Comment on: “What Fiscal Policy is Effective at Zero Interest Rates?”
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Role of expectations about policy

- Conventional view of stabilization policy
  - Active Monetary Policy / Passive Fiscal Policy
  - What if conduct of policy and beliefs are otherwise?

- Policy regime perfectly understood
  - Beliefs consistent with policy regime
  - What are the consequences for stabilization policy if they are not?
Example 1: An Alternative View of Policy

- Plausible assumption:
  - Agents expect interest rates to remain pegged
  - Fiscal policy central arm of stabilization policy

- Implication: Labor income policy is desirable
New Keynesian Model

- Demand and supply relations
  
  \[ x_t = E_t x_{t+1} - \sigma (i_t - E_t \pi_{t+1} - r_t) \]
  \[ \pi_t = \kappa x_t + \beta \psi \tau_t + \beta E_t \pi_{t+1} \]

  where \( \sigma, \psi, \kappa > 0 \) and \( 0 < \beta < 1 \)

- Monetary Policy:
  
  \[ i_t = 0 \]
• Fiscal Policy

  – Issue one-period nominal debt $B_t$ backed by payroll taxation

  – Exogenous marginal tax rate evolving as

    $$\tau_t = \rho \tau_{t-1} + \varepsilon_t$$

    with $0 < \rho < 1$
A Labor Income Tax Cut

- Policy configuration: unique bounded rational expectations equilibrium
  - Zero lower bound poses no particular conceptual difficulties

- Consider two kinds of tax cut of unit magnitude
  - Temporary: $\rho = 0$
  - Persistent: $\rho = 0.9$
Figure 1: Impulse response functions for inflation and the output gap to a temporary tax shock.
Figure 2: Impulse response functions for inflation and the output gap to a persistent unit tax shock.
Conclusion I

- There may exist reasons to anticipate future inflation not considered in:
  - The standard New Keynesian framework
  - The standard configuration of policy

- The deflationary effects of labor income policy on marginal costs may be off-set
  - Other examples: multiple models — Cogley and Sargent; fiscal limits

- Multiple regimes unlikely to challenge this thinking
  - Only if policy is actually AM/PF and this is understood by agents
Example 2: Regime Uncertainty

- Now suppose conventional policy configuration
  - Active Money / Passive Fiscal

- But: Agents uncertain about the details of the fiscal regime

- Question: does this impair stabilization policy?
Keynesian Model: Arbitrary Beliefs

- Log-linear approximation implies aggregate dynamics

\[ x_t = \delta \beta^{-1} (b_t - \pi_t) - \beta^{-1} \delta s_t + \]
\[ \hat{E}_t \sum_{T=t}^{\infty} \beta^{T-t} [(1 - \beta) (x_{T+1} - \delta \tau_{T+1}) - (\sigma - \delta) (i_{T} - \pi_{T+1}) + \sigma r_T] \]
\[ \rightarrow \text{optimal Consumption Decision Rule} \]

\[ \pi_t = \kappa x_t + \hat{E}_t \sum_{T=t}^{\infty} (\alpha \beta)^{T-t} [\kappa \alpha \beta x_{T+1} + (1 - \alpha) \beta \pi_{T+1}] \]
\[ \rightarrow \text{optimal Pricing Decision Rule} \]

\[ b_t = \beta^{-1} (b_{t-1} - \pi_{t-1} - (1 - \beta) \tau_{t-1}) + i_{t-1} \]
\[ \rightarrow \text{government flow budget constraint} \]
• Policy Rules

\[ i_t = \phi_\pi \hat{E}_{t-1} \pi_t \]
\[ \rightarrow \text{Monetary Policy} \]

\[ \tau_t = \phi_\tau b_t \]
\[ \rightarrow \text{Tax Rule for Lump-sum Taxation} \]

– Fiscal authority also specifies average structural surplus-to-output ratio, \( \delta \)
Beliefs

• Agents have statistical model:

\[ z_t = \omega_{0,t} + \omega_{1,t}b_t + \varepsilon_t \]

where \( z_t = \{x_t, \pi_t, b_{t+1}, i_t, s_t\} \)

• Update their beliefs using ordinary least squares
Inflation Expectations Shock

- Assume policy configuration is conventional
  - Active Money / Passive Fiscal

- Assume agents understand the monetary policy rule
  - Statistical model is restricted to make policy consistent forecasts
  - Agents do not know tax policy rule

- Compute impulse response functions to a shift in inflation expectations
  - Consider role of average indebtedness: $4\bar{b}/\bar{Y} = 0, 2.3$
  - Model Property: Beliefs converge to REE
Figure 3: The figure shows the impulse response of output in the high debt economy (solid line) and in the zero debt economy (dashed line).
Figure 4: The figure shows the impulse response of inflation in the high debt economy (solid line) and in the zero debt economy (dashed line).
Figure 5: The figure shows the impulse response of the nominal interest rate in the high debt economy (solid line) and in the zero debt economy (dashed line).
The Role of Indebtedness

- Aggregate demand

\[ \hat{x}_t = \delta \left( \beta^{-1} (\hat{b}_t - \hat{\pi}_t) - \beta^{-1} \hat{s}_t + \hat{E}_t \sum_{T=t}^{\infty} \beta^{T-t} [(\hat{\gamma}_T - \hat{\pi}_{T+1}) - (1 - \beta) \hat{s}_{T+1}] \right) \]

\[ + \hat{E}_t \sum_{T=t}^{\infty} \beta^{T-t} [(1 - \beta) \hat{x}_{T+1} - \sigma (\hat{\gamma}_T - \hat{\pi}_{T+1}) + \sigma r_T] \]

\[ = \psi_{\delta,t} + \psi_{R,t} \]

- Define long real rate

\[ \rho_t = \hat{E}_t \sum_{T=t}^{\infty} \beta^{T-t} (\hat{\gamma}_T - \hat{\pi}_{T+1}) \]
Figure 6: The figure shows the impulse response of the ricardian term $\Psi_{R,t}$ in the high debt economy (solid line) and in the zero debt economy (dashed line).
Figure 7: The figure shows the impulse response of the nonricardian term $\Psi_{\delta,t}$ in the high debt economy (solid line) and in the zero debt economy (dashed line).
Figure 8: The figure shows the impulse response of the expected long-term interest rate \( \rho_t \) in the high debt economy (solid line) and in the zero debt economy (dashed line).
Figure 9: The figure shows the impulse response of real debt in the high debt economy (solid line) and in the zero debt economy (dashed line).
Conclusion II and Final Remarks

- Model has the property that indebtedness constrains efficacy of policy
  - Raises questions about the likely magnitude of any multiplier

- Elegant paper
  - Clarifies mechanisms by which policy may be stimulatory under conventional assumptions
  - Question: are we in conventional times?