Remarks on ‘Escapist Policy Rules’ by James Bullard and In-Koo Cho

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Introduction

- What the authors do:
  - Examine a Taylor-type rule in the conventional sticky-price model for:
    - its stability
    - its learnability
    - its cyclical properties (i.e., escape dynamics)
  - Do so with three key deviations from rational expectations
    - misspecified private-sector beliefs about policy
    - feedback from beliefs to policy settings
    - constant-gain learning
  - They apply their model and technology to the Japan.
- Pertinent references include:
  - Bullard-Mitra (2001), Evans and Honkpohja (2001), Marcet-Sargent (1989), Kushner-Yin (1997) and Sargent (1993) on learning;
  - Cho, Sargent and Williams (2001), Sargent (1999), Williams (2001) on escape dynamics.

- The authors' major conclusions include:
  - The Taylor-type rule is learnable
  - The Taylor-type rule performs pretty well...on average
  - There are episodes of escape dynamics
  - They apply this to the Japanese liquidity trap situation and argue:
    - -- the model can explain Japan as a rare 'escape event' in an otherwise stable economy
    - -- the descent into the trap is broadly plausible in terms of its speed
- My knee-jerk reactions include:
  - This is a good paper; I liked it quite a lot
  - Well motivated and interesting, and capably carried out
  - Heroic effort toward an heuristic explanation of escapes
  - The details of the set-up raise some questions for me

Key assumptions

I identify 6 of what I regard as key assumptions and cover each in order, and then turn to a grab bag of miscellaneous stuff....

(1) convex Taylor-type rule: $r_t = \bar{r}_t \exp\left[\frac{\phi_\pi}{\bar{r}_t}(\pi_t - \bar{\pi}_t)\right] + \eta_t$

(2) misspecified private-sector model for the rule:

$$r_t = r_t^* \exp[B(\pi_t - \pi_t^*)]$$

(3) least-squares estimates of the rule:

$$r_t = \phi_{0,t} + \phi_{\pi,t}\pi_t + \xi_t$$

(4) drift in the target rate of inflation: $\bar{\pi}_t = \pi_t^*$

(5) knowledge of the shocks, ω_t, η_t

(6) knowledge and choice of B on: $\pi_t^* = -\rho + \frac{1}{B}\hat{\phi}_{\pi,t}$

(1) The convex Taylor-type rule

- $r_t = \bar{r}_t \exp\left[\frac{\phi_\pi}{\bar{r}_t}(\pi_t - \bar{\pi}_t)\right] + \eta_t$
- Why this rule? What role does the convexity play?
- Is the form of the rule the reason why escapes are to low inflation rates instead of high ones?
- What justification is there for the existence of $\eta_t \neq 0$?

(2) The private sector's beliefs

- $r_t = r_t^* \exp[B(\pi_t - \pi_t^*)]$ vs. $r_t = \bar{r}_t \exp\left[\frac{\phi_\pi}{\bar{r}_t}(\pi_t - \bar{\pi}_t)\right] + \eta_t$
- The form of the perceived rule is correct, but *B* is set exogenously and apparently on an *ad hoc* basis.
- The role of η_t is essentially ignored (see (3) below)

(3) Least-squares learning

- $r_t = \phi_{0,t} + \phi_{\pi,t}\pi_t + \xi_t$
- The rule is nonlinear but the regression is linear
- Because $\eta_t \neq 0$, $\hat{\phi}_{\pi,t}$ will be biased, likely downward
- But self-reinforcing equilibrium implies $\hat{\phi}^e_{\pi,t} = \phi_\pi$
- So why least-squares learning and what role does this play in the simulation results?

(4) Drift in the inflation target

- $\bar{\pi}_t = \pi_t^*$
- "If the government adopted a fixed target then the escape dynamics...could not occur. We need the 'center of gravity' of the system to move slightly with incoming shocks" (fn. 11, p. 10).
- Difficult to motivate drift in the target in the presence of a zero bound and the convex Taylor-type rule it engenders.

(5) Knowledge of the shocks

- ω_t, η_t
- If agents know the form of the true policy rule, and they know the true shocks, the rule could be inverted to find ϕ_π.
- What if they "knew" just the prediction error instead:
  $\hat{\eta}_{t-1} = r_{t-1} - r^*_{t-1}\exp[B(\pi_{t-1} - \pi^*_{t-1})]$

(6) Knowledge of *B*

- $\pi_t^* = -\rho + \frac{1}{B}\hat{\phi}_{\pi,t}$
- The regression does not supply both and $\hat{B}$ and $\hat{\phi}_{\pi,t}$, so the authors supply $B = 500$ and back out $\hat{\phi}_{\pi,t}$.
- But the choice of B is not innocuous; a large B implies a small response of π_t^* to changes in $\hat{\phi}_{\pi,t}$.
- Is there no way to get both π_t^* and $\hat{\phi}_{\pi,t}$ from the data?

Random queries and conjectures

- Are the simulations being conducted with the nonlinear model, or the linear approximation?
- Escapes don't happen very often; higher α would help, but would it come at a cost?
- At the liquidity-trap outcome, when $\hat{\phi}_{\pi, t} = 1$, what if anything keeps $\hat{\phi}_{\pi, t} \geq 1$? The projection facility?
- Potential for explaining why the low-inflation outcome arises, and also why there is no Wicksellian unravelling.