

C3A Code test

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Question 1)

The equilibrium values of the endogenous variables can be seen in Table 1 below.

Table 1: Equilibrium values of endogenous variables

| Yt | Lt | YDt | Mt | WBt | Pt | Nt | Ct | Kt | KTt | It |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|
| 400 | 400 | 360 | 400 | 400 | -56 | 400 | 360 | 400 | 400 | 40 |

Question 2)

The new equilibrium values can be seen below in Table 2. Overall the model needs 22 periods after the shock ($t = 10$) to stabilize. Consequently the model is fully stable again at period $t = 33$

Table 2: Equilibrium values of shocked endogenous variables

| Yt | Lt | YDt | Mt | WBt | Pt | Nt | Ct | Kt | KTt | It |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|
| 480 | 480 | 432 | 480 | 480 | -67 | 480 | 432 | 480 | 480 | 48 |

Question 3)

The model has no analytical solution when the parameters and initial values are unknown. In this case, there are more unknowns than there are equations, which means that the system of equations is underdetermined and has no solution (or, in some cases, infinite solutions) and is inconsistent. When the parameters and initial values are known, the model can be easily solved analytically by hand.

Question 4)

I was not able to rewrite the model in continuous time. I would greatly appreciate it if you could point me to some resources so I can learn how to do that.