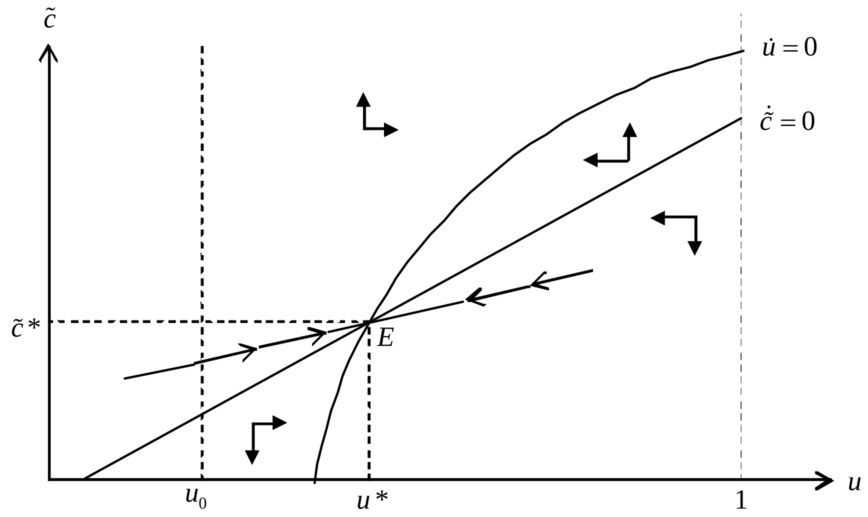

Figure 1:

Reordering gives

$$\frac{\pi^{(m)} + \dot{V}_t}{V_t} = r_t + \lambda,$$

which is the no-arbitrage condition (17).

B. Stability analysis

The Jacobian matrix, evaluated in steady state, is

$$\begin{aligned} J^* &= \begin{bmatrix} \partial \dot{u}/\partial u & \partial \dot{u}/\partial \tilde{c} \\ \partial \dot{\tilde{c}}/\partial u & \partial \dot{\tilde{c}}/\partial \tilde{c} \end{bmatrix}_{|(u,\tilde{c})=(u^*,\tilde{c}^*)} \\ &= \begin{bmatrix} -(\lambda + g_N + \eta B_2 u^*) & \eta L u^* \\ -\eta B_2 \tilde{c}^* & \eta L \tilde{c}^* \end{bmatrix}. \end{aligned}$$

The determinant of this matrix is

$$\det J^* = -(\lambda + g_N + \eta B_2 u^*)\eta L \tilde{c}^* + \eta L u^* \eta B_2 \tilde{c}^* = -(\lambda + g_N)\eta L \tilde{c}^* < 0.$$

Hence, the eigenvalues are of opposite sign and the steady state is a saddle-point. A possible configuration of the phase diagram is sketched in Fig. 1.

My conjecture is that given (A1) and (A2) it can be shown that the unique converging path is the unique solution to the model (saddle-point stability). I have not yet had time to check this formally, however.