Fiscal policy in an unstable economy

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Overview

- Introduction
- Harrodian instability
- A fiscal policy rule
- Conclusions
INTRODUCTION
Academic literature

- First paradox: ‘Ricardian equivalence’
- Second paradox: empirical literature
  - Causation???

- Here:
  - Theoretical perspective
  - Functional finance vs arbitrary trajectories
Functional finance

“Functional Finance … prescribes: first, the adjustment of total spending (by everybody in the economy, including the government) in order to eliminate both unemployment and inflation …; second, the adjustment of public holdings of money and of government bonds … to achieve the rate of interest which results in the most desirable level of investment”

Lerner (1943)
Steady growth results

- OLG setting:
  - empirical relevance of ‘dynamic inefficiency’
  - dynamic inefficiency implies AD problems
- ‘Stock-flow consistent’ setting

- Robust across models:
  - Low growth causes high debt
  - High government consumption causes low debt
- Why?
  - With higher I or G full-employment consumption needs to get squeezed → higher taxes
Short-run stabilization?

- Automatic fiscal stabilizers
  - Are they sufficient?

- Taylor rule for fiscal policy?
  - Supercharged fiscal stabilizer
General setting

- Closed economy (not NYC 1975 or Greece today)
- Labor constrained economy
- Given real interest rate (monetary policy)
  - Fixed coefficient production function
HARRODIAN BENCHMARK
Basic equations

- **Investment**
  \[ \dot{g}_t = \lambda(u_t - u^*), \quad \lambda > 0 \]

- **Consumption**
  \[ \frac{C}{K} = c(u - \delta) \]

- **Equilibrium condition**
  \[ u = \frac{g}{s} + \delta \]
Harrodian problems

- Warranted vs natural growth

\[ g_w = su^* \geq n \]

- Unstable dynamics

\[ \dot{g}_t = \lambda \left( \frac{g_t}{s} + \delta - u^* \right) = \frac{\lambda}{s} (g_t - g^w) \]
Policy problem -- example

- Assume initially:
  \[ u < u^* \]
  \[ e < e^* \]
  \[ g_w < n \]

- What should be done?
Solution

- First, reduce $\tau$ to ensure $u > u^*$ and raise short run growth.

- Now $g$ is increasing; at some point $e$ will begin to increase.

- Raise taxes as $e$ gets closer to $e^*$.

- Note: to get ‘soft landing’ requires high tax rates and $u < u^*$ before hitting full employment.

- Note: long-run growth positively related to $\tau$. 
Fiscal policy rule?

- Short-run stabilization
  - Reduce taxes to stimulate demand and growth
  - $\tau$ must respond positively to $u$
- Ensuring full employment
  - $\tau$ must respond to $e$
- Reduce overshooting
  - Adjust taxes to deviations of $g$ from $n$
MODEL
Basic equations

- **Extended consumption function**

  \[
  \frac{c_t}{k_t} = c(1 - \tau_t)(u_t - \delta + rb_t) + c_v(1 + b_t), \quad 0 < c < 1, \ c_v > 0
  \]

- **Government consumption**

  \[
  \frac{g_t}{k_t} = \gamma_t
  \]

- **Equilibrium**

  \[
  u_t = \mu_t[g_t + \gamma_t + c_v(1 + b_t)] + (\mu_t - 1)rb_t + \delta
  \]

  \[
  \mu_t = 1/[1 - c(1 - \tau_t)]
  \]
Dynamics

- **Investment dynamics**

  \[
  \dot{g}_t = \frac{\lambda}{1 - c(1 - \tau_t)} [g_t - g^w(\gamma_t, \tau_t, b_t)]
  \]

  where

  \[
  g^w(\gamma_t, \tau_t, b_t) = [1 - c(1 - \tau_t)](u^* - \delta) - \gamma_t - [c(1 - \tau_t)r + c_v]b_t - c_v
  \]

- **Employment dynamics**

  \[
  e = uk \quad \text{where} \quad k = K/L
  \]

  \[
  \hat{k} = g - n
  \]
Debt dynamics

\[ \dot{B}_t = rB_t + G_t - \tau(Y_t - \delta K_t + RB_t) \]

and

\[ \dot{b}_t = (r - g_t)b_t + \gamma_t - \tau_t(u_t - \delta + rb_t) \]
\[ = (r - g_t)b_t + \gamma_t - \tau_t \mu_t[g_t + \gamma_t + c_v(1 + b_t) + rb_t] \]
Keynesian policy rule

- Tax dynamics

\[ \dot{\tau}_t = \phi_e (e_t - \bar{e}) + \phi_u (u_t - u^*) + \phi_g (g_t - n) \quad \text{with} \quad \gamma_t = \gamma \]

- 4D system
- Stability if sufficiently strong adjustment
- All three terms needed
• $\phi_u = 1$ (blue)
• $\phi_u = 1.2$ (red)
• $\phi_u = 1.6$ (light green)

• $\phi_e = 0.4$, $\phi_g = 0.8$

• Other values: $c=0.625$, $c_v=0.045$, $u^d=0.45$, $\gamma=0.12$, $r=0.04$, $n=0.03$, $e^*=0.95$, $\delta=0.1$, $\lambda=0.25$
Austerity rule

- Tax dynamics

\[ \dot{\tau}_t = -\phi_b \left( \beta - \frac{b_t}{u} \right) \]

- Implications:
  - Instability is reinforced
CONCLUSIONS AND EXTENSIONS
Conclusions

- Need for policy
  - Automatic stabilizers dampen effects of shocks but fail to remove Harrodian instability

- ‘Keynesian policy rule’ is stabilizing

- ‘Austerity policy rule’ is de-stabilizing
Extensions

- Monetary stabilization
  - Interaction of fiscal policy and ‘Taylor rule’
  - Financial assets
- Other stabilizing mechanisms
  - ‘reserve army effects’
- Fiscal rules in ‘full’ cycle model
- Empirics on ‘implicit fiscal policy rules’
THANKS!