Asset Price Bubbles: Lessons and Policy Implications

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Netherlands: Tulip Mania, Nov. 1636 to May 1637

Futures Price For Delivery of One Tulip Bulb
Index = 10 on Nov 12, 1636

What is a Bubble?

Bubble (def.): An asset price that has risen (significantly) above its “fundamental value,” as measured by the discounted stream of expected future cash flows that will accrue to the owner of the asset.
Outline

History

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What Explains Bubbles?

• Forecasts based on past price movements, not fundamentals.
• Social dynamics and human emotion.
• Market structure (short-selling is risky and costly).
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**Policy Implications**
- Economic consequences of bubbles.
- Pre-crisis view on dealing with bubbles.
- Post-crisis view on dealing with bubbles.
Four (or Five) Major Run-ups in U.S. Stock Prices

Real S&P 500 Index
In logarithms

1901 1929 1966 2000 2014 log(index)

Source: Robert Shiller's website
Japan: Twin Bubbles in Stocks and Real Estate, 1985 to 1990

### Nikkei 225
Monthly Average

### Real Estate Price Index
Japan: Six Large City Areas; Index March 2000=100

Source: Japanese Real Estate Institute
What Explains Bubbles?

I. Forecasts Based on Past Price Movements

• Upward price motion begets expectations of further upward motion.

• Rise in prices fuels optimism, drawing in new investors.

• New investors bid up prices further, often using borrowed money.
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II. Social Dynamics and Human Emotion
   • Bubbles are “fads” or “infectious beliefs” that spread like epidemics through personal interactions and the media.
   • Episodes typically involve a story about new technology or a “new era.”
   • Human emotion (fear of missing out) is a powerful driving force.
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III. Market Structure
   • Market consists of both optimistic and pessimistic investors.
   • Pessimistic investors must engage in risky and costly short-selling to express their views.
   • Optimistic investors can therefore dominate the price action.
Detecting a bubble: Investors become more optimistic about future asset returns as prices go higher.

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Investor Forecasts Track Recent Price Action

Detecting a bubble: Investors become more optimistic about future asset returns as prices go higher.

**Expected Returns Track the NASDAQ Index**


**Investor Optimism Tracks Past Price Movements**

Investors Bid Up Prices Using Borrowed Money

House prices rose faster where exotic mortgages were more prevalent.

Four (or Five) Major Run-ups in U.S. Stock Prices

Real S&P 500 Index
In logarithms

Source: Robert Shiller's website
Price Run-ups and “New Era Enthusiasm”

- **Early 1900s**: High-speed rail travel, transatlantic radio, long-line electrical transmission.
- **1920s**: Mass-production of autos, travel by highways and roads, commercial radio broadcasts, widespread electrification of manufacturing.
- **1950s and 60s**: Widespread introduction of television, advent of the suburban lifestyle, space travel.
- **Late 1990s**: Widespread availability of the internet, innovations in information and communication technology, introduction of web-based business model.
- **2009-2014**: Social networks, electric cars, digital currency, wearable technology.
Fear of Missing Out Draws in New Investors

September 1999
Fear of Missing Out Draws in New Investors

September 1999

February 2005
Fear of Missing Out Draws in New Investors

September 1999

Are You Missing the Real Estate Boom?

February 2005

Why the Real Estate Boom Will Not Bust—And How You Can Profit From It

February 2006
Market Structure and Bubbles

- Overpriced assets represent a profit opportunity for bearish investors.

- Why don’t they eliminate the over-pricing by short-selling? (Sell overpriced asset now and buy back later at a lower price).

Risks and Costs to Short-selling

- Losses to short-sellers are potentially unlimited.

- Keynes: “Markets can remain irrational longer than you can remain solvent.”

- Cannot short some types of assets (e.g. housing).
Economic Consequences of Bubbles

As house prices rose, builders became more optimistic, leading to overinvestment in residential capital.

Economic Consequences of Bubbles

January 2009: Unfinished subdivision in Rio Vista, California

U.S. consumption binge fueled by run-up in household debt.

*Income and PCE are annual rates. PCE is a four-quarter moving average.
“Over-investment and over-speculation are often important; but they would have far less serious results were they not conducted with borrowed money.”

--Irving Fisher, 1933.

<table>
<thead>
<tr>
<th></th>
<th>House Price</th>
<th>Stock Price</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total number of busts</strong></td>
<td>47</td>
<td>98</td>
</tr>
<tr>
<td>Mean number of busts per country</td>
<td>2.8</td>
<td>4.7</td>
</tr>
<tr>
<td>Mean price decline per episode</td>
<td>-18%</td>
<td>-37%</td>
</tr>
<tr>
<td>Mean duration of episode</td>
<td>10 qtrs</td>
<td>7 qtrs</td>
</tr>
<tr>
<td>Mean decline in GDP per episode</td>
<td>-4.3%</td>
<td>-1.3%</td>
</tr>
</tbody>
</table>

1. Relative to GDP trend.

IMF study of 21 advanced economies, IMF World Economic Outlook (2009), Chapter 3.
Policy Implications of Bubbles

• Pre-crisis view: Do not lean against suspected bubbles. Instead, clean-up the damage afterwards.

• Post-crisis view:
  “What has become patently obvious is that not dealing with certain kinds of bubbles before they get big can have grave consequences. This lends more weight to arguments in favor of attempting to mitigate bubbles, especially when a credit boom is the driving factor.”

FRBSF President Janet Yellen, April 16, 2009
What type of policy instruments should be used to lean against suspected bubbles? (An important, but unresolved question.)

**Macroprudential Policy** (First line of defense)
- Prudent lending standards, i.e. limits on borrowers’ loan-to-value ratio or debt-to-income ratio.
- Countercyclical capital buffers for banks.

**Monetary Policy** (Second line of defense)
- Raise interest rates to restrain excessive credit growth or excessive risk taking by lenders.


