

Directions: Answer the questions below using the social planner's problem (mathematically equivalent to a one-period general equilibrium model with no frictions or distorting taxes).

1. Suppose an improvement in artificial intelligence technology can be productively employed by workers, leading to higher average worker productivity. Describe and illustrate the equilibrium effects in the one-period socially optimal general equilibrium model. Describe and illustrate the impact on consumption, real GDP, leisure, employment, and consumer welfare (i.e. utility).

2. Suppose deterioration of capital stock makes labor and capital less productive. Describe and illustrate the equilibrium effects in the one-period socially optimal general equilibrium model. Describe and illustrate the impact on consumption, real GDP, leisure, employment, and consumer welfare (i.e. utility).

3. Suppose the government increases its expenditure on public goods. Describe and illustrate the equilibrium effects in the one-period socially optimal general equilibrium model. Describe and illustrate the impact on consumption, real GDP, leisure, employment, and consumer welfare (i.e. utility).

4. Consider the analysis in problem #3 to the benefits of providing public goods, the costs of providing public goods, or both. Comment on whether you think a cut to public goods expenditure is good or bad policy. Use the model outcomes and shortcomings of the model to describe your answer.