1. The Overlapping Generations Model

The model is set up as follow:

- 2 period lives
- 1 commodity per period, $\ell = 1$
- Stationary environment
- 1 person per generation

The utility functions are given as:

$$u_0(x^1) = \beta \log x^1$$
$$u_t(x_t, x_{t+1}^t) = \alpha \log x_t^t + \beta \log x_{t+1}^{t+1} \text{ for } t = 1, 2, \ldots$$

The endowments are 1 unit for each period each person is alive:

$$\omega^1_0 = \omega^t_t = \omega^1_t = 1 \text{ for } t = 1, 2, \ldots$$

Define the excess demands:

$$z^t = x^t_t - \omega^t_t$$
$$z^{t+1} = \omega^{t+1}_t - x^{t+1}_t$$

Case 1: $\alpha = 1, \beta = 10, m_0^1 = 1, m_s^t = 0$ otherwise

Case 2: $\alpha = 5, \beta = 1, m_0^1 = 1, m_s^t = 0$ otherwise

For both of the above cases, solve for the following:

a) The equilibrium demand $(x^t_t, x^{t+1}_t)$
b) The offer curve (OC)
c) The steady states
d) The set of equilibrium money prices, $P^m$
e) The full dynamic analysis, including the stability of steady states