

# Taming a Minsky Cycle

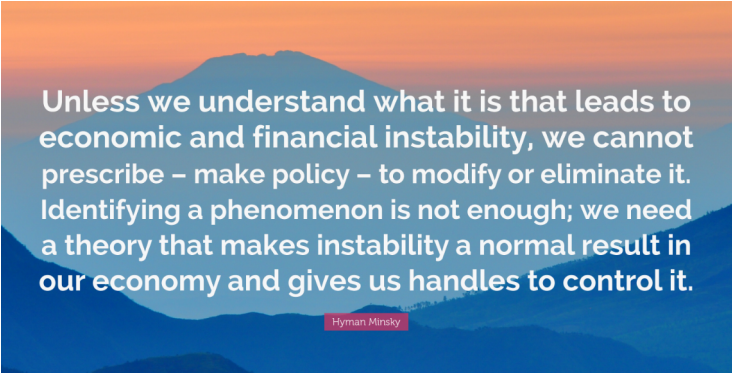
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# The Question



Unless we understand what it is that leads to economic and financial instability, we cannot prescribe – make policy – to modify or eliminate it. Identifying a phenomenon is not enough; we need a theory that makes instability a normal result in our economy and gives us handles to control it.

Hyman Minsky

- Growing research: biased beliefs  $\Rightarrow$  economic/financial instability
- This paper: What should be the policy handles to control it?

# Model in a Nutshell

- Actors: Policymaker, Borrowers, Savers
- Timing:
  - ▶ Period 0 (boom): key decisions + possible exuberance
  - ▶ Period 1 (bust): ZLB, “Minsky moment”
  - ▶ Period 2: Lucas tree pays dividend
- Assets:
  - ▶ Risk-free bond (for borrowing)
  - ▶ Risky asset (Lucas tree): price  $P_t$  for  $t < 2$ ; only borrowers can buy
- Borrowers (investors) may have biased beliefs about  $P$ . 3 Cases:

1 Rational

2 Extrapolation at  $t = 0$ , rational at  $t = 1$

$$\underbrace{P_1^e/P_0}_{\text{subjective return}} = (1 - \rho) \underbrace{(P_1/P_0)}_{\text{rational belief}} + \rho \underbrace{(P_0/P_{-1})}_{\text{extrapolation}}$$

3 Extrapolation at  $t = 0$  (too optimistic) &  $t = 1$  (too pessimistic)

# Optimal Policies

Instruments: **Monetary** ( $R_t$ ); **Macro-prudential**/taxing leverage ( $\tau_0, t_0^i$ )

Key friction: Too much debt due at  $t = 1$ , when ZLB binds

- Individuals do not internalize externalities of their borrowings

## Monetary policy alone

- $R_0$  takes into account impact on debt due at  $t = 1$
- Aim to reduce borrowers' debt due at  $t = 1$ 
  - ▶ Initial leverage channel
  - ▶ Belief channel **if borrowers extrapolate**
    - ⇒ Stronger case for hawkish monetary policy at  $t = 0$
- Output gap at  $t = 0$  can be non-zero

# Optimal Policies

## Monetary policy + Macro-prudential policy

### 1 Rational borrowers

- ▶  $t = 0$ : no output gap,  $1 - \tau_0 = 1 + \underbrace{(\mu_1/\phi^S)}_{\text{bust severity}} \underbrace{(dY_1/db_1^S)}_{\text{output sensitivity to borrower leverage}}$

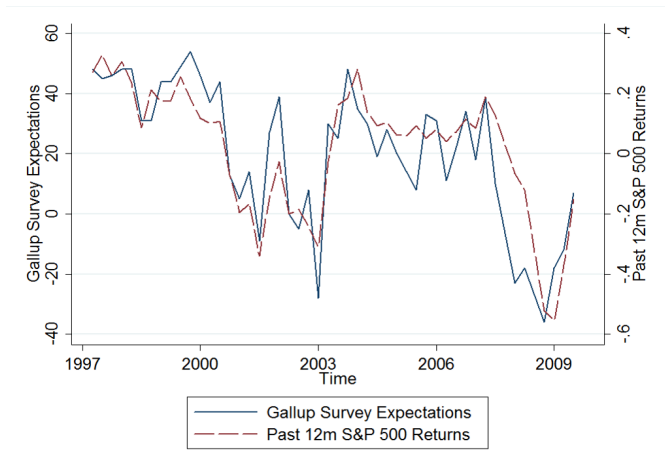
### 2 Extrapolation at $t = 0$ , rational at $t = 1$

- ▶  $t = 0$ : no output gap,  $1 - \tau_0 = \underbrace{(c_1^B/c_1^{B,e})}_{\text{degree of bias}} [1 + (\mu_1/\phi^S)(dY_1/db_1^S)]$
- ▶ “Dosage change” of MacroPru, to correct for biased beliefs

### 3 Extrapolation at $t = 0$ (overoptimism) & $t = 1$ (overpessimism)

- ▶  $t = 0$ :  $R_0$  leans against wind  
Lower  $P_0 \Rightarrow P_1/P_0$  higher  $\Rightarrow$  **Less overpessimism at  $t = 1$**
- ▶ **MacroPru also leans against the wind**

# Extrapolation is Common: Both Boom & Bust



Greenwood-Shleifer 14: Investor expectations of next 12m stock returns

Theme of “depression babies” is common

# Macroeconomic Policies and Beliefs

## Q&A with Senior Fed Official at a Conference

Q (Anonymous Beaver 🦫): What if the market's perception of Fed actions is different from the Fed's intention?

A (Senior Fed Official):

*Do you have in mind December 2018? We raised rates and the market behaved like there was a solar eclipse due to the sun eaten by a dragon, and there were crazy religious rituals on the streets. We...the high priests...tried to explain that there was no dragon, but the crazy rituals continued. Then we had to say that even if there is such a dragon, here is a plan that we have to slay the dragon, so we can restore the religious sensibility of the market.*

## How macroeconomic policies affect subjective beliefs not well understood

- Fed information effect, forward guidance, xxx  $\Rightarrow$  Open question for research
- Asset purchases can influence returns & beliefs
- Other policies to shape beliefs?

# The Fallibility of Lenders

This paper: risk-free borrowing between borrowers and savers

Many works on credit cycles: **lenders' beliefs & credit supply**

- Geanakoplos 09, Greenwood-Hanson 13, Cheng-Raina-Xiong 14  
Bordalo-Gennaioli-Shleifer 18, Bordalo-Gennaioli-Shleifer-Terry 20
- “Lending standards”: credit spreads, margins/LTV, covenants...

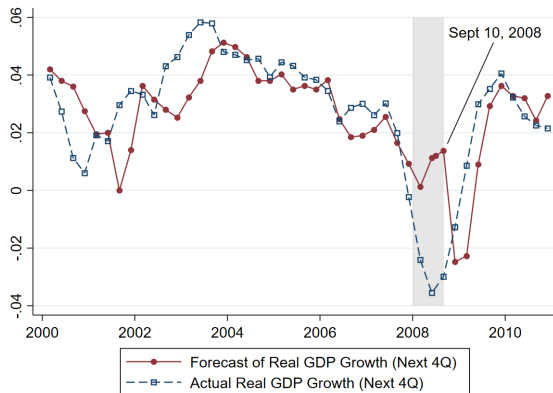
Do belief-driven credit supply shocks matter for optimal policy analyses?

- To the extent they affect “lending standards”
- Are they isomorphic to biased beliefs of borrowers?



# The Fallibility of Policymakers

Fed Greenbook Forecasts of US Real GDP Growth



- Should policymakers proceed as if their beliefs are correct?
- Or max-min/stress test?

# A Thought-Provoking Paper

When macroeconomic policies interact with non-rational expectations

- Empirical: How do policies affect beliefs (directly & indirectly)?
- Theoretical: Which instruments for which targets?
  - ▶ When MacroPru not sufficient for financial stability?

Whose biases matter? Models have taken many paths:

- 1 Rational savers + Irrational borrowers
- 2 Irrational lenders + Rational borrowers
- 3 Irrational lenders + Irrational borrower

What to do when policymakers do not know the ground truth?