

HOMework 4

Econ 501: Macroeconomic Analysis and Policy

Spring 2016

1. Suppose that we have an economy in which agents maximize preferences given by

$$\text{Max} E_0 \sum_{t=0}^{\infty} \beta^t \{ \ln C_t + \theta \ln(1 - L_t) \}$$

The firm has the Cobb-Douglas production function, $Y_t = Z_t K_t^\alpha L_t^{1-\alpha}$, where $Z_t = e^{z_t}$ and $z_t = \rho z_{t-1} + \varepsilon_t, \varepsilon_t \sim N(0, \sigma^2)$. $0 < \beta < 1, 0 < \alpha < 1, 0 < \delta < 1, \rho \in [0, 1)$ K_0 is given.

- Define the First order conditions for C_t, L_t and K_{t+1} .
- Derive the equilibrium conditions (hint: you should get 7 equations, 7 endogenous variables and 1 exogenous variable).
- Compute the non-stochastic steady state. The non-stochastic steady state of this economy is the steady state that would be reached if z_t were zero for all t .