Bubbles and Central Banks: Historical Perspectives

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I. Introduction

II. Characteristics of asset price bubbles

III. Severity of crises

IV. Policy responses
How should central banks react to asset price booms?

- Should central banks behave passively and intervene only when a bubble bursts?
  ⇒ “Cleaning up the mess” (Greenspan view)

- Or should they try to prevent the emergence of bubbles early on?
  ⇒ “Leaning against the wind” (BIS view)

- If central banks should “lean against the wind”, how should they intervene?
  - Should they raise interest rates...
  - ... or use macroprudential tools?
Why monetary policy **should not** react to asset prices

- 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 prices

- 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
Selection problem

- **Selection bias**: Historical reporting of asset price bubbles is more likely if . . .
  - they were *not* tackled and burst,
  - they were tackled *by mistake*,
  - they resulted in *severe crises*

- Therefore, we also searched for asset price booms not resulting in severe crises

- High selectivity has to be kept in mind when interpreting results
<table>
<thead>
<tr>
<th>Event</th>
<th>Time</th>
<th>Place</th>
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<tr>
<td>Tulipmania</td>
<td>1634-1637 (crisis: Feb. 1636)</td>
<td>Netherlands</td>
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<td>Mississippi bubble</td>
<td>1719-1720 (crisis: May 1720)</td>
<td>Paris</td>
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<td>Crisis of 1763</td>
<td>1763 (crisis: Sept. 1763)</td>
<td>Amsterdam, Hamburg, Berlin</td>
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<td>Crisis of 1772</td>
<td>1772-1773 (crisis: June 1772)</td>
<td>England, Scotland</td>
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<td>Railway Mania</td>
<td>1840s (crises: April/Oct.1847)</td>
<td>England</td>
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<td>Gründerkrise</td>
<td>1872-1873 (crisis: May 1873)</td>
<td>Germany, Austria</td>
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<td>Chicago real estate boom</td>
<td>1881-1883 (no crisis)</td>
<td>Chicago</td>
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<td>Crisis of 1882</td>
<td>1881-1882 (crisis: Jan.1882)</td>
<td>France</td>
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<td>Panic of 1893</td>
<td>1890-1893 (crisis: Jan. 1893)</td>
<td>Australia</td>
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<td>Norwegian crisis of 1899</td>
<td>1895-1900 (crisis: July 1899)</td>
<td>Norway</td>
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<td>US real estate bubble</td>
<td>1920-1926 (no crisis)</td>
<td>United States</td>
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<td>German stock price bubble</td>
<td>1927 (crisis: May 1927)</td>
<td>Germany</td>
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<td>Dotcom bubble</td>
<td>1995-2001 (crisis: April 2000)</td>
<td>USA</td>
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<tr>
<td>Real estate bubble in Australia</td>
<td>2002-2004 (no crisis)</td>
<td>Australia</td>
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<tr>
<td>Subprime housing bubble</td>
<td>2003-2010 (crisis: 2007)</td>
<td>USA</td>
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<tr>
<td>Spanish housing bubble</td>
<td>1997-? (crisis: 2007)</td>
<td>Spain</td>
</tr>
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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
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

- Crucial factor: *Debt financing* of bubbles
- Lending booms ⇒ severity increases
  - Examples: Tulipmania 1634-37 vs. crisis of 1763, dot-com crisis 2000 vs. Railway mania 1840s
  - Real-estate bubbles typically debt-financed & severe counterpart: Chicago real estate boom 1881-1883
- if also *banking crises* ⇒ severe recessions
  - if banks hold bubble assets *fire sales* amplify examples: crisis of 1763, Australian panic of 1893
  - *bank balance sheets* weaken ⇒ ground for a later crisis, example: German stock price bubble of 1927
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IV. Policy Responses

- Little empirical evidence on the effectiveness of policy responses
- There are only few episodes where policies were explicitly targeted at curbing asset prices
- This is especially true for policy rate changes, which were often driven by other considerations (depending on the central bank mandate, exchange rate regime etc.)
  - It is not possible to distinguish between intentional and unintentional measures
- Macroprudential interventions were typically targeted at curbing loan volumes
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
  - 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 ✓

- Interest rate increases *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
    - Fed started raising rates in 2004, but housing prices continued to rise until 2006

- Interest rate increase came *too late*
  - Example 1: Railway mania 1840s
    - Bank of England reacted too late to speculation
    - Bursting followed by 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 late, may force sharp rate increase,
  ⇒ “pricking” bubble
  - Example: Japan’s lost decade
    - Bank of Japan was criticized for having promoted the recession by pricking the bubble (Patrick 1998)
- Pricking *not always* lead into a recession,
  - Examples: Mississippi bubble 1719-20, dot-com bubble 1995-2001
- Problem: *Counterfactual* is unclear - late leaning may still be better than allowing the bubble to expand further
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
  - Under the National Banking Act, loans were subject to loan-to-value restrictions of 50 percent (White 2009)
  - 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 successful
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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  ➤ Policy measures can be effective in mitigating crises
  ➤ Cleaning strategy risks causing the next crisis
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- Lesson 4: No instrument appears to be dominant to deal with asset price bubbles