California Dreamin’ 
Rational and Irrational Exuberance in Property Markets
Bubbles and the Winner’s Curse
Snap, Crackle and Pop: How to Win in a Bubble Economy

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Outline

• What is a bubble?
• What causes bubbles?
• How can investors minimize the likelihood of overpaying during a bubble—winner’s curse?
• What are the warning signs a bubble exists?
• How can investors profit during a bubble?
“Thank You!” to Our Contributors

Heitman
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“Irational Exuberance”
Popular Bubble Definitions

- Irrational exuberance
- Speculative mania
- Self fulfilling prophecy
- Vicious cycles
- Speculative orgy
- Markets out of line
- Analytic approach
What is a Bubble?

• A psychological state of irrational exuberance and investor enthusiasm
• Spreads like contagion
• A cascade of amplifying stories
• Price and volume increases
• Doubts about fundamentals crumble in the face of investor envy
Famous Bubbles

- Japanese stock market in the 1980’s
- Palm stock and the NASDAQ run-up
- U.S. real estate in the 1980’s
- Stock market and DOT COM 1994 through 2000
- Real estate 2004 - ?
South Sea Bubble
Tulipmania
One of the early experiments in financial engineering

![Graph of Tulipmania](chart.png)
Teapot Dome Scandal
Bubbles are easier to detect with the benefit of 20/20 hindsight!
What is Not a Bubble?

- A rapid price increase
- Relative prices can change due to regulatory or tax changes, cartel-induced oil price hikes
- Have fundamentals changed?
- Are expectations of future price increases sustaining the market?
- Are these expectations creating anxieties?
- Is there sufficient confidence in diverse expectations to generate trades?
Housing and Apartments are the Most Bubbly
Single Family Homes and Condominiums are Bubbly

- Disentangling bubbles from fundamentals is difficult.
- One comparable period of home price increases is the period just following WW II.
- Smart money does not typically speculate in homes
- Real, quality-adjusted, housing prices have not appreciated significantly over the decades.
- Stock and housing market booms have a two year lagged correlation.
- Booms are contagious across asset classes.
Bubbles—Macro Correlates

- Prices are significantly above trend
- High prices in relation to income—cap rates have fallen rapidly
- High price volatility
- Trading volume is high and rising
- Increase in frequency of portfolio and mega deals
Bubbles-Micro Correlates

- Winner’s curse and participant irrationality
- More bidders increase probability of overestimating the value of an asset
- Increased bid dispersion
- Bubbles do not typically crash if there is a lot of market noise and investors are not synchronized
- Many positive feedback channels, not all evident to investors
Positive Feedback

• Difficult to identify precipitating factors or specify causality; feedback can last for years

• Feedback occurs in response not to a sudden price increase but a consistent pattern of price increases
  – Price-to-GDP-to-price
  – Price-to-price
  – Wealth-to-price
  – Price-to-corporate earnings-to-price
Not all bubbles are bad!
Stock Market Interlinkages

- Stock markets can play a significant stabilizing or destabilizing role.
- Where countries have different financial risk, interlinkage reduces dispersion of asset prices.
- Where countries differ in asset payoff risk, linkage can increase price dispersion—high prices are higher and low prices are lower.
- Financial liberalization, short-run inelastic supply of assets, and absence of short sales.
- Central bank must make difficult choices: Stabilize exchange rates? Consumer prices? or asset prices?
Agency Problems

- Intermediaries with agency problems buy most real estate.
- Leverage accentuates the agency problem.
- Borrowers increase payoffs in good times by shifting risk to lenders in bad times.
- In the aggregate, this risk shifting can bid up prices.
- The riskier the asset, the more risk to be shifted and the larger the bubble.
And now for some fun technical stuff!
Our Bubble Model 1

- Assumptions
  - High trading costs
  - Short sales not allowed or practically too costly
  - Heterogeneous and asymmetric information
  - Investors differ in assessment of fundamentals
  - Inelastic supply of real estate assets
  - Many risk neutral agents
Our Bubble Model 2

- Preliminaries and predictions
  - Coexistence of high prices, high trading volume, and high volatility
  - Asset prices may exceed fundamental value when agents disagree or when short selling is not possible
  - Agents disagree regarding probability distribution of expected income
  - Information signaled through noisy “indicators”; each class of bidders has a special “indicator”
  - Agents are overconfident in the accuracy of their indicators.
  - Thus, there are different forecasts.
  - The noisier the information, the more trades.
Our Bubble Model 3

• The Bubble
  – Asset owners have an option to sell the asset in the future to agents in other bidding groups
  – Determining the option value is an optimal stopping problem
  – Value of option (the “bubble”) is difference between demand price and fundamental value
  – Fluctuations in bubble value contributes to priced volatility
  – Bubble is consequence of divergence of opinions by overestimation of informativeness of distinct indicators
Our Bubble Model 4

• When to sell?
  – The “critical amount”, $K$, is the amount by which the price must exceed the agent’s valuation
  – $K$ determines turnover and sales volume
  – $K$ is zero when there are no trading costs, $C$
  – Low $C$ increases the size of the bubble and volatility
  – As $C$ increases, $K$ increases and the expected profit from each trade increases.
  – Forecasts oscillate and information flows, thus generating trades
  – The greater the overconfidence of heterogeneous beliefs, the greater is the size of the bubble
Let’s check the evidence!
REIT Trading Volume is Up

All REITs, average daily trading volume, millions of dollars


Volume Predicted
NCREIF Cap Rates Have Fallen

A graph showing the trend of Cap Rates from 1992 to 2004. The graph compares two types of Cap Rates: All Sold Props and Current Value (Appraisal) Cap Rates. The Cap Rates for All Sold Props range from 11% in 1993 to 4% in 2003, while the Current Value (Appraisal) Cap Rates range from 11% in 1993 to 6% in 2004.
Total and Apartment REIT and Returns

![Graph showing return standard deviation and moving average over time, with lines for all and apartment categories.](image)
NCREIF Regional Cap Rates

Year-Quarter

East
West
South
Midwest

Cap Rates

5% 6% 7% 8% 9% 10% 11% 12%

91 93 95 97 99 01 03
Total Private NCREIF Sales
If you win the bid, are you losing the game!
Winner’s Curse—What is it?

- People often overestimate the precision of their knowledge; Illusion of knowledge; experts’ estimates will vary substantially
- Asymmetric bargaining and incomplete information
- Winning the bidding is a Pyrrhic victory
- Each player estimates the value of the asset.
- If bidders estimates are unbiased, then the highest bidder almost certainly overestimates the value, and, on average, overpays
- Perceptive, rationale bidders place a bid below their estimate of value
- The greater the “winner’s curse”, the greater the number of bidders, the uncertainty of the price of the asset, and the dispersion between the highest and lowest bid.
Avoiding the Winner’s Curse

- Rationality is an assumption, not a demonstrated fact!
- The “curse” is about cognitive illusion and systematic error, especially in bubble economies
- Hubris hypothesis and takeovers
- Collusion (which is probably illegal) or sharing knowledge with competitors to reduce their bids
- Bidding lower than one’s estimate of value, and being prepared to lose more auctions and to avoid loses.
- Avoiding auctions and focusing on off-market transactions.
Focus on California
Is Real Estate in a Bubble?

• Probably, we observe high prices, increased volatility, high trading volume, and increased dispersion of bids
• Maybe we are witnessing a massive institutional portfolio shift toward real estate
• The bubble component varies by market, asset type, and location
• Single family homes and apartments/condos are the most bubbly
• How will the bubble break?
• What are the likely mechanisms of a burst bubble?
Will the bubble break?
Profiting During Bubbles 1

• Brokers (paid based on trading volume):
  – Punctured bubbles are Darwinian herd-thinners
  – Agents benefit from volatility and heterogeneity
  – Break up portfolio if assets have low correlation
  – Otherwise, reap potential portfolio premium
  – Research as “story telling” generates trades and reinforces environment of heterogeneous views
Profiting During Bubbles 2

• Agents (paid based on asset performance)
  – Big question: Bubble or change in fundamentals?
  – Answer suggests different strategies
  – Avoid auctions
  – Focus on non-bubble markets
  – Build strengths that permit preemptive moves
  – Specialize in controlling certain kinds of systematic risks
  – Pursue economies of scale
  – Pay for value-added research that is not a “sophisticated front end” for the sales or marketing department
My beach has the BEST bubbles!