

One Sector Growth Model

Consider a deterministic infinite horizon problem that a social planner seeks to maximize:

$$\sum_{t=0}^{\infty} \beta^t \frac{(c_t^\mu (1 - l_t)^{1-\mu})^{1-\sigma}}{1 - \sigma}$$

subject to:

$$c_t + k_{t+1} - (1 - \delta)k_t = k_t^\theta l_t^{1-\theta}$$

where $c_t \equiv$ consumption at time t , $k_t \equiv$ capital stock at time t , and $l_t \equiv$ labor supplied at time t .

Use value function iteration methods to compute the value and policy functions and plot them. Assume the following parameter values:

- **Preferences:** $\mu = 0.34$, $\sigma = 2$, $\beta = 0.99$
- **Technology:** $\theta = 0.36$, $\delta = 0.025$