On Asset Prices and Monetary Policy

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Two Underlying Premises:

- Asset price bubbles may produce:
  
  (i) inefficient business fluctuations
  
  (ii) financial crises

- Monetary policy design should respect central banks’ ignorance about:

  (i) whether fundamentals or non-fundamentals are driving asset prices

  (ii) the impact of non-fundamental asset price movements on spending
BG: “Flexible inflation targeting” is the best feasible strategy for containing the harmful effects of bubbles:

Induces a central bank to:

(i) Accommodate asset price movements driven by fundamentals but

(ii) Offset non-fundamental asset price movements that generate inflationary and deflationary pressures.

Example:

\[ i_t = r r_t^* + \beta E_t \pi_{t+1}^*; \quad \beta > 1 \]

→

Respond to asset prices only to the extent they may signal inflationary or deflationary pressures (or adjustments in the equilibrium real rate):
BG (Jackson Hole, 1999):

Simulate the impact of a non-fundamental asset boom and bust within in a small scale macro model:

Key Findings:

(i) Aggressive inflation targeting policy mitigates the impact of the bubble—

(ii) No significant gain to targeting asset prices, and potentially harmful effects

BG (May AER 2001):

Analyze performance of rules across entire probability distribution of shocks (true stochastic simulation).

Obtain similar findings to BG 1999.
Today: Explore the implications of the link between asset price movements and spending.

- Evidence suggests very imprecise connection between high frequency asset price movement and spending.

- Build this factor into the model, and explore the implications for policy.

Key Punchline: Another reason to be wary of direct asset price targeting.
Evidence:

- Little connection between high frequency movements in stock prices and consumption:
  
  Ludvigson and Steindl, 1999
  Lettau and Ludvigson, 2001

- Little connection between market value measures of Q and investment
  
  Bond and Cummins, 2000
BGG Financial Accelerator Model:

Dynamic General Equilibrium Framework with:

a. Money

b. Imperfect Competition and Nominal Price Rigidities

Financial Accelerator: Baseline Case:

Investment, Finance and Q:

\[ \frac{I_t}{K_t} = \phi(Q_t) \]

\[ E_t\{D_{t+1}+Q_{t+1}\}/Q_t = (1+\chi_t) \left\{ (1 + i_t)\frac{P_t}{P_{t+1}} \right\} \]

\[ \chi_t = \chi \left( \frac{B_{t+1}}{P_t} \frac{P_t}{Q_tK_{t+1}} \right) \]

Consumption and Wealth:

\[ C_t = c(Q_tK_{t+1}, \ldots) \]
Adding a Non-Fundamental Bubble

Fundamental Price $Q_t$:

$$Q_t = E_t \sum_{i=0}^{\infty} [D_{t+1+i}/ \prod_{j=0}^{i} R_{t+1+i}^q]$$

$$= E_t \{ [D_{t+1} + Q_{t+1}]/ R_{t+1}^q \}$$

Market Price $S_t$:

A bubble exists iff $S_t - Q_t \neq 0$
If a bubble exists at $t$: 

with prob. $p$

$$ (S_{t+1} - Q_{t+1}) = \frac{a}{p} (S_t - Q_t) R_{t+1}^q $$  \hspace{0.5cm} (2) $$

where $p < a < 1$.

with prob. $1 - p$

$$ S_{t+1} - Q_{t+1} = 0 $$  \hspace{0.5cm} (3) $$

(6) and (7) $\rightarrow$:

$$ E_t[(S_{t+1} - Q_{t+1})/R_{t+1}^q] = a(S_t - Q_t) $$  \hspace{0.5cm} (4) $$
Collateral Value of Capital, \( C_tK_{t+1} \)

\[
C_tK_{t+1} = [\varepsilon(S_t - Q_t) + Q_t]K_{t+1}
\]

with

\[
0 \leq \varepsilon \leq 1
\]

In BG, \( \varepsilon = 1 \) \( \rightarrow \)

\[
C_tK_{t+1} = S_tK_{t+1}
\]
Policy Rules:

\[ i_t = \beta E_t \pi_{t+1} \]

\[ i_t = \beta E_t \pi_{t+1} + \xi s_{t-1} \]

\[ i_t = \beta E_t \pi_{t+1} + \psi (y_t - y_t^*) \]
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Differential Spending Effect: $\varepsilon$
Odds and Ends:

1. Should we target housing prices?

   No systematic link between housing prices and inflation or real activity (Stock and Watson, 2001)

   Endogeneity problems: housing prices highly sensitive to monetary policy

2. Should we target asset prices because they reflect the behavior of the equilibrium real rate?

   No tight connection between asset price movements and low frequency movements in the real rate.
Smooth rrate - ln(S&P/Y)