Fiscal Multipliers

Livio Maya [†]

[†]Insper

Course Content

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Fiscal Multiplier in Equilibrium (Woodford (2011))

- Period utility $u(c) = v(1-n)$
- Production function $f(n)$, no physical capital

$$v'(1-n) = wu'(c)$$
$$f'(n) = w$$

- In equilibrium $y = c + g$,

$$h'(y) = u'(y-g)$$

  for $h(y) = -v(1-f^{-1}(y))$ ("disutility" of leisure)
- Elasticities

$$\eta_u = -\frac{u''(c)}{u'(c)} > 0 \qquad \eta_h = \frac{h''(c)}{h'(c)} > 0.$$

- Multiplier

$$\frac{\Delta y}{\Delta g} = \frac{\eta_u}{\eta_u + \eta_h} \in (0,1)$$

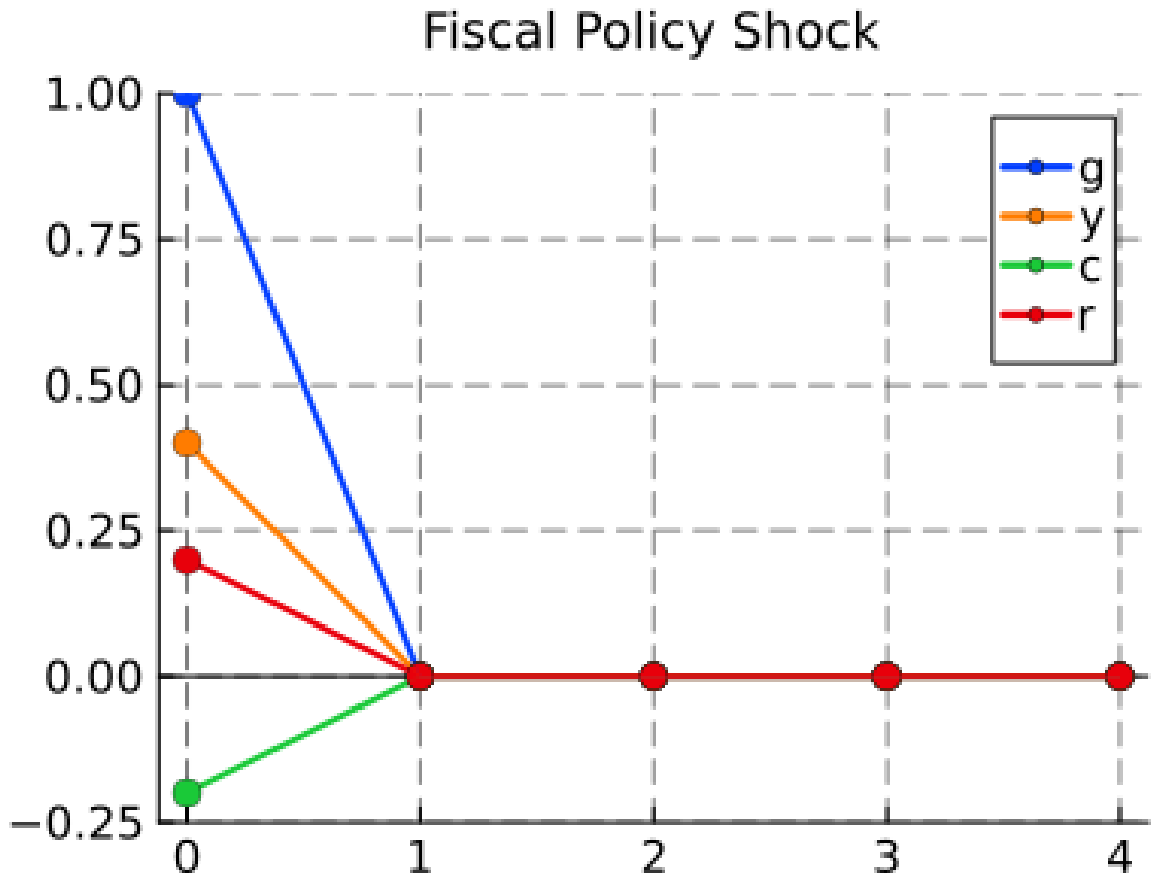
Frictionless Model

- Linearized Model, multiple periods
- Flexible prices

$$
\begin{aligned}
c_t &= E_t c_{t+1} - \gamma r_t \\
0 &= \psi^{-1} n_t + \gamma^{-1} c_t \\
y_t &= (1-\bar{g}) c_t + \bar{g} g_t \\
y_t &= n_t \\
g_t &= \rho g_{t-1} + \epsilon_t
\end{aligned}
$$

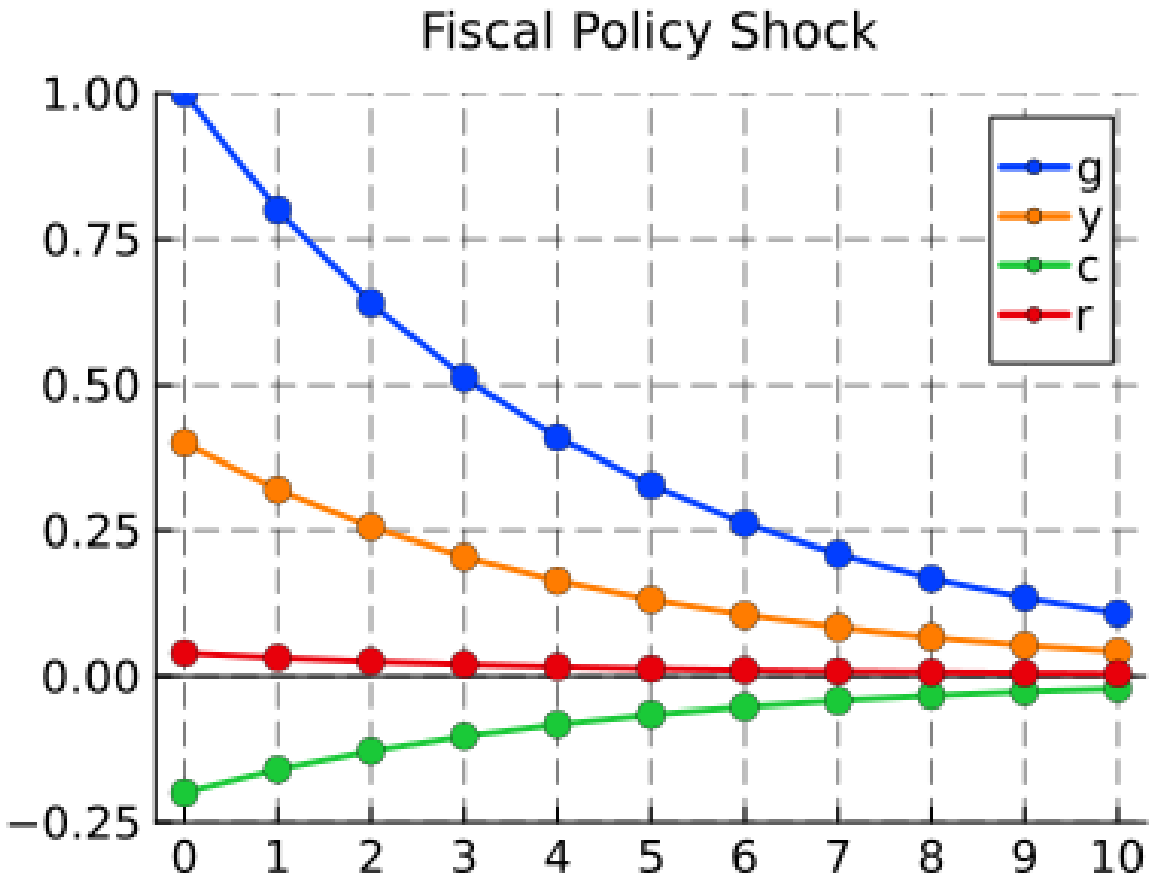
- Fiscal Multiplier $= \frac{\Delta E_t Y_t}{\Delta E_t G_t} = \frac{\Delta E_t y_t \times Y}{\Delta E_t g_t \times G} \approx \frac{\Delta E_t y_t}{\Delta E_t g_t} / \bar{g}$

Frictionless Model



Fiscal Multiplier = 0.8

Frictionless Model



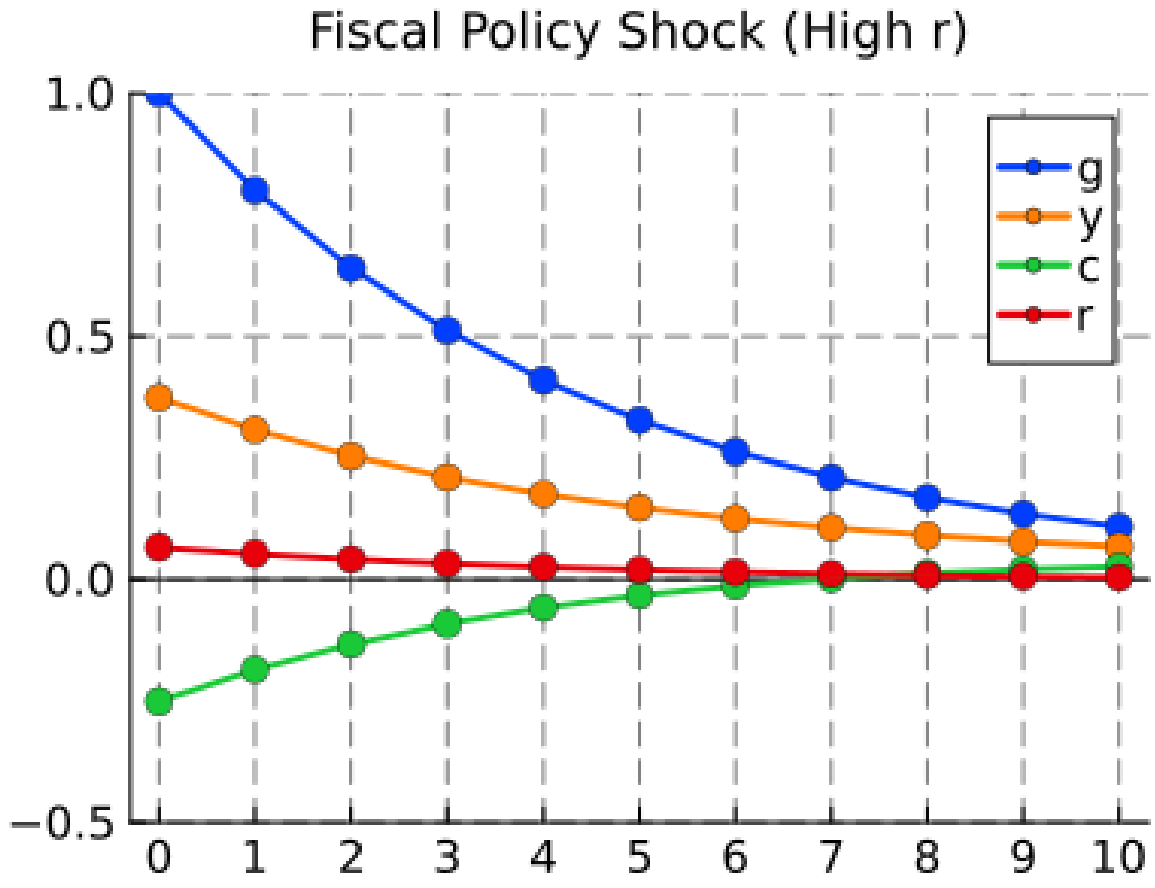
Fiscal Multiplier = 0.8

Price Rigidity

- Monetary policy affects real interest!

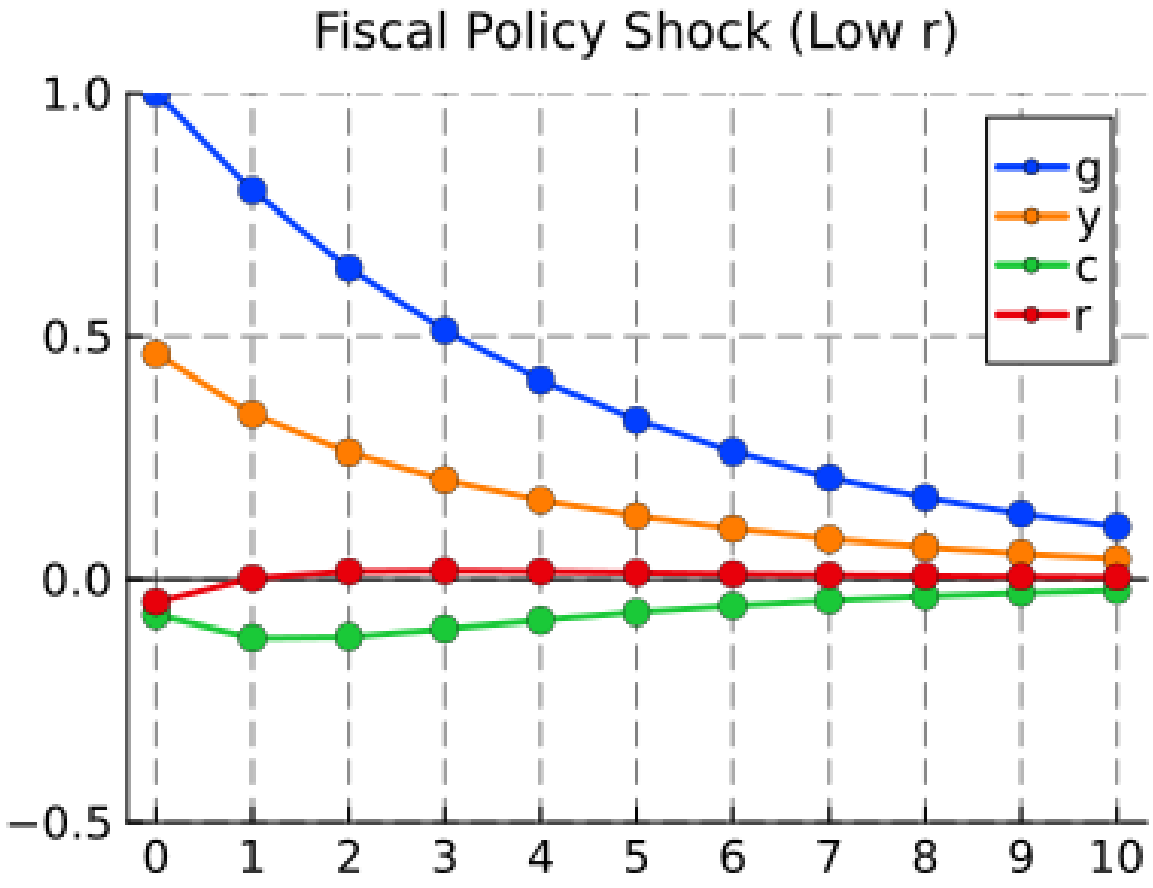
$$
\begin{aligned}
c_t &= E_t c_{t+1} - \gamma(i_t - E_t \pi_{t+1}) \\
w_t &= \psi^{-1} n_t + \gamma^{-1} c_t \\
\pi_t &= \beta E_t \pi_{t+1} + \kappa w_t \\
y_t &= (1 - \bar{g}) c_t + \bar{g} g_t \\
y_t &= n_t \\
g_t &= \rho g_{t-1} + \epsilon_t \\
i_t &= \phi \pi_t
\end{aligned}
$$

Price Rigidity



Fiscal Multipliers: 0.748 (high *r*) and 0.926 (low *r*)

Price Rigidity



Fiscal Multipliers: 0.748 (high *r*) and 0.926 (low *r*)

References I

Woodford, M. (2011). Simple Analytics of the Government Expenditure Multiplier. *American Economic Journal: Macroeconomics*, 3(1):1–35.