

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

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

	Event	Time	Place
1	Tulipmania	1634-37 (crisis: Feb. 1636)	Netherlands
2	Mississippi bubble	1719-20 (crisis: May 1720)	Paris
3	Crisis of 1763	1763 (crisis: Sept. 1763)	Amsterdam, Hamburg, Berlin
4	Crisis of 1772	1772-73 (crisis: June 1772)	England, Scotland
5	Latin America Mania	1824-25 (crisis: Dec. 1825)	England (mainly London)
6	Railway Mania	1840s (crises: April/Oct.1847)	England
7	Panic of 1857	1856-57 (crisis: Oct.1857)	United States
8	Gründerkrise	1872-73 (crisis: May 1873)	Germany, Austria
9	Chicago real estate boom	1881-83 (no crisis)	Chicago
10	Crisis of 1882	1881-82 (crisis: Jan. 1882)	France
11	Panic of 1893	1890-93 (crisis: Jan. 1893)	Australia
12	Norwegian crisis of 1899	1895-1900 (crisis: July 1899)	Norway
13	U.S. real estate bubble	1920-26 (no crisis)	United States
14	German stock price bubble	1927 (crisis: May 1927)	Germany
15	U.S. stock price bubble	1928-29 (crisis: Oct. 1929)	United States
16	"Lost decade"	1985-2003 (crisis: Jan. 1990)	Japan
17	Scandinavian crisis: Norway	1984-92 (crisis: Oct. 1991)	Norway
18	Scandinavian crisis: Finland	1986-92 (crisis: Sept. 1991)	Finland
19	Asian crisis: Thailand	1995-98 (crisis: July 1997)	Thailand
20	Dot-com bubble	1995-2001 (crisis: April 2000)	United States
21	Real estate bubble in Australia	2002-04 (no crisis)	Australia
22	Subprime housing bubble	2003-10 (crisis: 2007)	United States
23	Spanish housing bubble	1997-? (crisis: 2007)	Spain

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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 - ▶ 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*
- ▶ *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

- ▶ *Financing* of bubbles:
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→ Raises the likelihood of a banking crisis
- ▶ 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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- ▶ *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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 - ▶ Policy measures can be effective in mitigating crises
 - ▶ Cleaning strategy risks causing the next crisis

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- ▶ 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
- ▶ 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

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*

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

- ▶ 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
- ▶ 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