The Taylor Rule in Monetary Theory

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Taylor Rule in Monetary Theory

- Taylor: Major *contribution* is elaboration of a comprehensive practical strategy, empirical success, not a mechanical "rule" or High Theory.
- Taylor's Taylor rule is a a benchmark against which to measure deviations. Stabilize expectations, avoid panicked discretionary mistakes.
- Inherits the mantle of gold, money growth, but better and more realistic.
- Nonetheless Taylor rule has had a deep *influence* on monetary theory.

Taylor Rule in Traditional Models, Policy Beliefs

- Friedman (1968): inflation is *unstable* under an interest rate target. Target M!
- Central banks: set interest rate targets, not M.
- Taylor: Raising rate > 1-1 stabilizes inflation.
- This is how Taylor (e.g. 1999), central banks think of the rule.
- Taylor rule was a central step to a theory of inflation under interest rate targets, with passive M, interest on reserves, etc!







Taylor Principle in New Keynesian Model

- All academic and central bank models since 1990. (Not words!)
- Interest peg is *stable*, but *indeterminate*, *multiple equilibria*, *"sunspot" volatility*. (Sargent Wallace 1975).

$$i_t = E_t \pi_{t+1} \cdot \pi_{t+1} - E_t \pi_{t+1}?$$

Conclusion: Target M. But banks target interest rates.

 Taylor principle. Central bank intentionally destabilizes the economy, threatens hyperinflation or deflation for all but one equilibrium. Taylor principle gives "equilibrium selection" policy. Simplest example:

$$i_t = \phi \pi_t, \phi > 1. E_t \pi_{t+1} = \phi \pi_t.$$

Only $\pi_t = 0$ does not lead to hyperinflation/deflation.





+ equilibrium selection



Taylor rule is good in FTPL + NK too

- FTPL picks one equilibrium of NK model.
- Surplus pays interest costs on debt.

$$E_0 \sum_{t=0}^{\infty} \rho^t s_t = E_0 \sum_{t=0}^{\infty} \rho^j (i_t - \pi_t) \text{ picks } \{\pi_t\}.$$

- Inflation is *stable* and *determinate* (+ long-run neutral).
- Interest rate target still picks path of expected inflation.
- Prompt and large response of interest rate to inflation is still great policy! (Avoid 2021-2023, for example.)





Fiscal shock (inflation, output move) + Monetary response = random walk inflation, small output movement.

Taylor Rule in Monetary Theory

"The Taylor rule is always the answer, the questions keep changing"

- Taylor rule restores *stability* to traditional models, allows inflation control without money supply control; with an interest rate target.
- Taylor principle restores determinacy to new Keynesian / rational expectations models.
- Taylor idea is excellent output/inflation *variance reduction* in FTPL+NK model.
- Taylor & Weiland: Not exactly optimal in any model, but very good in almost all. (For very different reasons, mechanisms.) *Robust.*

Trouble in Paradise (Purgatory?)

- Last 30 years: Taylor Principle in NK models.
- $i_t = i_t^* + \phi(\pi_t \pi_t^*) \leftrightarrow i_t = \phi \pi_t + v_t$ (King)= $\pi_t = \pi_t^*$ is the only non-explosive equilibrium.
 - "Taylor principle" is an equilibrium-selection threat. Not observed in equilibrium.
 - π = π*, Taylor & Clarida Gali Gertler regressions (φ<1 1970s φ>1 1980s) do not measure φ of this model. (Can measure adaptive expectations φ, other parameters of this model.)
 - Was 1970s really indeterminacy, multiple equilibria, not too-loose policy? Did Volker really succeed by quashing multiple equilibrium volatility? If so, why did that not erupt at ZLB ϕ <1?
- Interest rates raise inflation in new-Keynesian models.
 - Inflation is a moving average of interest rates with positive coefficients + selection shock.
 - Needed for higher rates to induce explosive behavior, select equilibria.
 - "Equilibrium selection" π_t^* shock does all the work to lower inflation. No need for rates!
- No respectable textbook economic model of how interest rates lower inflation!
- The equations look *nothing* like policy doctrine. Different *signs and mechanisms*. If central bankers understood the equations they would be incredulous. Are models wrong or is the doctrine wrong?
- Challenge and Opportunity!

Rules rule

- Response to shocks against a stable rule, as measured by VAR, is largely beside the point, not "the effect of monetary policy."
- 1970-1980, successful disinflations, periods of good and bad outcomes are about *changing rules.*
- Taylor and CGG regressions $i_t = \phi \pi_t + u_t$, measure ϕ , see if ϕ has changed over time, not response of inflation to u_t with stable ϕ , are exactly *right* about that!
- Challenge, opportunity: How do you measure the effects of changing the rule?
- Taylor, Lucas: With forward looking people in the economy who learn from experience, you must talk about rules and expectations, not "actions" and mechanistic responses.