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

$$g_w = su^* \gtrless n$$

- 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 τ 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 τ.

Fiscal policy rule?

- Short-run stabilization
  - Reduce taxes to stimulate demand and growth
  - τ must respond positively to u
- Ensuring full employment
  - τ 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

$$\begin{aligned}\dot{b}_t &= (r - g_t)b_t + \gamma_t - \tau_t(u_t - \delta + rb_t) \\ &= (r - g_t)b_t + \gamma_t - \tau_t \mu_t [g_t + \gamma_t + c_v(1 + b_t) + rb_t]\end{aligned}$$

Keynesian policy rule

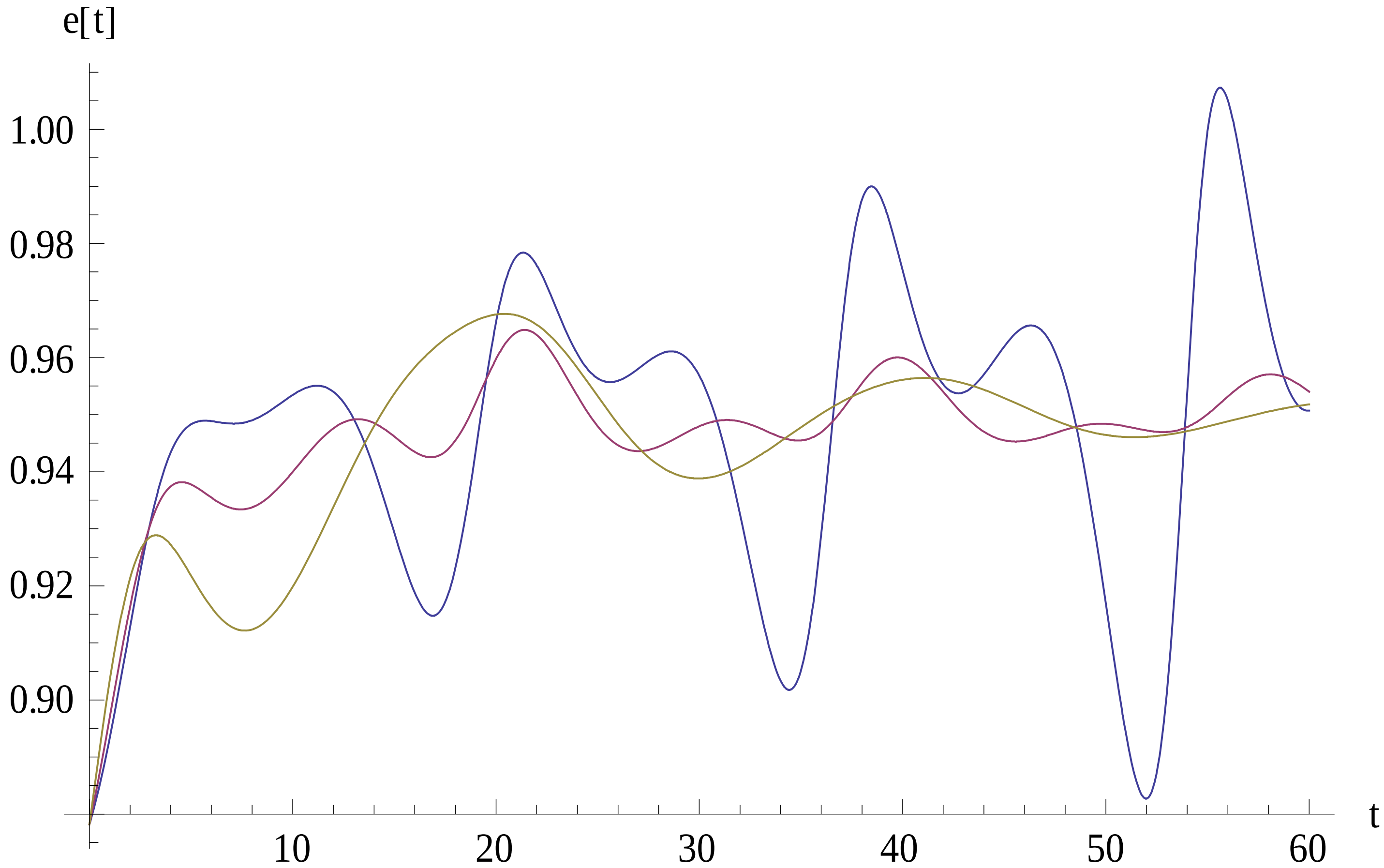
- Tax dynamics

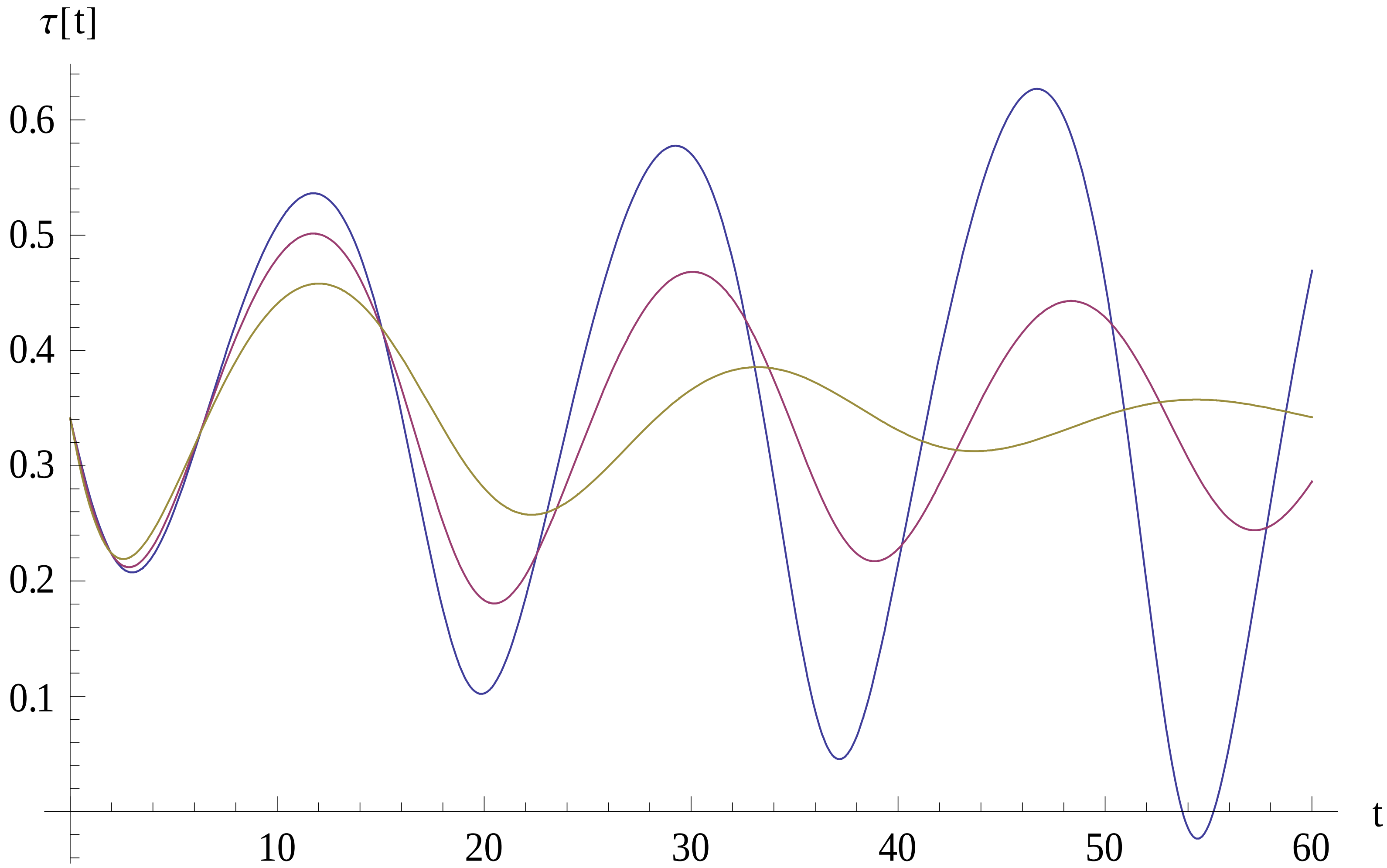
$$\dot{\tau}_t = \phi_e(e_t - \bar{e}) + \phi_u(u_t - u^*) + \phi_g(g_t - n) \quad \text{with } \gamma_t = \gamma$$

- 4D system
- Stability if sufficiently strong adjustment
- All three terms needed

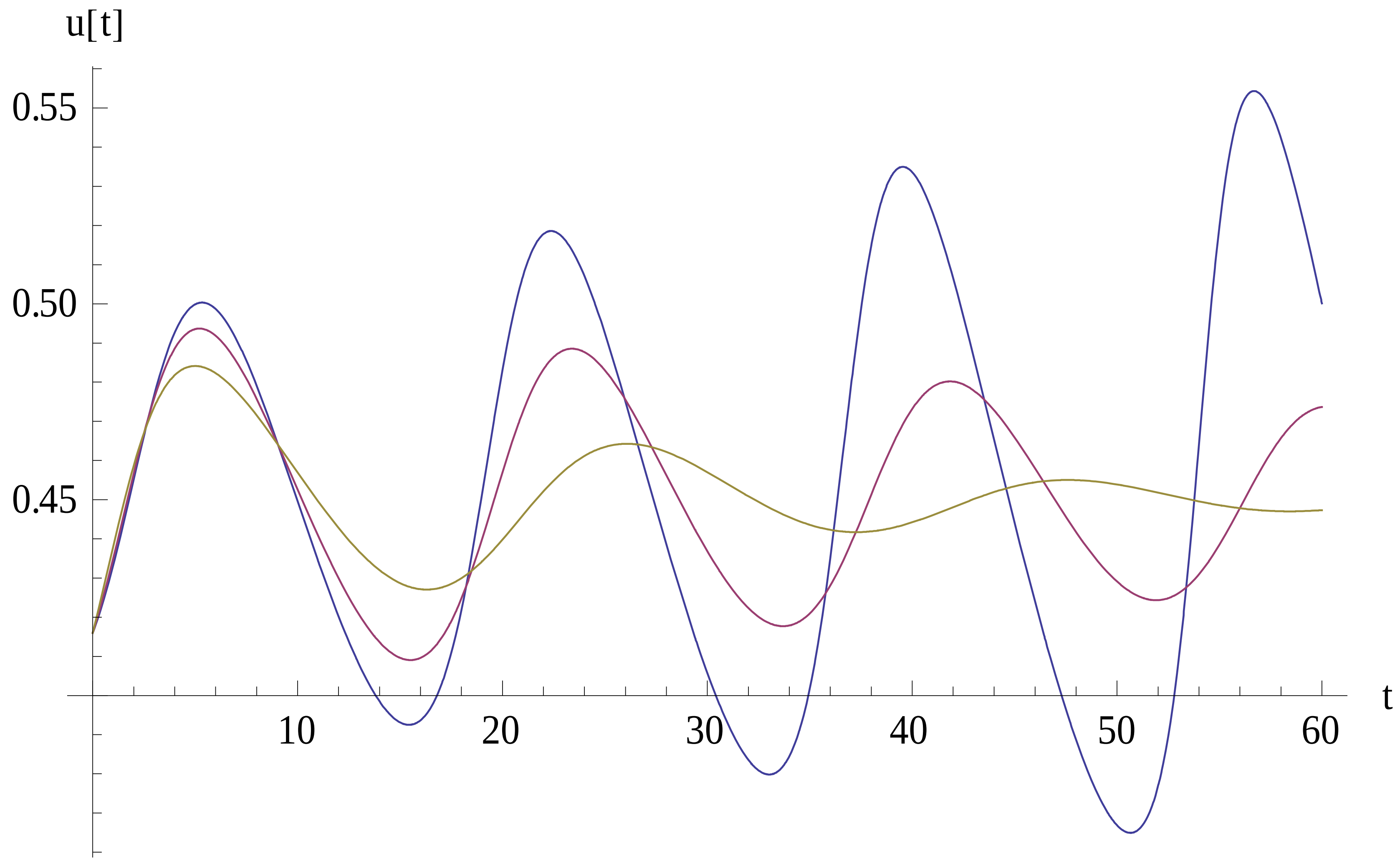
- $\phi_u = 1$ (blue)
- $\phi_u = 1.2$ (red)
- $\phi_u = 1.6$ (light green)

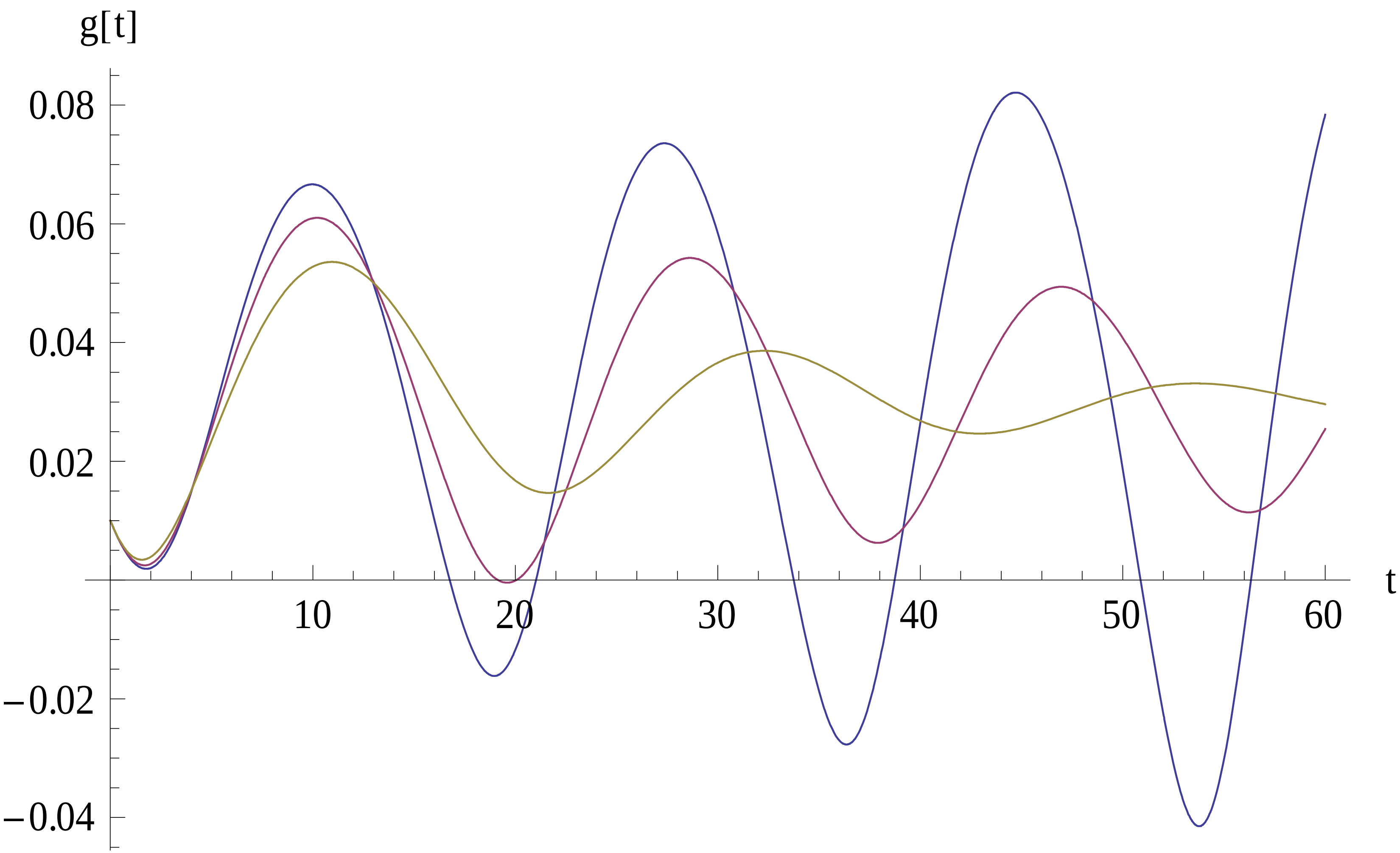
- $\phi_e = 0.4$, $\phi_g = 0.8$
- Other values: $c=0.625$ $c_v=0.045$, $u^d=0.45$, $\Upsilon=0.12$, $r=0.04$, $n=0.03$, $e^*=0.95$, $\delta=0.1$, $\lambda=0.25$


e[t]
1.00
0.98
0.96
0.94
0.92
0.90
10
20
30
40
50
60
t

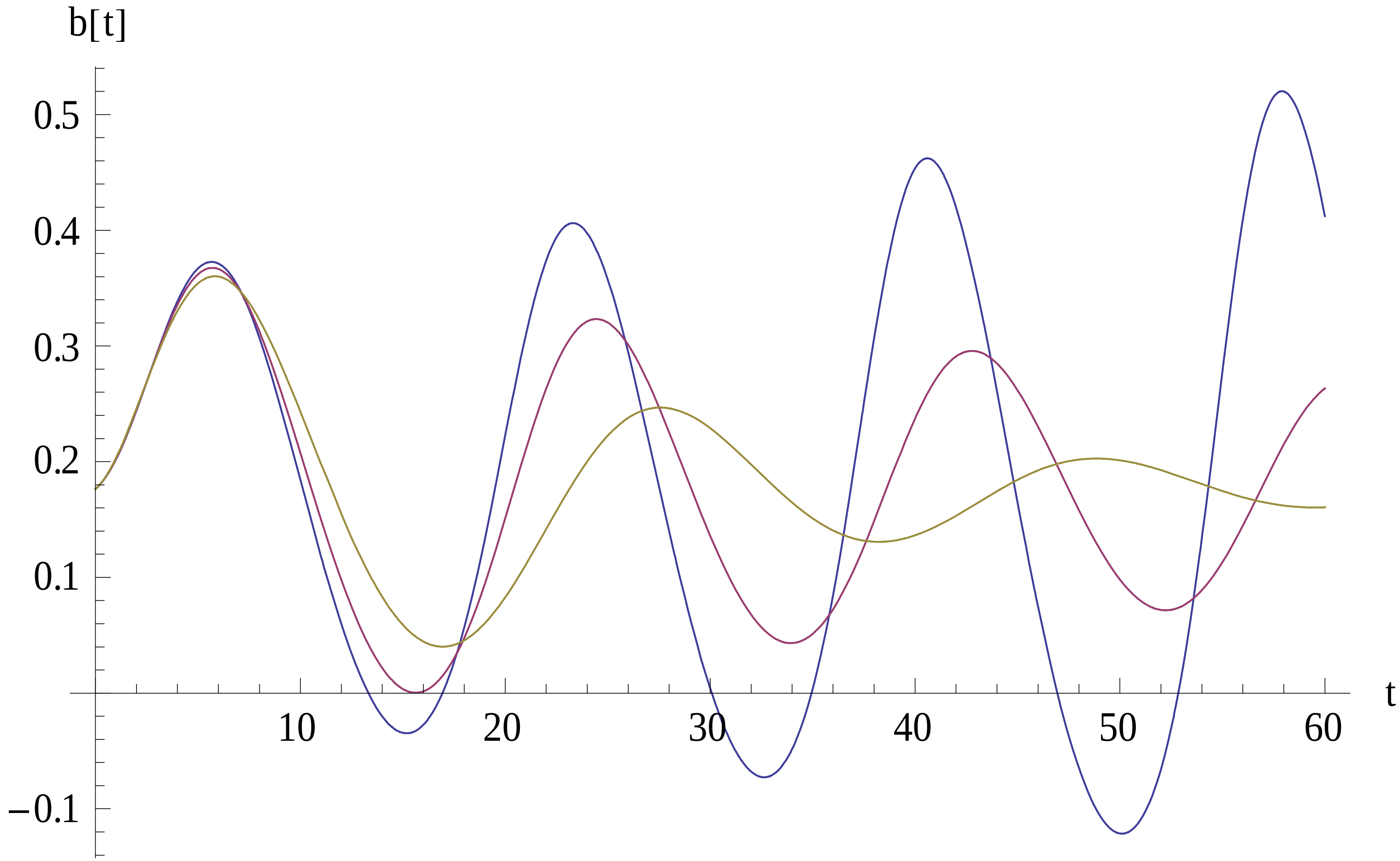


τ[t]
0.6
0.5
0.4
0.3
0.2
0.1
10
20
30
40
50
60
t


u[t]
0.55
0.50
0.45
10
20
30
40
50
60
t



g[t]
0.08
0.06
0.04
0.02
−0.02
−0.04
10
20
30
40
50
60
t


b[t]
0.5
0.4
0.3
0.2
0.1
−0.1
10
20
30
40
50
60
t

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!