TUTORIAL 3

Week 4

Problem 1: The Household's Problem

Consider a representative consumer whose preferences can be represented by the utility function

$$U(C,l) = \ln(C) + \theta \ln(l),$$

where C is consumption, l is leisure, and $\theta > 0$ is a parameter.

Let w be the hourly wage, and assume that the government levies a lump sum tax T *and* a proportional tax on labour income $\tau \in (0,1)$. Finally, let π be the amount of profits (or dividends) that the consumer receives from a firm that he owns, and assume that h is the total hours that the household distributes between leisure and labour.

1. Write the consumer's budget constraint.
2. Write the consumer's optimisation problem.
3. Show that at the optimum the marginal rate of substitution between l and C equals the $w(1-\tau)$. Interpret.
4. Suppose $\pi - T > 0$. Draw the budget constraint on the (l,C) plane, and a typical optimal choice for consumption and leisure.
5. Find the optimal (l^*, C^*) bundle as a function of the parameters of the household's problem.
6. Suppose that the government increases the proportional tax τ. Would the household work more or less than before? Explain by making reference to income and substitution effects.

Problem 2: Fixed Hours

Modify the standard problem of the consumer studied in class as follows. Suppose that the consumer must choose between working $q > 0$ hours or not working at all. Suppose that dividend income is zero, and that the consumer pays a tax T if she works, and receives an unemployment benefit in the amount b if she doesn't work.

1. Derive the optimal decision rule for hours worked. Show it in a diagram with w on the horizontal axis.

2. Suppose that the wage rate increases. How does this affect the consumer's hours of work?

3. Suppose that unemployment insurance b increases. How does this affect hours of work? Explain the implications of this fact for the design of unemployment insurance programs.