

ECON 899A - Problem Set 4

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Exercise 1

1. Use the parameterization from the previous problem set. We continue to assume that labor supply is endogenous. Solve for the stationary equilibrium with social security ($\theta_0^{SS} = 0.11$) and without it ($\theta^S S_N = 0$) following the algorithm described in the lecture notes (*Step 1: Calculating the stationary competitive equilibrium*). Denote the initial distribution of agents over age, j , asset holdings, a , and productivity levels, z , by $\Gamma_0^{SS}(z, a, j; \theta_0^{SS})$. Denote the welfare of agents alive in the initial steady state by $V_0^{SS}(z, a, j; \theta_0^{SS})$.

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2. Compute the transition path of the economy using the algorithm in *Step 2: Solving for the transition path* in the lecture notes. Try $N = 30$ for the number of periods it approximately takes to get to the new steady state. Obtain and store the value function for the generations in the initial steady state, $V_0(z, a, j; \theta_0^{SS}, \theta_N^{SS})$. Plot the transition paths of interest rate, wage, capital, and effective labor. Comment on the results you obtain.

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3. What fraction of the overall population would support the reform? Compute and plot the measure of consumption equivalent variation for each age, EV_j , using

$$EV_j = \sum_z \int_a EV(z, a, j) \Gamma_0^{SS}(z, a, j; \theta_0^{SS}) da$$

with

$$EV(z, a, j) = \left(\frac{V_0(z, a, j; \theta_0^{SS}, \theta_N^{SS})}{V_0(z, a, j; \theta_0^{SS})} \right)^{\frac{1}{\gamma(1-\sigma)}}$$

Discuss the results.

Exercise 2

1. Instead of considering an unexpected elimination of the social security system, assume that in $t = 0$ the government credibly announces that it is going to abolish the public pension system starting from $t = 21$ onwards. Thus, all individuals retired keep their social security benefits, but future retirees anticipate that they will receive only part or no social security benefits. Repeat steps (1)-(3) of exercise 1 to study how agents readjust their plans and how political support changes for the anticipated reform

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in 21 years. You will have to increase the number of transition periods (try $N = 50$). Discuss your results.