There are two periods, $t = 0$ and $t = 1$. At the end of period 1, the world ends. The economy is populated by two types of agents: households and a government.

There is a single consumption good, which households value. The following utility function captures the schedule of households' preferences among consumption pair (c_0, c_1), where c_0 represents consumption in period 0, and c_1 consumption in period 1:

$$u(c_0) + \beta u(c_1)$$

All transactions are carried out using consumption goods.

The government demands g_0 goods in the market in period 0, and g_1 in period 1. To finance itself, it charges *lump-sum* taxes (τ_0, τ_1) on households. It also issues bonds that promise the delivery of one unit of good in the following period. In period 0, the price of one bond is q_0 units of consumption good. In period 1, households have no incentive to save, and demand no bonds; hence, the equilibrium bond price is $q_1 = 0$.

The following equations represent the budget constraint faced by the government.

$$q_0 b_0 + \tau_0 - g_0 = b_{-1} \tag{1}$$

$$\tau_1 - g_1 = b_0 \tag{2}$$

$$\begin{aligned} \max_{c_0, c_1, b_0} \quad & u(c_0) + \beta u(c_1) \\ \text{s.t.} \quad & q_0 b_0 + c_0 = b_{-1} + y_0 - \tau_0 && (3) \\ & c_1 = b_0 + y_1 - \tau_1 && (4) \\ & b_0 \geq \underline{b} && (5) \end{aligned}$$

We assume income (y_0, y_1) and initial wealth b_{-1} are large enough so that the household can choose non-negative amounts of goods.

We assume that $b_{-1} + y_0 - \tau_0 \geq 0$

$y_0 > \tau_0$, so income high enough to pay taxes.
$b_{-1} \geq 0$
$\underline{b}$ is the borrowing limit.