Public Economics (ECON 131)
Section #7: Capital Income and Savings Taxation

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1 Capital Income and Savings Taxation

1.1 Key concepts

- Intertemporal choice model: The choice individuals make about how to allocate their consumption over time.
- Savings: The excess of current income over current consumption.
- Intertemporal budget constraint (IBC): The measure of the rate at which individuals can trade off consumption in one period for consumption in another period. Note, the opportunity cost of first-period consumption is the interest income not earned on savings for second-period.
- We find the optimal consumption level at each time by solving a lifetime utility maximization problem:

- Using the information from the IBC we can graph the opportunity set:

- A tax on savings modifies the individuals intertemporal choice. This change can be decomposed in two effects, the substitution and the Income effect:

1.2 Practice problem

1.2.1 Gruber, Ch. 22, Q.13

Consider a model in which individuals live for two periods and have utility functions of the form $U(C_1, C_2) = \ln C_1 + \ln C_2$. They earn income of \$100 in the first period and save S to finance consumption in the second period. The interest rate, r, is 10%.

(a) Set up the individual's lifetime utility maximization problem. Solve for the optimal C_1, C_2, and S. (Hint: Rewrite C_2 in terms of income, C_1, and r.) Draw a graph showing the opportunity set.

(b) The government imposes a 20% tax on labor income. Solve for the new optimal levels of C_1, C_2, and S. Explain any differences between the new level of savings and the level in part (a), paying attention to any income and substitution effects.

(c) Instead of the labor income tax, the government imposes a 20% tax on interest income. Solve for the new optimal levels of C_1, C_2, and S. (Hint: What is the new after-tax interest rate?) Explain any differences between the new level of savings and the level in (a), paying attention to any income and substitution effects.

(d) Returning to the labor income tax in part (a): What consumption tax rate would result in the same effects as the 20% labor income tax rate?

2 Additional problems for practice

2.1 Gruber Ch. 22, Q.1

Suppose that a person lives for two periods, earning \$30,000 in income in period 1, which she consumes or saves for period 2. What is saved earns interest of 10% per year.

(a) Draw that person's intertemporal budget constraint.

(b) Draw that person's intertemporal budget constraint if the government taxes interest at the rate of 30%.

2.2 Gruber Ch. 22, Q.2

Suppose that the government increases its tax rate on interest earned. Afterward, savings increase. Which effect dominates, the income effect or the substitution effect? Explain.