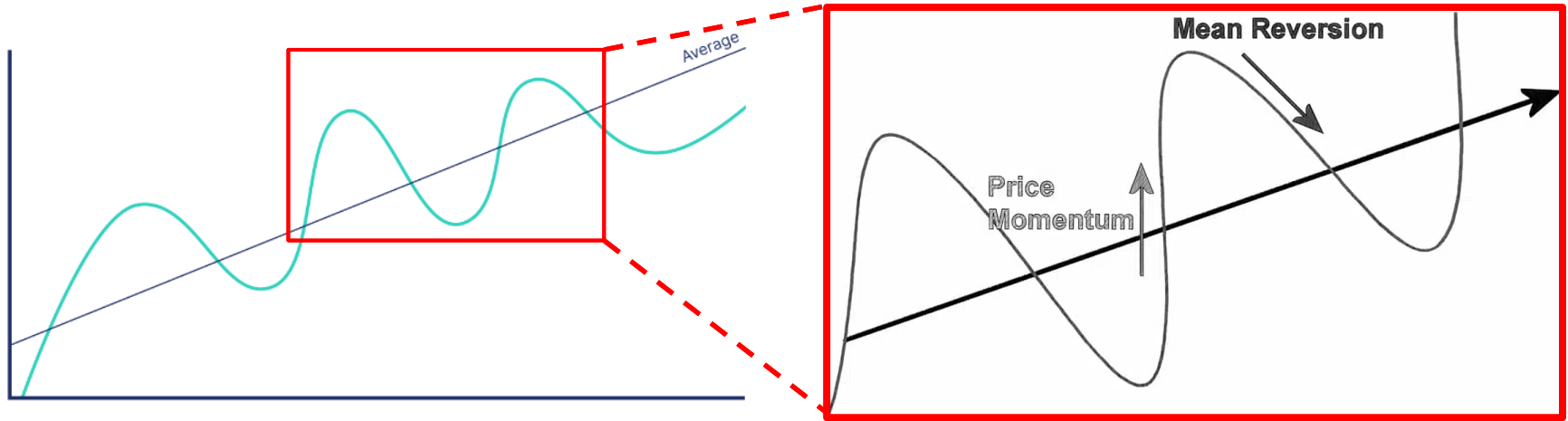
< Homeownership Rates >



Stylized Facts of Housing Market Cycle

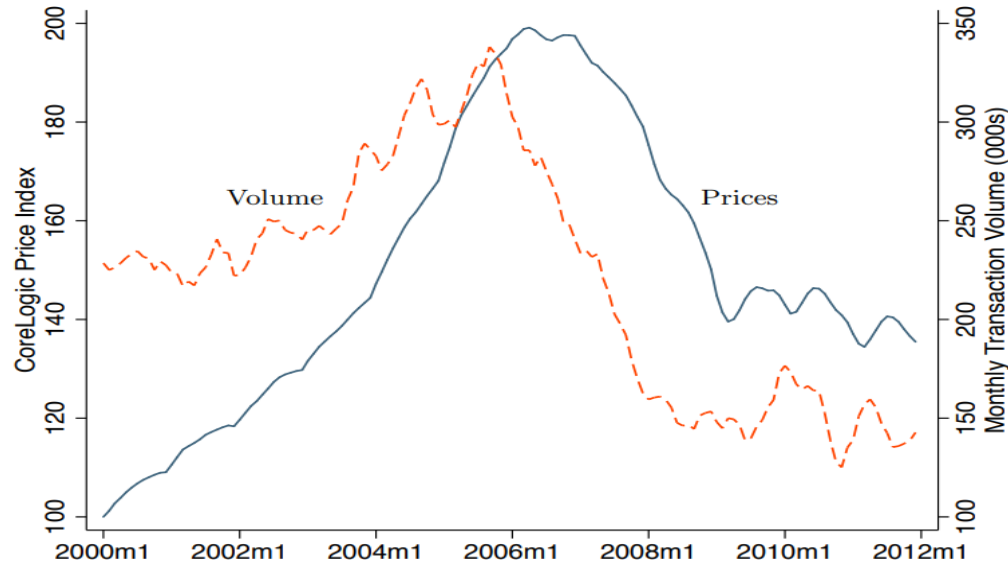
A Set of Patterns in House Prices

1. Short-run *momentum* and long-run *mean reversion* (Glaeser and Nathanson, 2015)
 - Short-run momentum: Areas that experienced higher housing price growth rates last year tend to have greater housing price growths
 - Long-run mean reversion: Areas that experienced higher housing price growth rates 5 years ago tend to experience larger housing price declines



A Set of Patterns in House Prices

2. Positive price-volume correlation: markets are extremely active during booms and then dry up during busts (Glaeser and Nathanson, 2015)

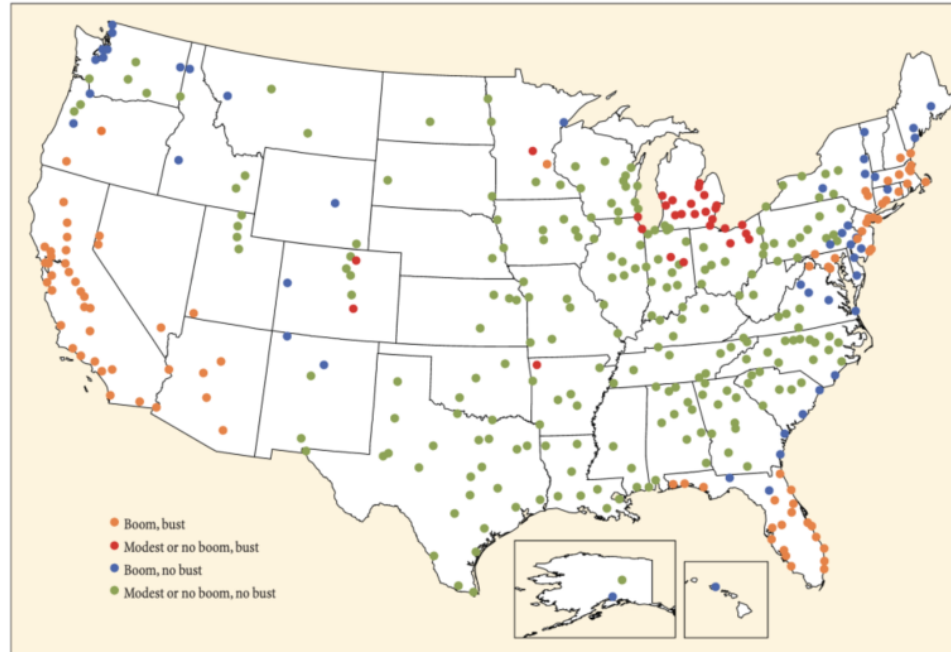


Source: DeFusco, Nathanson, Zwick (2017)

A Set of Patterns in House Prices

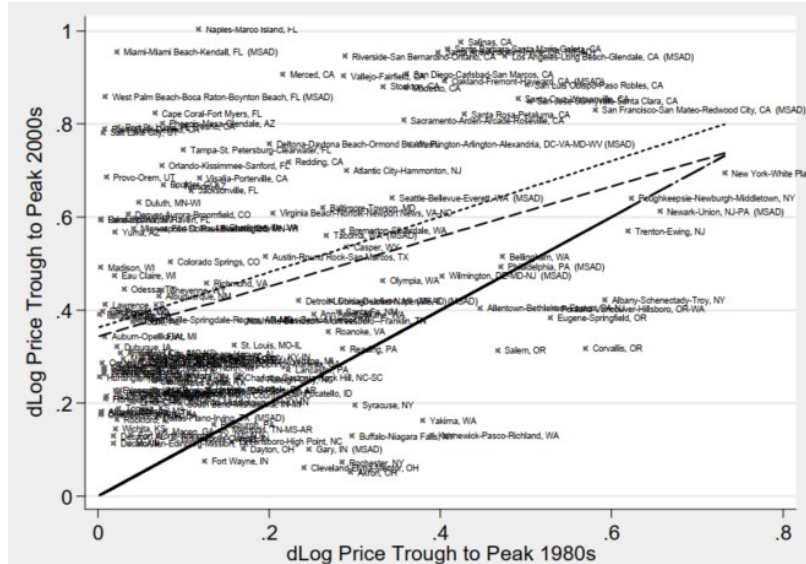
3. Heterogeneity in the amplitudes of their cycles (Sinai, 2013)
- 75th percentile MSA experienced 111% trough-to-peak growth in real house prices in the 1990s and 2000s, whereas the 25th percentile MSA had only 32% growth

Geographic Distribution of Boom/Bust Metropolitan Areas

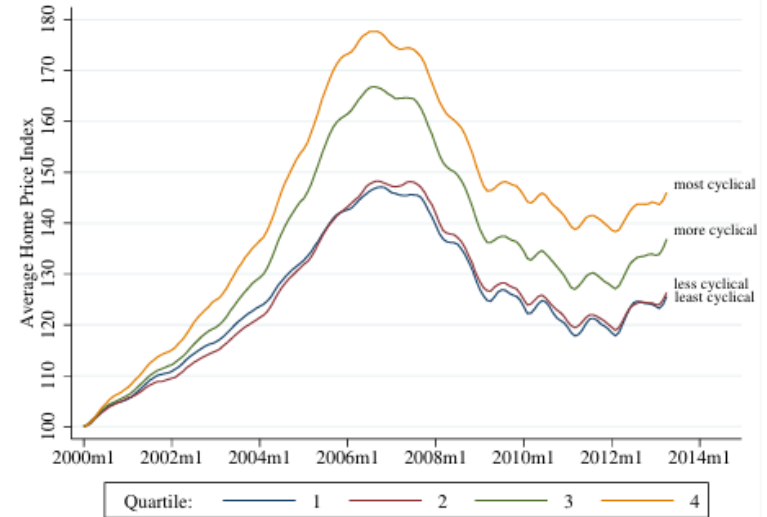


A Set of Patterns in House Prices

4. The areas with the biggest boom-bust cycles in the 2000s also had the largest boom-busts in the 1980s and 1990s (Sinai, 2013)
 - Persistent differences in local housing supply elasticity could be an explanation



I. Historical Cyclicality



What Explains Housing Bubbles

Changes in Credit Conditions

Mian and Sufi (2009) "The Consequences of Mortgage Credit Expansion: Evidence from the U.S. Mortgage Default Crisis," Quarterly Journal of Economics 124(4), pp.1449-1496

- Lower interest rates and relaxed lending standards make it easier for buyers to obtain mortgages
- This influx of buyers increases demand for homes, driving up prices
- Homes become overvalued, detaching from underlying economic fundamentals

Extrapolative Beliefs

Investors and consumers assume that past trends in housing prices will continue in the future (Glaeser and Nathanson, 2015)

- As prices start to rise, more participants enter the market, believing that the upward trend will persist
- Rising prices reinforce these beliefs, leading to increased speculative buying
- This self-reinforcing cycle pushes house price beyond underlying economic fundamentals

Greater Fool Theory

A speculative investment strategy that involves buying an asset at an inflated price and then selling it for a profit when someone else is willing to pay more (Malkiel, 1985)

- Investors don't think that prices reflect true value, but they know that prices will continue to grow in the short run
- People hear stories of others who bought in early and made big profits, causing those who did not buy to feel a fear of missing out
- Investors can find someone else to sell the good to

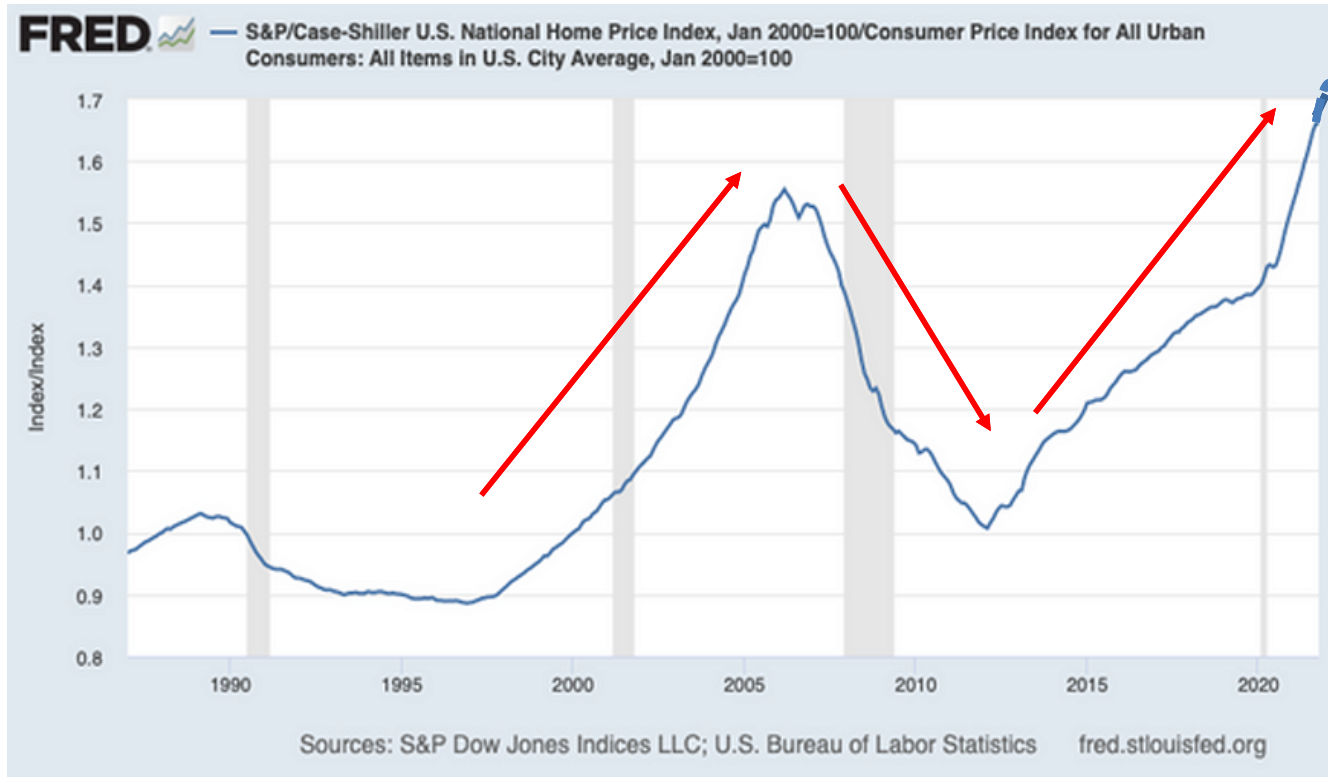
Search and Matching in Housing Transaction

Friction in housing transactions results in delayed adjustments of market prices in response to demand shocks (Genesove and Han, 2012)

- Unlike stocks or other products, housing transactions involve a complex search and matching process between sellers and buyers
- When a demand shock occurs, the number of would-be buyers increases; however, not all of them are immediately matched with available properties
- The friction in the housing market leads to staggered price responses, which ultimately creates momentum in realized prices over time

Are We in a Housing Bubble?

Introduction



Assessing Bubbles

- How do we tell whether rapid growth in house prices is caused by fundamental factors, or it is an unsustainable bubble?
- Obviously, high price growth is not evidence *per se* that housing is overvalued
 - In some local housing markets, house price growth can exceed the national average rate of appreciation for very long periods of time (Boston, New York, and cities in California)
 - Rosen-Roback framework can justify the long-run high home price growth in some cities!

Assessing Bubbles

- A technique we have learned can a useful tool to assess bubbles: “The User Cost Model”

Quick review of the User Cost Model:

$$(i + t + d - g) \times V = \text{rent} \quad \Rightarrow \quad V = \frac{\text{rent}}{i + t + d - g}$$

- i : Annual interest rate
- t : Annual property tax rate
- d : Annual depreciation rate
- g : Annual real home value growth rate

Assessing Bubbles

Himmelberg, Mayer, and Sinai (2005) “Assessing High House Prices: Bubbles, Fundamentals and Misperceptions”, Journal of Economic Perspectives 19(4), pp. 67-92

- Himmelberg, Mayer, and Sinai (2005) calculate the “imputed rent” using the information on property value (V), interest rate (i), property tax rate (t), depreciation rate (d), real home value growth rate (g)
- Then, they divide the imputed rent by the actual rent to create the **“Imputed-To-Actual-Rent Ratio”**
- Interpretation of the ratio:
 - If the Imputed-to-Actual-Rent Ratio is greater than 1, housing prices are overvalued
 - If the Imputed-to-Actual-Rent Ratio is less than 1, housing prices are undervalued

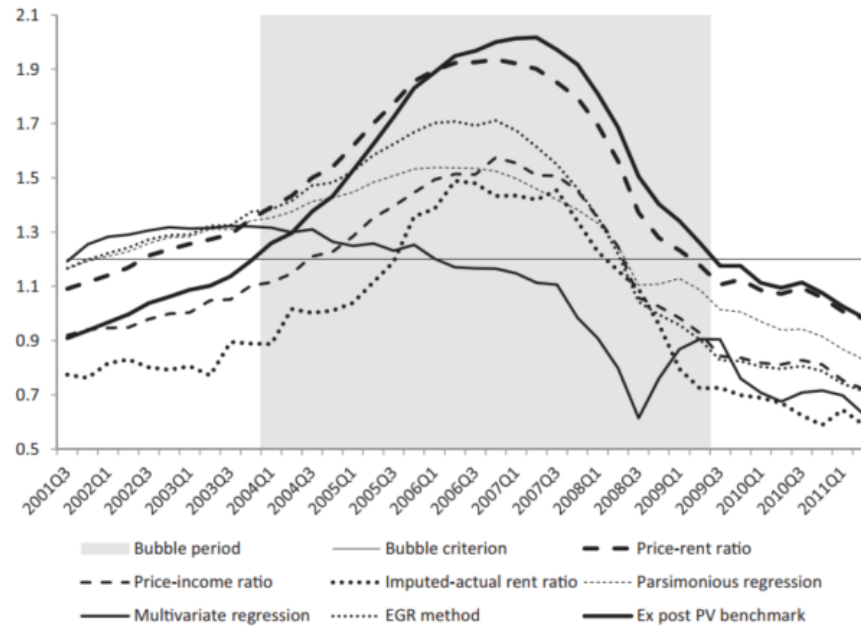
Assessing Bubbles

Bourassa, Hoesli, and Oikarinen (2019) “Measuring House Price Bubbles”, Real Estate Economics 47(2), pp. 534-563

- Bourassa, Hoesli, and Oikarinen (2019) suggests that a simpler calculation (price/rent) is the most effective measure for detecting bubbles, both ex post and in real-time
- From their analysis using six metropolitan areas (Helsinki, Geneva, Zurich, Chicago, Miami, and San Francisco), they confirm that a simple price-rent ratio outperforms other alternative measures

Assessing Bubbles

Bourassa, Hoesli, and Oikarinen (2019) "Measuring House Price Bubbles", Real Estate Economics 47(2), pp. 534-563



B. Miami
Heejin Yoon

Video Clip

The Big Short (3:45)



Key Takeaways

- Understand the past housing bubble history
- Understand the typical patterns of housing cycles
- Understand potential explanations of housing boom-bust cycles
- Understand the methods to determine whether the market is a bubble
- (Optional) Readings
 - Glaeser, E.L. and Nathanson, C.G., 2015. Housing bubbles. In Handbook of regional and urban economics (Vol. 5, pp. 701-751). Elsevier.
 - Sinai, T.M., 2012. House price moments in boom-bust cycles (No. w18059). NBER Working Paper.
 - Himmelberg, C., Mayer, C. and Sinai, T., 2005. Assessing high house prices: Bubbles, fundamentals and misperceptions. Journal of Economic Perspectives, 19(4), pp.67-92.
 - Bourassa, Hoesli, and Oikarinen (2019) "Measuring House Price Bubbles", Real Estate Economics 47(2), pp. 534-563