Aiming for the bull’s eye: Uncertainty and inertia in monetary policy

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What the paper does

- Demertzis and Viegi (DV) derive a policy procedure in a forward looking New-Keynesian type model

- 2 twists:
  - Parameter uncertainty: The slope of the short run Phillips curve is unknown
  - Expectations are subject to differential information as in Morris and Shin (2006) which introduces inflation inertia
The set up

\[\begin{align*}
\pi_t &= \beta E_t \pi_{t+1} + \alpha y_t + \varepsilon_t \\
y_t &= E_t y_{t+1} - \gamma (i_t - \beta E_t \pi_{t+1}) + \xi_t \\
\alpha &\sim N(\bar{\alpha}, \sigma^2_\alpha) \\
L &= [(\pi_t - \pi^*)^2 + y_t^2]
\end{align*}\]

Brainard's (1967) result applies: Policy "caution" is increasing in variance of \(\alpha\)
Expectations

DV appeal to Morris and Shin (2006)

- Only a fraction \( \mu \) of price setters receive information about the CB’s target level of inflation \( \pi_t^* \)

- This is used to motivate \( E_t \pi_{t+1} = \pi_{t-1} \) in numerical simulations
The results

DV derive a two-step procedure that yields certainty equivalent policy recommendation

- More aggressive/certainty equivalent policy results in smaller losses than Brainard type policy

- What’s going on?
New Dynamics

\[ \pi_t = \beta \pi_{t-1} + \alpha y_t + \varepsilon_t \]  \hspace{1cm} (1)

- We are in Soderstrom (SJE 2002): Discretionary policy is now a dynamic problem
- No analytical solution to optimal policy if CB care about both inflation and output gap volatility
- No particular reason to believe that either Brainard or TS will be optimal
- Soderstrom finds that if inflation follows (1), then the intuition of Brainard still holds.
Using Morris and Shin (2006) in a NK setting

Morris and Shin’s set up is highly stylized:

\[ a_{it} = \gamma E_{it} \theta_t + \beta E_{it} a_{t+1} \]
\[ a_t = (1 - \beta) E_t \theta_t + E_t \beta a_{t+1} \] (2)

- Limit case for $\beta \to 1$ perhaps not the most interesting or realistic

- State only affect outcomes through expectations
  - Otherwise a simple observation of $a_t$ would reveal that the state has changed

- NK Phillips curve does not have the form (2)
Suggestions

- Be more careful when transplanting Morris and Shin type information set up into the model.

- Start from the price setting problem of the firm, define information sets and a process for CB’s inflation target.

- Solve the dynamic optimization problem of the central bank.

- Interesting interactions between caution and learning about target?