Model Framework for Issues in

Evaluation of Different types of Fiscal Consolidations

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Purpose of the Model

- Both trend (flexible-price) and cyclical (sticky-price) analysis of FP effects

- Effect of a given fiscal programme onto
  - long-run properties of economic development
  - cyclical properties of economic development

Presented

- Basic model framework -- perpetual-youth OLG, Yaari (1965) and Blanchard (1985)
- Small open economy
- One good, no money

Distinct Properties of the Model

- Strong non-ricardian devices
  - overlapping generations
  - age-earnings profiles

- Active rules in both FP and MP
  (fiscal determination of price level ruled out)

Agents and Markets

- Domestic agents: households, producers, fiscal authority, monetary authority
- Foreign counterparts when needed

- International markets: real goods (consumption, physical capital), riskless bonds, labor

Households (Individual Behavior)

- Constant probability of death, p
- Life expectance $1/p$
- Size of each generation born at s

$$p(1-p)^{t-s}$$

- Competitive life insurance market -- redistribution of wealth

Households (Individual Behavior)

- Consume goods, supply labor (inelastically), hold bonds, own firms
- Maximize expected utility from consumption

$$\max_{c} \sum_{j=0}^{\infty} \left(\frac{1-p}{1+\beta} \right)^{j} u\left(c_{t+j}\right)$$

$$u(c_t) = \frac{c_t^{1-\sigma} \left(\frac{c_t}{z_t} \right)^{-\varphi}}{1-\sigma-\varphi} + \frac{(1+l_t)}{A^{\sigma}}$$

Households (Individual Behavior)

- Constraint

$$b_t = b_{t-1}\frac{(1+i_{t-1})}{1+\alpha} + w_t l_t (1-\tau_w) + \pi_t + d_t - c_t P_t$$

$$c = H_H^{\omega} F_H^{1-\omega} \qquad P_F = \bar{p}_F (1+\tau_c)$$

$$F = F_H + F_G \qquad P = P_D^{a\omega} P_F^{a(1-\omega)}$$

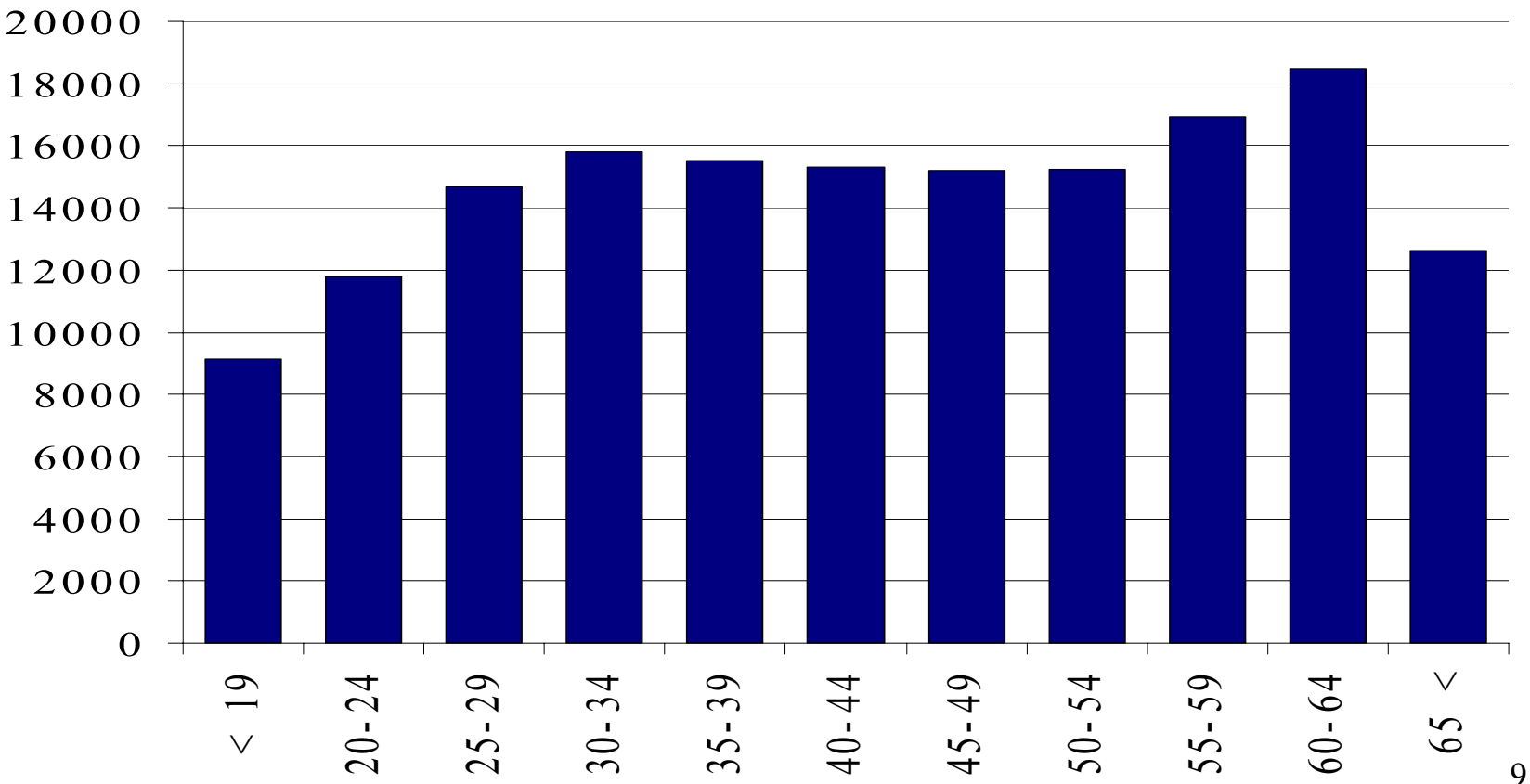
$$P_D = \bar{p}_D (1+\tau_c) \qquad a = H_G \big/ F_G$$

- Age-earnings profile

$$w_{s,t} = W\left[a_1(1-z_1)^{t-s} - a_2(1-z_2)^{t-s}\right]$$

Households (Individual Behavior)

- Age-earnings profile



Households (Aggregate Behavior)

- Difference between individual and aggregate rate of wealth accumulation

$$\frac{1+r}{1-p} \text{ versus } 1+r$$

- Strengthened by non-flat age-earnings profile

Firms (Individual Behavior)

- Own physical capital, make investment (financed by issuing debt), hire labor, produce/sell goods
- Installation cost of capital
- Maximize present value of net cash flows

$$\max \sum_{t=1}^{\infty} \frac{1}{1+r_t} \left\{ \left[Y_t \frac{P_t}{(1+\tau_c)} - w_t l_t - P_t m_t \right] (1+\tau_z) - I\overline{p}_I \right\}$$

$$Y = H + H^*$$

$$Y = H \frac{P_D}{(1+\tau_c)} + H^* \overline{p}_D$$

$$H = H_H + H_G$$

$$K_t = K_{t-1}(1-\delta) + I_t$$

$$Y_t = F(K_{t-1}, L_t, M_t)$$

Fiscal Authority

- Consumes goods, levies taxes, issues or holds bonds
- Utility from private consumption not affected by level of public consumption
- Fiscal policy rule in terms of direct (income) taxes

Fiscal Authority

$$\tau_w^t = \tau_w^{t-1} + k_1\left(\frac{B_t^G}{Y_t} - t\arg et\right)$$

$$\tau_c^t = \tau_c^{t-1} + k_2\left(\frac{B_t^G}{Y_t} - t\arg et\right)$$

$$\tau_z^t = \tau_z^{t-1} + k_3\left(\frac{B_t^G}{Y_t} - t\arg et\right)$$

$$TR = wl\tau_w + H\bar{p}\tau_c + F\bar{p}\tau_c + \Pi\tau_z$$

$$TE = D + G$$

$$B^G = B_{-1}^G + (TR - TE)$$

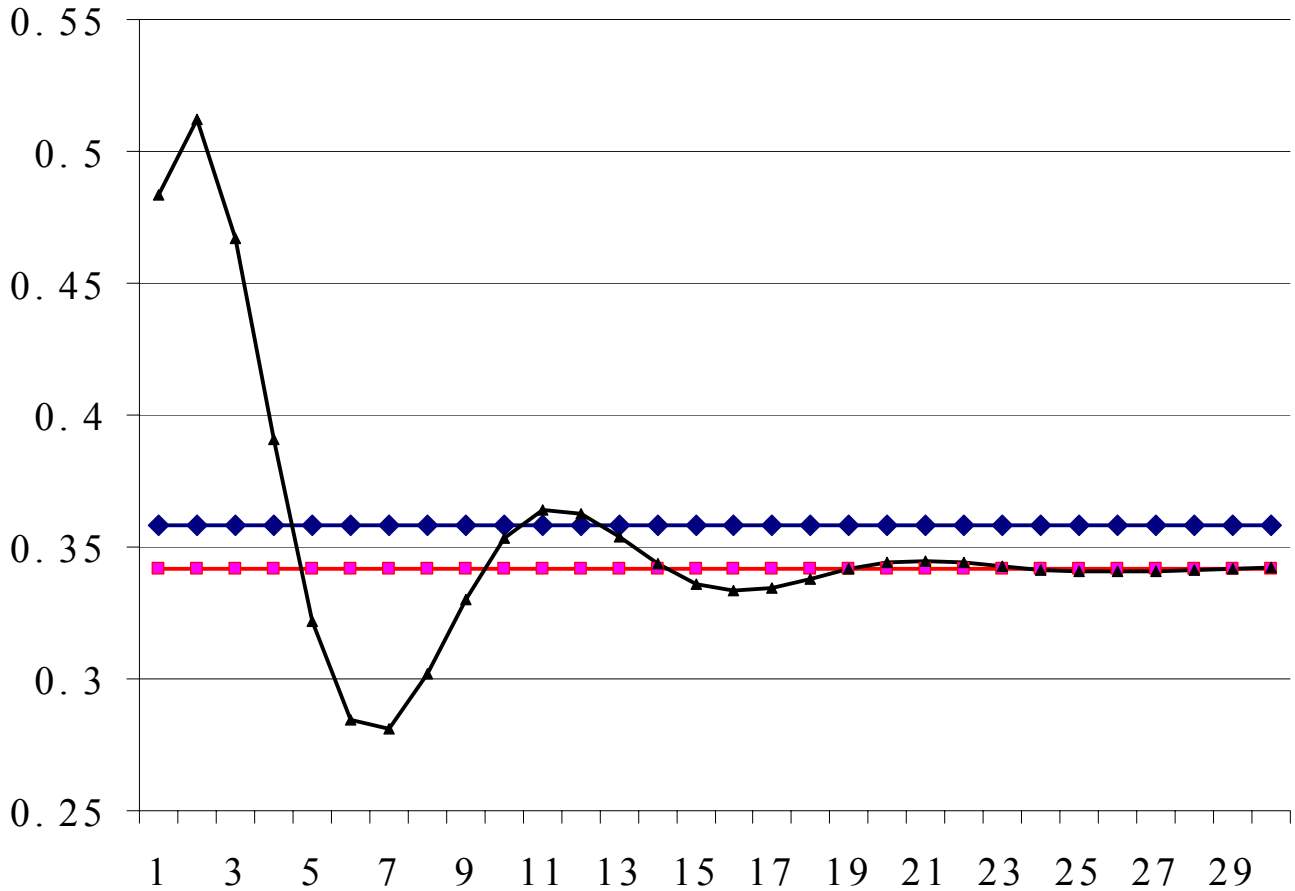
Economy constraint

$$(B_t^G + B_t^H) = (B_{t-1}^G + B_{t-1}^H)(1 + i_{t-1}) + \overline{p}_{D,t} H^* - \overline{p}_{F,t} F - \overline{p}_I I$$

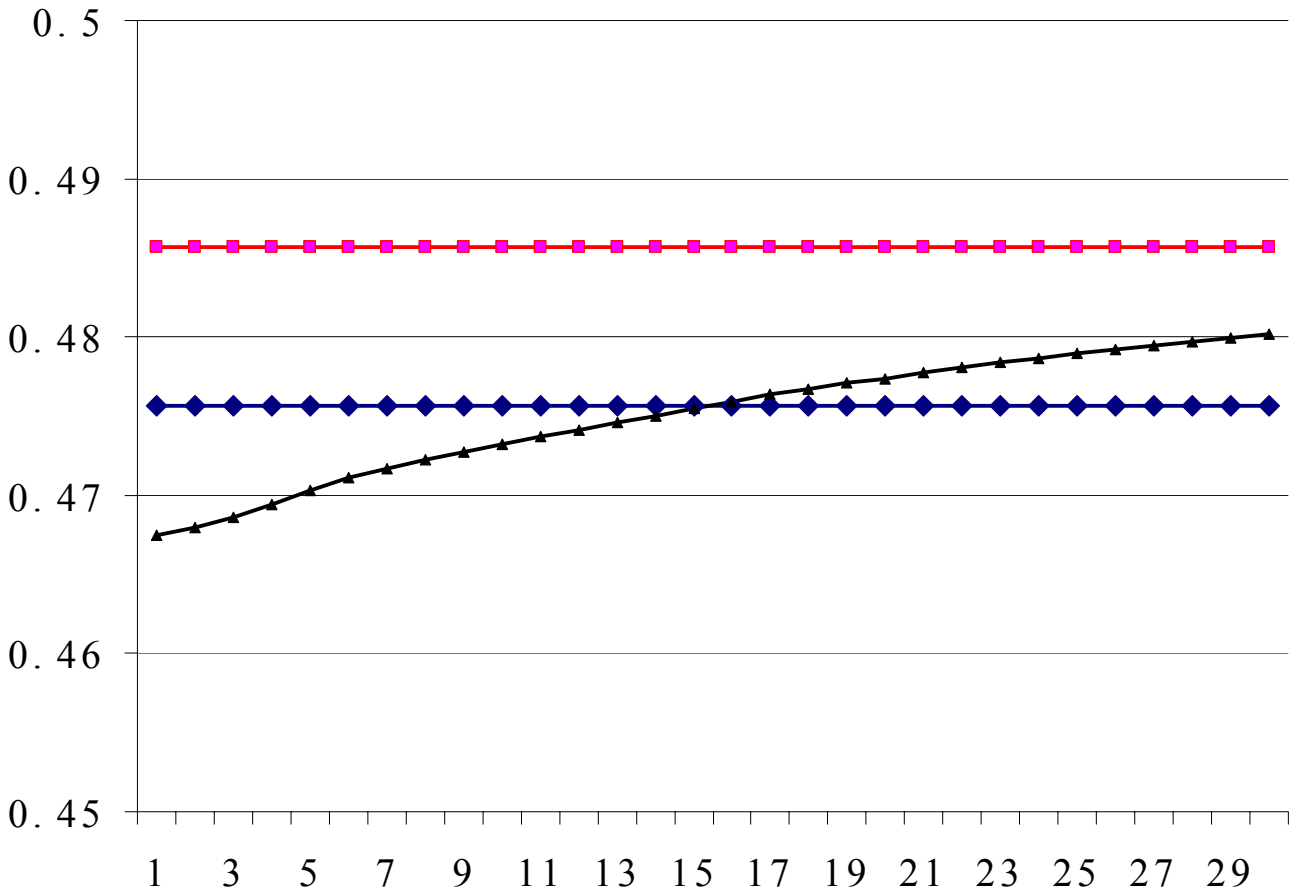
Simple Simulation

- Fiscal consolidation
- Bringing public debt down (30 % of GDP to 10 % of GDP)
- Public consumption unchanged (20 % of GDP)

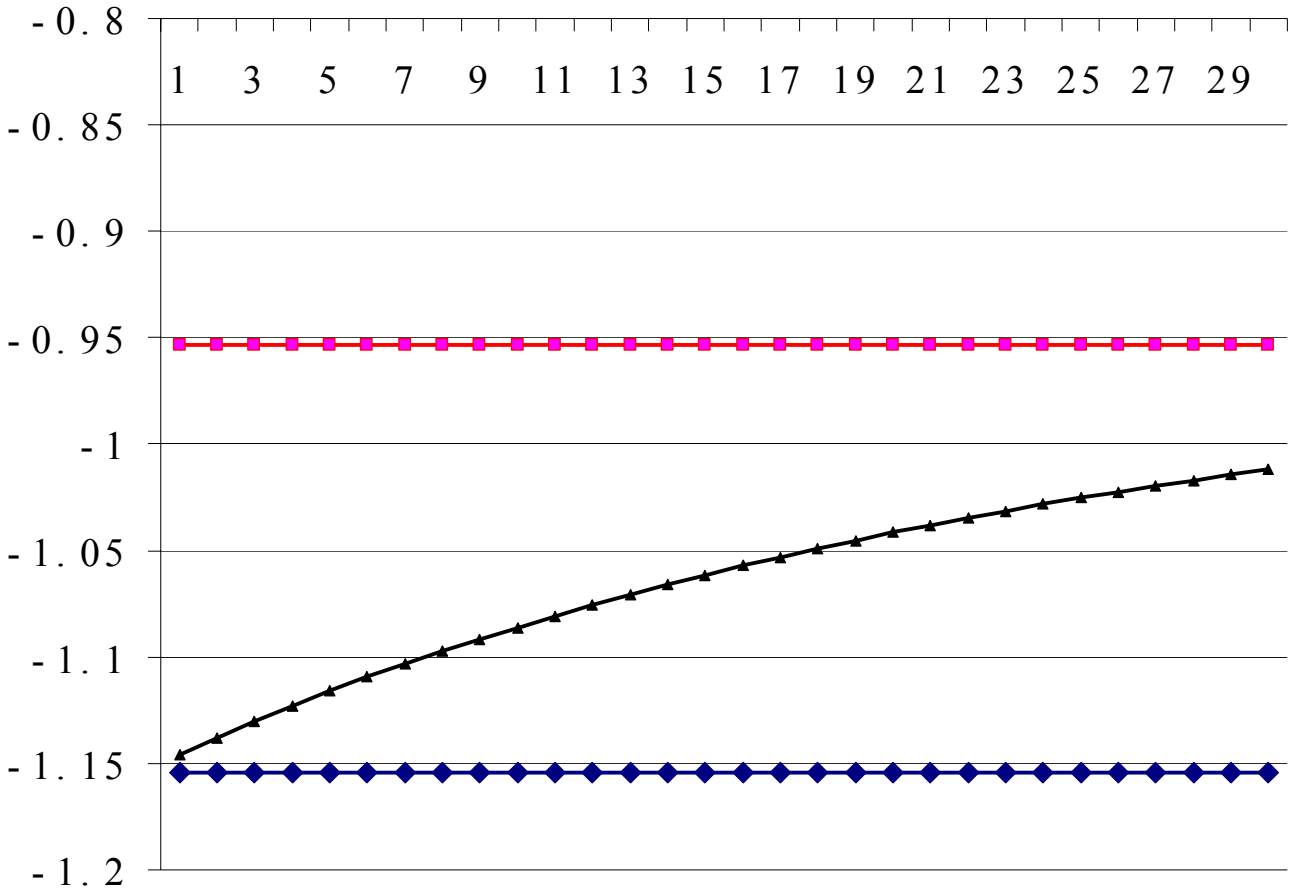
Income Tax Rate



Consumption-to-GDP Ratio



Foreign Debt-to-GDP Ratio



Public Debt-to-GDP Ratio