

Practice Exam 1

1. Suppose there is an increase in the wage rate. Answer the following questions from the point of view of a consumer that chooses consumption and leisure to maximize utility.

(a) (15 points) Describe and illustrate the income and substitution effects for consumers' optimal choices for consumption and leisure. Include in your answer the economic intuition for the income and substitution effects.

(b) (5 points) Describe whether labor supply curves should be upward sloping or downward sloping, as a function of wage. How does this depend on income and substitution effects.

2. Suppose the government collects a sales tax $\tau \in (0, 1)$ for each unit of consumption good purchases.
- (a) (5 points) Write down an equation for the consumers' budget line that includes this sales tax. Graph the budget line and report the slope.
- (b) (10 points) Illustrate the utility maximizing choice for consumption and leisure. Given consumers' optimal choices, will the equilibrium result be socially optimal? Why or why not?
- (c) (10 points) Suppose the government increases the sales tax rate. Describe and illustrate the impact on utility maximizing choices for consumption and leisure. If substitution and income effects are work in opposite directions, assume that substitution effects dominate.

3. Suppose the government collects a proportional tax on business revenue at rate $\tau \in (0, 1)$ on each dollar of revenue. Answer the following questions from the point of view of a producer that chooses labor demand to maximize profits.

(a) (5 points) Write down an equation for producers after-tax profits.

(b) (10 points) Suppose the government increases the tax rate on business revenue. Describe and illustrate the impact on producers' labor demand and production decisions.

(c) (10 points) Do producers optimal decisions result in a socially optimal outcome? Why or why not?

4. (15 points) Suppose there is a change in consumers' preferences such that they value their leisure time less, becoming willing to give up leisure time for higher income and larger consumption possibilities. Describe and illustrate the effect on all the endogenous variables in a one-period, general equilibrium model with endogenous decisions for consumption, leisure, labor demand, and production. Report also the effect on the marginal utility of consumption, the marginal utility of leisure, the marginal product of labor, and the marginal product of capital.

5. (15 points) Describe five of the nine conditions that will cause unregulated, competitive markets to be socially optimal. For each condition, describe a situation in which the condition may not hold.