Question

Dear Professor Pfeifer,

I have a question regarding the timing convention in Dynare. I have the following equations:

$$B_t = L_t + (1-m)(1-\gamma)\frac{B_{t-1}}{\pi_t} \tag{1}$$

$$L_t \leq \varphi_t \xi_t Q_t^h h_t^{I*} \tag{2}$$

$$h_t^I = h_t^{I*} + (1-m)h_{t-1}^I \tag{3}$$

$$\omega_t^* = \frac{B_{t-1}}{\pi_t Q_t^h h_{t-1}^I} \tag{4}$$

B_t is the long-term debt. Equation (1) says that the impatient household enters with $(1-m)(1-\gamma)B_{t-1}$ long term debt. In t, impatient household borrows L_t from the banks and at the end of the period, household's debt is B_t.

Equation (2) is loan-to-value constraint. φ_t is time varying LTV constraint, ξ_t is the exogenous shock, Q_t^h is the house price in t, h_t^{I*} is the new housing investment in t.

Equation (3) says that household enters in t with $(1-m)h_{t-1}^I$ housing stock, makes new housing purchases -h_t^{I*} and at the end of t, housing stock is h_t^I.

In the equation (4), ω_t^* is the default threshold, which is derived from solving impatient household's problem.

My question is how should I write this 4 equations in the Dynare to be consistent with the Dynare timing convention?

I wrote these 4 equations in the Dynare in the following way

$$B = L + (1-m)(1-\gamma)\frac{B(-1)}{\pi} \tag{5}$$

$$L \leq \varphi * \xi * Qh * hIstar \tag{6}$$

$$hI = hIstar + (1-m) * hI(-1) \tag{7}$$

$$omegastar = \frac{B(-1)}{\pi * Qh * hI(-1)} \tag{8}$$

Is this correct? The problem is that Dynare gives me an error. I could not solve this problem

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There are 21 eigenvalue(s) larger than 1 in modulus
for 20 forward-looking variable(s)

The rank condition ISN'T verified!

MODEL_DIAGNOSTICS:  No obvious problems with this mod-file were detected.
Error using print_info (line 42)
Blanchard Kahn conditions are not satisfied: no stable equilibrium
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Figure 1

Thank you very much for your help.