Bubbles and Central Banks: Historical Perspectives

Markus K. Brunnermeier
Princeton University

Isabel Schnabel
Johannes Gutenberg University Mainz and German Council of Economic Experts

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I. Introduction

II. Characteristics of asset price bubbles

III. Severity of crises

IV. Policy responses

V. Conclusion and policy implications
I. Introduction

- How should central banks react to asset price bubbles?
  - Should they behave passively and intervene only when the bubble bursts?
    ⇒ “Cleaning up the mess” (Greenspan view)
  - Or should they try to intervene early to prevent the emergence of bubbles?
    ⇒ “Leaning against the wind” (BIS view)

- If central banks should “lean against the wind”, how should they intervene?
  - Should they prick the bubble by raising interest rates...
  - ... or should they use macroprudential tools?
I. Introduction

- Before the recent crisis, the Fed and most other central banks had been *reluctant* to use monetary policy to tackle asset price bubbles.
- Given the *huge costs* of the crisis, many observers speculate whether these costs could have been avoided by a monetary policy trying to prevent the evolution of the housing bubble.
- The experience from the crisis seems to have shifted the view *towards more intervention*.
- What can *history* tell us about the success of monetary or other interventions in fighting asset price bubbles?
Why monetary policy **should not** react to bubbles

- Bubbles cannot be *identified* with confidence
- Monetary policy is *too blunt* to contain a bubble in a specific market
- High *costs of intervention* because it may damage other parts of the economy
- Bubbles are a problem only in combination with *unstable financial markets*
  - Problems should be tackled by financial regulation rather than monetary policy
Why monetary policy should react to asset price bubbles

- Even if bubbles are hard to identify, it is not optimal to do nothing
- Expected costs of bursting bubbles outweigh the costs of intervention
- Cleaning after a bubble is an asymmetric policy, which risks creating the next bubble
- Financial regulation may not be fully effective
  - Regulatory arbitrage limits the reach of financial regulation
  - Monetary policy also reaches the shadow banking sector
Contribution of this paper

- Analyze and categorize 23 prominent asset price booms from the past 400 years:
  - Types of assets involved
  - Holders of assets
  - Economic environment during emergence
  - Severity of crises
  - Policy responses
## Overview of sample

<table>
<thead>
<tr>
<th>Event</th>
<th>Time</th>
<th>Place</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tulipmania</td>
<td>1634-37 (crisis: Feb. 1636)</td>
<td>Netherlands</td>
</tr>
<tr>
<td>Mississippi bubble</td>
<td>1719-20 (crisis: May 1720)</td>
<td>Paris</td>
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<tr>
<td>Crisis of 1763</td>
<td>1763 (crisis: Sept. 1763)</td>
<td>Amsterdam, Hamburg, Berlin</td>
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<tr>
<td>Crisis of 1772</td>
<td>1772-73 (crisis: June 1772)</td>
<td>England, Scotland</td>
</tr>
<tr>
<td>Railway Mania</td>
<td>1840s (crises: April/Oct.1847)</td>
<td>England</td>
</tr>
<tr>
<td>Gründerkrise</td>
<td>1872-73 (crisis: May 1873)</td>
<td>Germany, Austria</td>
</tr>
<tr>
<td>Chicago real estate boom</td>
<td>1881-83 (no crisis)</td>
<td>Chicago</td>
</tr>
<tr>
<td>Crisis of 1882</td>
<td>1881-82 (crisis: Jan. 1882)</td>
<td>France</td>
</tr>
<tr>
<td>Panic of 1893</td>
<td>1890-93 (crisis: Jan. 1893)</td>
<td>Australia</td>
</tr>
<tr>
<td>Norwegian crisis of 1899</td>
<td>1895-1900 (crisis: July 1899)</td>
<td>Norway</td>
</tr>
<tr>
<td>U.S. real estate bubble</td>
<td>1920-26 (no crisis)</td>
<td>United States</td>
</tr>
<tr>
<td>German stock price bubble</td>
<td>1927 (crisis: May 1927)</td>
<td>Germany</td>
</tr>
<tr>
<td>Asian crisis: Thailand</td>
<td>1995-98 (crisis: July 1997)</td>
<td>Thailand</td>
</tr>
<tr>
<td>Real estate bubble in Australia</td>
<td>2002-04 (no crisis)</td>
<td>Australia</td>
</tr>
<tr>
<td>Subprime housing bubble</td>
<td>2003-10 (crisis: 2007)</td>
<td>United States</td>
</tr>
<tr>
<td>Spanish housing bubble</td>
<td>1997-? (crisis: 2007)</td>
<td>Spain</td>
</tr>
</tbody>
</table>
Are we really talking about bubbles?

- The terms “bubbles” and “asset price booms” are used interchangeably here.
- No attempt to identify deviations from fundamental values.
- When talking about bubbles, we mean asset price booms accompanied by *euphoria* and *extrapolative expectations* followed by a collapse of asset prices.
- We do not judge whether this collapse was fundamentally justified.
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II. Characteristics of asset price bubbles

- Bubbles occurred in a wide range of assets:
  - Especially in the early part of the sample: *Commodities* (tulips, grain, sugar)
  - 19th century: Large *infrastructure* projects (railroads, canals)
  - Throughout the sample: *Securities* and *real estate*
II. Characteristics of asset price bubbles

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- **Holders** of assets:
  - In most instances, bubble assets were held widely
  - In a few cases bubble assets were only held by specific groups, such as specialized traders or wealthy individuals
  - Often *banks* were among the speculators
Characteristics of bubbles

- **Financing** of bubbles:
  - Most bubbles were largely financed by *debt*
  - Exceptions: Chicago real estate boom 1881-83, dot-com crisis 2000
  - *Bank financing* played an important role in many crises
    → Raises the likelihood of a banking crisis
Characteristics of bubbles

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- Triggers of bubbles ("*displacements*")):
  - Technological innovations: Railways, New Economy,…
  - Financial innovations: Futures, acceptance loans, securitization,…
  - Political events: Wars,…
Economic environment

- Bubbles …
  - emerged when the stance of monetary policy was expansive (also: issuing of bank notes by private banks, gold discoveries)
  - were accompanied by lending booms, often related to financial innovation (acceptance loans in 1763, securitization in 2007/2008), mutual reinforcement of lending booms and asset bubbles
  - were sometimes fueled by capital inflows (Railway mania 1840s in England, German stock price bubble of 1927, Scandinavian crises 1991, US subprime crisis 2007-09)
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III. Severity of crises

- No clear relationship with type of bubbles
  - Bubbles involving real estate often led to severe recessions
  - But: Same was true for other types of bubbles, such as 1763 (grain and sugar), Latin America mania 1824/25 and Railway mania 1840s in England (securities and commodities), French crisis of 1882 (securities)
  - Not all real estate bubbles had severe consequences, example: United States 1920-26
  - Narrow focus on real estate bubbles is misplaced and risks overlooking the build-up of risks in other markets
Severity of crises

- Crucial factor: *Debt financing* of bubbles
- Severity of crises is strongly correlated with the occurrence of lending booms
  - Examples: Tulipmania 1634-37 vs. crisis of 1763, dot-com crisis 2000 vs. Railway mania 1840s
- Real-estate bubbles are typically debt-financed and therefore tend to be severe
- Crises tended to be less severe when *leverage* was limited, example: Chicago real estate boom 1881-1883
Severity of crises

- Almost all crises in our sample involving *banking crises* led to severe recessions
- In some cases, the crisis was amplified by *fire sales* by banks if banks themselves were holding the bubble asset, examples: crisis of 1763, Australian panic of 1893
- In other cases, *bank balance sheets* were weakened by depressed asset prices, setting the ground for a later crisis, example: German stock price bubble of 1927
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IV. Policy Responses

- We distinguish between the following policies:
  1. *Cleaning* = *only* cleaning: No significant policy reaction before the bursting of the bubble
  2. *Leaning interest rate policies* = Increases in policy interest rates in the run-up phase of the bubble
  3. *Macroprudential policies* = All policy reactions using other tools than interest rates, such as loan-to-value ratios, quantity restrictions for lending, specific reserve requirements etc. (sometimes also referred to as *quantity instruments*)
Hypothesis 1: Pure cleaning is costly ✓

- Pure cleaning strategies are only found in relatively *immature* financial systems
- Example 1: Crisis of 1763
  - No authority felt responsible or was capable of mitigating the lending boom
  - Severe disruptions in the financial sector and the real economy
- Example 2: Australian panic of 1893
  - Boom in mining shares and land and the accompanying lending boom were not mitigated by any policy intervention
  - Burst of the bubble led to a deep depression and the breakdown of the financial system
Hypothesis 2: Leaning interest rate policies may mitigate crises (✓)

- There are instances of successful leaning
- Example 1: Norwegian crisis of 1899 (Gerdrup 2003)
  - Early increase in interest rates seems to have mitigated the real estate bubble and may explain the relatively mild recession
- Example 2: Australian real estate bubble of 2002-04
  - Stepwise tightening of monetary policy
  - Housing prices decelerated without any severe disruption
- Evidence suggests that leaning in principle can be effective
- However, in most instances of leaning interest rate policies there were severe recessions nevertheless
Hypothesis 3: Leaning interest rate policy may be ineffective if it is too weak or comes too late ✓

- There are many cases where policy interest rate increases prior to the crisis were *too weak* to curb the bubble
- Example 1: Gründerkrise 1872/73
  - Interest increases were not sufficient to mitigate the boom in stocks and real estate
- Example 2: US subprime housing bubble 2003-2010
  - The Fed started raising interest rates in 2004, but housing prices continued to rise until 2006
Hypothesis 3: Leaning interest rate policy may be ineffective if it is too weak or comes too late ✓

- Often interest rates were raised only at a very *late stage*
- Example 1: Railway mania 1840s
  - Bank of England was criticized for having reacted too late to speculation
  - Bursting of the bubble was followed a deep recession and one of the worst British banking panics
- Example 2: US stock price bubble 1929
  - Discount rate was raised shortly before the bubble burst
Hypothesis 4: Leaning interest rate policy may be harmful if it is too strong (?)

- When the policy response comes late, this may force a sharp interest rate increase, which then triggers the bursting of the bubble ("pricking")
- Example: Japan’s lost decade
  - Bank of Japan was criticized for having promoted the recession by pricking the bubble (Patrick 1998)
- Problem: *Counterfactual* is unclear - late leaning may still be better than allowing the bubble to expand further
Hypothesis 4: Leaning interest rate policy may be harmful if it is too strong (?)

- Pricking of bubbles does *not always* lead into a recession, example: Mississippi bubble 1719-20, dot-com bubble 1995-2001

- A policy *preventing the emergence of bubbles* seems preferable to late pricking

- When prices have already risen to an unsustainable level, all policy options are likely to be expensive
Hypothesis 5: Macroprudential instruments may mitigate crises. (√)

- **Macroprudential instruments** were not used in the early episodes but have become more common since the 20th century and were sometimes *quite successful*

  - Example 1: US real estate bubble 1920-26 (White 2009)
    - Under the National Banking Act, loans were subject to loan-to-value restrictions of 50 percent
    - Total real estate lending was limited to 25 percent of a bank’s capital
    - Most banks survived the bursting bubble relatively well, stability of the financial system was not threatened

  - Example 2: Australian real estate bubble 2002-04
    - Higher capital requirements for certain loans, including home equity loans
    - Policy was accompanied by a leaning interest rate policy and appears to have been *quite successful*
Hypothesis 5: Macroprudential instruments may mitigate crises. (√)

- In other episodes macroprudential instruments were less successful
- Example 1: Stock price bubbles in Germany 1927 and US 1929
  - Limiting access to the discount window for banks was very effective in limiting stock market lending
  - But it also induced a severe crash in stock markets
  - Measures came too late and were too strong
- Example 2: Spain 1997-?
  - First country to introduce countercyclical measures in the form of dynamic provisioning
  - Credit expansion was not curbed effectively
  - Reasons: Measures were not strong enough, credit was substituted through other sources (Jiménez et al. 2012)
Interest rate policy vs. macroprudential instruments

- Both types of policies were effective in some episodes, but failed in others
- Advantage of macropru: More targeted than interest rate increases because it can be applied to specific sectors, therefore also less subject to conflicts of objectives
- Disadvantage of macropru: Measures can more easily be circumvented (regulatory arbitrage)
- In any case, the timing and dosage are essential
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V. Conclusion and policy implications

- *No simple prescription* how to deal with asset price bubbles
- No instrument worked well under all circumstances
- Large heterogeneity: Appropriate responses depend on the characteristics of bubbles and on the economic and institutional environment
Some lessons learnt

Lesson 1: *Type of financing* (debt vs. equity) matters more than the type of bubble assets
  - Main factors: Lending booms, high leverage, involvement of financial institutions
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- **Lesson 2:** “*Cleaning up the mess*” is unlikely to be optimal
  - Policy measures can be effective in mitigating crises
  - Cleaning strategy risks causing the next crisis
Some lessons learnt

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- **Lesson 2:** “*Cleaning up the mess*” is unlikely to be optimal
  - Policy measures can be effective in mitigating crises
  - Cleaning strategy risks causing the next crisis
- **Lesson 3:** *Timing* and *dosage* are of the essence
  - Late interventions can be ineffective or even harmful
  - This calls for a continuous *macroprudential analysis* trying to detect the emergence of bubbles early on
Lesson 4: No instrument appears to be dominant to deal with asset price bubbles

- Trade-off: Macroprudential policy is *more targeted* and subject to *fewer conflicts of interest* but can more easily be *circumvented*
- Interest rate tools and macroprudential tools appear to be *complementary*
Some lessons learnt

- Lesson 4: No instrument appears to be dominant to deal with asset price bubbles
  - Trade-off: Macroprudential policy is *more targeted* and subject to *fewer conflicts of interest* but can more easily be *circumvented*
  - Interest rate tools and macroprudential tools appear to be *complementary*

- Combination of an *early-warning system* through macroprudential oversight, a *macroprudential regulatory framework* responding to warning signs, and a *monetary policy acting proactively* when macroprudential policies are ineffective may be a promising way how to deal with asset prices bubbles
Back-up: Current situation

- Build-up of risks in many market segments due to *search of yield* (= consequence of earlier cleaning strategy)
- Potential exaggeration of price development in real estate markets, stock markets, corporate bonds...
- But: No clear threat to financial stability as long as there is no sharp expansion of credit
Back-up: Current situation

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- Potential exaggeration of price development in real estate markets, stock markets, corporate bonds...
- But: No clear threat to financial stability as long as there is no sharp expansion of credit
- Risks from a leaning interest rate policy especially high after a financial crisis
  - Example: Sweden plunged into deflation when policy rates were raised
- Macroprudential policy may be *better suited* in current times to deal with the asset price boom