

Homework #3  
Economics 411  
Due Wednesday, January 26  
Christiano

1. Consider the neoclassical growth model studied in class, with  $\beta = 1/1.03$ ,  $\alpha = 1/3$ ,  $\delta = 0.10$ ,  $\gamma = 1$ , where preferences are given by:

$$\sum_{t=0}^{\infty} \beta^t u(c_t), \quad u(c) = \frac{c^{1-\gamma}}{1-\gamma},$$

and the aggregate resource constraint is given by:

$$c_t + k_{t+1} - (1 - \delta)k_t \leq k_t^\alpha.$$

What is the steady state value of  $k$ ? How long does it take to close 95 percent of a gap between an initial value of the capital stock,  $k_0$ , and the steady state value?

Consider the Solow model. This assumes that people save and invest a fixed fraction,  $s$ , of gross output,  $k^\alpha$  :

$$k_{t+1} - (1 - \delta)k_t = sk_t^\alpha$$

What value of  $s$  is required in order for the steady states of the neoclassical and Solow models to coincide? How much time does it take for 95 percent of the gap between  $k_0$  and steady state capital to be closed in the Solow model?

2. Consider the handout on the course website, ‘Recursive Methods and Participation Constraints’. Do questions 1-3 at the end.