Fisher without Euler—Summary

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Consider a frictionless economy in which the government issues nominal one-period debt. Maturing government debt is the numeraire: the price of one unit of consumption at date t is p_t units of maturing government debt. The supply of nominal government debt maturing at date t is B_{t-1}. Households inelastically supply y_t units of consumption and consume c_t. They are automatons who simply spend a fraction $\alpha \in (0,1]$ of their after-tax income and a fraction $\beta \in (0,1)$ of their holdings of government securities. Their nominal consumption expenditures are

$$p_t c_t = \alpha(1-\tau)p_t y_t + \beta B_{t-1}.$$

The government purchases g_t units of the consumption good. The goods market has to clear,

$$y_t = c_t + g_t.$$

Eliminating c_t yields

$$p_t(y_t - g_t) = \alpha(1-\tau)p_t y_t + \beta B_{t-1}, \tag{1}$$

which then determines p_t. The maintained assumption is

$$y_t - g_t - \alpha(1-\tau)y_t > 0,$$

so that the government never tries to consume more than the maximum that households could leave on the table.

The very simple decision rule followed by households implies that p_t is a funtion only of real output at date t, and the supply of nominal debt issued at date $t-1$. Prices are high when the supply of maturing government debt is high, or when there is a negative supply shock. One could make α stochastic to generate high prices when consumers go on a consumption binge. In contrast to more standard versions of the fiscal theory of the price level, the price level does not look like a stock price.

The supply of nominal government securities evolves according to

$$q_t B_t = p_t(g_t - \tau y_t) + B_{t-1} \tag{2}$$

where $q_t \leq 1$ is the price of a one-period nominal discount bond. Think of nominal debt maturing at date t as a bearer security that automatically converts into maturing debt at $t+1$ if it is not redeemed at date t. This prevents the government from "paying" a negative nominal interest rate. The government sets $q_t \leq 1$ simply by offering debt maturing at date $t+1$ for debt maturing at t, at a non-negative discount. The initial supply of government debt is positive and government policy is assumed to be be such that it never tries to lend to the private sector (equation (2) in the paper.)

Combining (1) and (2) gives

$$\begin{aligned} p_t &= \frac{\beta B_{t-1}}{(1-\alpha)(1-\tau)y_t + \tau y_t - g_t} \\ \frac{q_t B_t}{B_{t-1}} &= \frac{(1-\alpha)(1-\tau)y_t + (1-\beta)(\tau y_t - g_t)}{(1-\alpha)(1-\tau)y_t + \tau y_t - g_t} \end{aligned}$$

Given stable or slowly-moving real quantities, this says that high nominal interest rates result in high inflation. For the US and most other economies, the main caveat is that one-period debt is not the only nominal government security.

The first paragraph of Sims's (2011) "stepping on a rake" paper highlights the neo-Fisherian implications of the fiscal theory of the price level for a frictionless economy with forward-looking agents. The simple model described here repeats his argument for an economy in which consumers follow very simple decision rules. Their only sophistication is that they divide B_{t-1} by p_t.