
Should Central Bankers Respond to Asset Price Movements: Theory & Evidence

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Overview

- Can central bankers improve economic performance by paying attention to asset prices (in addition to inflation and output)?
- If so, how should they do it?
 - Using interest rates
 - Alternative “unconventional policies”
- What have policymakers actually done?

Main conclusions

- Can central bankers improve economic performance by paying attention to asset price (in addition to inflation and output)?

Yes, reacting to asset prices can reduce the variability of both inflation and output (about their target levels).

Main conclusions

- Is it possible to identify asset price misalignments (and bubbles)?

Bubbles exit and yes they are hard to measure. But central banks have no choice but to forecast asset prices, and measuring misalignments is no harder than estimating the output gap or the equilibrium real interest rate.

Main conclusions

- Are there alternative, less conventional, policy responses for addressing perceived asset price misalignments?

There is some evidence that changes in margin requirements and other unconventional policy tools will dampen asset price volatility.

Main conclusions

- What have policymakers done?

It appears that they react to measures related to bubbles and financial system stress.

The Road Map

1. Bubbles

- a. Arguments for why they exist
- b. Impact on the Economy

2. Models Examining the Efficacy of Reacting

- a. Background: What Central Bankers Do
- b. Conventional/interest rate response
- c. Non-conventional responses

3. Estimating Reactions



The US Postal Service will honor the 24 cent value of this stamp.
Today, collectors value this stamp at approximately \$150,000.

Bubbles

- Do Bubbles Exist?
 - Easy to argue that prices of collectables reflect deviations from fundamental value
 - Printing errors in stamps are worth more
 - Perfect forgery's are worth less
- There should be a presumption in favor of bubbles existing.

What About Financial Assets?

- Argument against bubbles is based on arbitrage.
 - Assume that we know there is a bubble
 - Someone will short the asset
 - Increased desire to sell drives the price down
 - The bubble is eliminated

When Arbitrage Fails

- Holding short positions can be difficult or impossible.
 - Requires constantly posting additional margin as prices rise
 - Risk of being squeezed
 - How do you short residential housing?
- Information asymmetries
 - Too many open-ended funds
 - Managers have short horizons
 - Benchmark to average return means that managers can't hold a position until a bubble bursts



Bubbles Distort Economic Decisions

- **Investment:**

Financing is too cheap, especially in sectors where the bubble is biggest.

- **Consumption:**

False impression of wealth

Housing price increases temporarily alleviate liquidity constraints, making borrowing possible. But with the collapse, there is debt is unsustainable.

Bubbles Distort Economic Decisions

- **Fiscal Policy:**
Increase in revenue leads to tax cuts and expenditure increases
- **Pension Funds:**
Book high returns, become over funded, so company sponsors can make withdrawals
- **Insurance Companies:**
High returns make reserves look big

Bubbles Distort Economic Decisions

- **Potential GDP:**

Over investment in high productivity growth sectors makes both real growth and productivity look higher than it actually is.

- **Balance Sheet of Financial Institutions:**

Deterioration of the quality of assets, placing banks at risk.

Consequences of Bubbles

- Output rises and then falls
 - Depending on the exact mechanism, potential output can rise and fall as well.
- Financial Intermediaries can be impaired

Considerations

- Theoretical Models
- Logical Arguments
- Evidence of Response

Theoretical Models

- Bernanke and Gertler
- Dupor
- Gruen, Plumb, and Stone

The Bernanke-Gertler model

Firm finance:

1. Combination of internal funds and external borrowing.
2. Credit market frictions make external finance more costly.
3. External borrowing premium depends on firm's balance sheet position.

The Bernanke-Gertler model

Consider an increase in a firm's share price:

- ❑ Raises net worth of the firm's owners
- ❑ Improves firm's creditworthiness
- ❑ Reduces external finance premium
- ❑ Increases borrowing and investment

The Bernanke-Gertler model

Consequences of Financial Accelerator:

- ❑ Monetary policy, through its impact on the real interest rate, can move asset prices affecting borrowing costs.
- ❑ Asset Price Misalignments cause investment boom-bust cycles.

The Bernanke-Gertler model

Conclusions:

- Focus on inflation is important
- Reacting to asset prices can improve performance

Dupor:

Nominal versus Asset Price Stabilization

- The model is necessarily complex
- The intuition is straightforward
- Two marginal conditions
 - Atemporal Consumption – Leisure:
distorted by nominal price rigidity
 - Intertemporal Investment:
distorted by asset price bubble
- Policymaker has one instrument
- Result: Nonfundamental movements in asset prices signal a capital market distortion to which
- Policymakers should react to temper overaccumulation of capital, but the cost is destabilizing nominal prices

Gruen, Plumb, and Stone

- Activist raising interest rates initially to combat the bubbles initial effects.
- But then lowers interest rates quickly in anticipation of the bubble bursting.
- As the bubble grows, the potential negative impact of its eventual bursting will increase.
- Case for tightening in response:
 - Probability of bubble bursting soon is small
 - Probability of bursting is interest rate sensitive
 - Bubble's demise is likely to occur slowly rather than suddenly
- Since it is hard to identify a bubble until it gets big, there is a weak case for reacting.

Arguments Against Activism

“I believe that if central bankers allow the fluctuations in asset market prices to affect their decisions, it may distract them from concentrating on some combination of output growth and inflation. The focus of the Federal Reserve on the level of equity prices in 1929 clearly led to a disastrously contractionary path for policy.”

Arguments Against Activism

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Cecchetti, “Understanding the Great Depression: Lessons for Current Policy,” 1997.

1929 Revisited

- Crash was caused by Fed behavior
- They sought to bring prices down by keeping banks from lending that would be used to purchase stock.
- FRB Board members believed
 - Speculation was causing stock prices to rise
 - Result was damaging the real economy

1929

“The Federal Reserve Act does not, in the opinion of the Federal Reserve Board, contemplate the use of the resources of the Federal reserve banks for the creation or extension of speculative credit. A member bank is not within its reasonable claims for rediscount facilities at its Federal reserve bank when it borrows either for the purpose of making speculative loans or for the purpose of maintaining speculative loans.”

Federal Reserve Bulletin, February 1929

Fed Confusion and Market Response

- FR Board thought the increase in debt used real resources decreasing real investment
- Following the statement, interest rates on broker loans skyrocketed
- 26 Mar 1929 the overnight rate rose to 20% and stock prices fell 10%
- FRBNY President & 1st National City Bank President provided liquidity to the market to stem the decline
- Criticism followed, and they didn't do it again.
- And the Fed failed as lender of last resort over the next 3+ years.

Current Arguments Against Activism

- Difficult to identify imbalances
- Risk that responsive policy is destabilizing
- Difficult to provide public justification

Identifying Misalignments

- Central bankers have no extra information or expertise:
 - If you're so smart, why aren't you rich?
- Market expectations are unobservable

Estimating asset price misalignments: Too hard to be practical?

- Estimating potential output also requires estimates of trend productivity growth and equity risk premium
- But forecasts for inflation and real growth require forecasts of
 - Investment ← Equity Prices!
 - Current Account ← Exchange Rates!
 - Interest Sensitivity of Aggregate Demand ← Housing Prices!

Risk of Destabilizing the Economy

- Qualitative knowledge is great
- Quantitative knowledge is not.
- Imprecision argues for caution, not paralysis

Communication

- Responding to bubbles stabilize growth and inflation
- Clarity of goals should make explanation possible.

Regulation vs. Monetary Policy

- Why not adjust regulations instead?
- Possibilities
 - Cyclically sensitive capital requirements
 - Difficult to implement
 - Interest rates can respond to banking system stress
 - Vary Margin requirements
 - Argument against this is that it is ineffective
 - Why not try?

What Central Banks Do

- 1997-98 Greenbook:
 - Forecast a 10 to 20 percent drop in the stock market

Alan Greenspan's Speech at the American Enterprise Institute

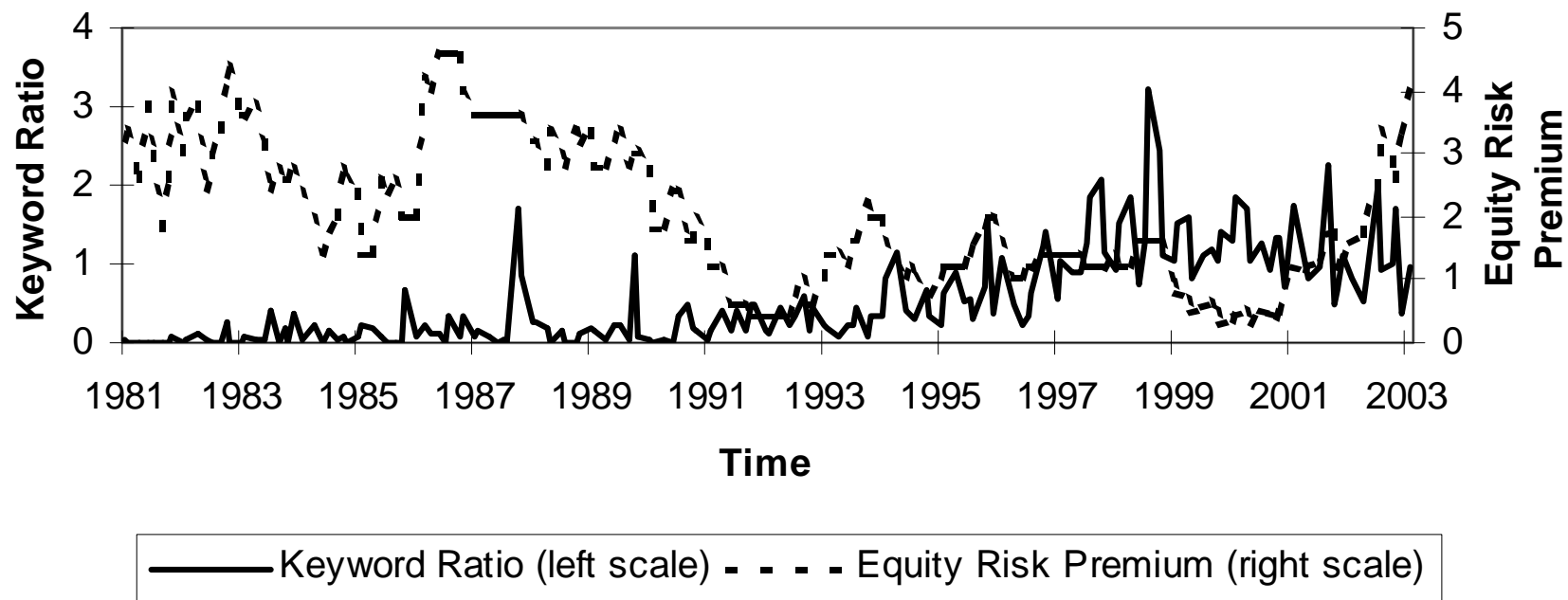
"[H]ow do we know when **irrational exuberance** has unduly escalated asset values, which then become subject to unexpected and prolonged contractions as they have in Japan over the past decade? And how do we factor that assessment into monetary policy? We as central bankers need not be concerned if a collapsing financial asset bubble does not threaten to impair the real economy, its production, jobs, and price stability."

“Irrational Exuberance”

- Did public silence imply private indifference?
- Were officials discussing and reacting to asset price movements & banking system conditions?
- What was the FOMC saying and doing?

What Was the FOMC Saying?

Figure 1: Keyword Ratio and Equity Risk Premium



Correlation = -0.42 (s.e.=0.07)

What Was the FOMC Doing?

- Examine a forward-looking Taylor Rule

$$r_t^* = r^* + \beta_\pi [E(\pi_{t,k} | \Omega_t) - \pi^*] + \beta_y [E(y_{t,q} | \Omega_t)]$$

$$r_t = \rho(L)r_{t-1} + (1-\rho)v_t$$

Policymakers respond smoothly to a combination of expected deviation of inflation from its target and the output gap.

Augmented-Taylor Rule

- Add
 - Stock market bubble
 - Banking System stress

$$r_t^* = r^* + \beta_\pi [E(\pi_{t,k} | \Omega_t) - \pi^*] + \beta_y [E(y_{t,q} | \Omega_t)] + \beta_b b_t + \beta_s s_t$$

Table 1: Augmented-Taylor Rule for the U.S.
(1990 Q1 to 2003 Q1)

Inflation Index	Inflation Gap β_π	Output Gap β_y	Equity Market Bubble	Banking System Stress	Sum of adjustment lags, ρ	Test of Over-identifying Restrictions	Goodness of Fit (R^2)
Consumer Price Index	0.34 (0.30)	0.57 (0.00)			0.23 (0.00)	0.51	0.80
	0.20 (0.24)	0.57 (0.00)	0.09 (0.47)		0.25 (0.00)	0.80	0.81
	0.46 (0.03)	0.41 (0.00)		-0.17 (0.02)	0.41 (0.00)	0.94	0.86
	0.67 (0.00)	0.50 (0.00)	-0.65 (0.00)	-0.23 (0.00)	0.40 (0.00)	0.88	0.88

Source: GMM estimates of text equation (4) substituted into equation (2). Numbers in parentheses are p-values for the test that the coefficient estimate is equal to zero. When p-values are 5 percent or lower, the coefficient is printed in bold face. Data sources are reported in the appendix.

Note: Fuhrer and Tootell note that this result could be a consequence of using a different information set from the one that the FOMC actually used when making their decisions.

Chairman Greenspan:

“It seems reasonable to generalize from our recent experience that no low-risk, low-cost, incremental monetary tightening exists that can reliably deflate bubble. But is there some policy that can at least limit the size of the bubble and, hence, its destructive fallout? From the evidence to date, the answer appears to be no.”
(Greenspan 2002, pg. 5).

Reactions

- Immediately harsh.
“Given the problems of the intervening years how can he say that the FOMC shouldn’t even have tried?”
- More Charitable reaction:
“They tried and failed. Maybe they should have done more.”

State of the Debate

- Property vs. Equity Price Bubbles
 - Property price collapses are more serious
 - Does the structure of the financial system matter?

Comparing Equity and Property Bubbles

	Equity		Property	
	<u>Size</u>	<u>Impact</u>	<u>Size</u>	<u>Impact</u>
Boom	+104.6	+0.38	+34.4	+0.73
Bust	-44.0	-1.77	-32.5	-2.36

Definitions:

Equity Booms +40%, Busts -30%

Property Booms +15%, Busts -15%

Data are from 23 countries

Financial Structure

- Preliminary Results Suggest:
 - During housing booms, GDP growth is higher in economies where financial markets are more important.
 - During housing busts, GDP declines by more in economies where banks are less important.

The Picture of a Cautious Central Banker



**The
Suspenders**

**(Then) ECB President
Wim Duisenberg, wears
both a belt
and suspenders.
There's no chance
his pants will
fall down!**

The Belt