Public Economics (ECON 131)
Section #5: Labor Income Taxation (Continued)

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1 Labor Income Taxation

Public economists are interested in problems where the choice variables for the consumer are consumption and leisure. When this is the case, the budget constraint differs from the standard case in micro since income is no longer exogenous, but chosen by the consumer through their labor. In this section, we will consider how the budget constraint of the consumer changes in response to labor income taxes, and how this may affect choices of consumption and leisure.

1.1 Key concepts

- Income and substitution effects
- Earned Income Tax Credit
  - Understand what it is
  - Understand how it impacts the budget constraint
  - Know how to draw EITC budget constraint
  - Income and substitution effects on different portions of EITC budget constraint (Phase-in, flat, phase-out)

1.2 Practice problems

1.2.1 Labor income taxation with quasi-linear utility function

You graduate from UC Berkeley and take a job at a consulting firm with a wage of \$20 per hour. Your job is extremely flexible: You can choose any number of hours from 0 to 4000 per year. Your preferences over consumption (c) and leisure hours (h) are given by $u(c, h) = 100c - 0.5(4000 - h)^2$.

(a) Suppose there is a progressive income tax of the following form:

- *Income up to \$10,000: no tax*
- *Income from \$10,000 to \$40,000: 20% tax rate*
- *Income from \$40,000 up: 30% tax rate*

Draw a graph in consumption/leisure space showing your opportunity set with and without the tax system. Solve analytically for the optimal labor supply with the tax system.

(b) What is your marginal tax rate at this level of labor supply? What is your average tax rate? Do these rates differ? Why or why not?

(c) Suppose that the highest income bracket is lowered so that the 30% tax rate begins to apply for incomes above \$30,000. How many hours will you choose to work now?

(d) Suppose that the government replaces the current tax system with a lump-sum tax: each person pays \$10,000 per year in taxes regardless of what they earn. Draw your new opportunity set. What is your new labor supply? What is the deadweight loss associated with this tax?

(e) With this "quasi-linear" utility function, do changes in the tax rate affect labor supply through a price effect, income effect, or both?

Space for solution to previous problem:

Space for solution to previous problem:

1.3 Additional problems for practice

1.3.1 Gruber, Ch.21, Q.5

The country of Akerlovia currently has a tax system that gives each citizen $5,000 in cash up front, exempts the first $10,000 in earned income from tax, and taxes all earned income over $10,000 at a 25% rate. It is considering replacing this system with an Earned Income Tax Credit system. The proposed new system would drop the $5,000 cash give-away and would instead subsidize the first $10,000 in earned income at a 50% rate. All income earned over $10,000 would still be taxed at the same 25% rate, and the EITC benefits would never be phased out. Describe the effects of this policy change on the labor supply of workers with various incomes.

1.3.2 Gruber, Ch.21, Q.8

Suppose that the government introduces an Earned Income Tax Credit such that for the first $8,000 in earnings, the government pays 50¢ per dollar on wages earned. For the next $3,000 of earnings, the credit is held constant at $4,000, and after that point the credit is reduced at a rate of 20¢ per dollar earned. When the credit reaches zero, there is no additional EITC.

(a) Draw the budget constraint that reflects this earned income tax credit for a worker who can work up to 4,000 hours per year at an hourly wage of $10 per hour.

(b) Illustrate on your graph the portions of the budget constraint where the labor supply effects of the policy are positive, negative, or ambiguous, relative to the "no policy" status quo.