Activity: Labor Income Tax and Transfer Foundations
Econ 308

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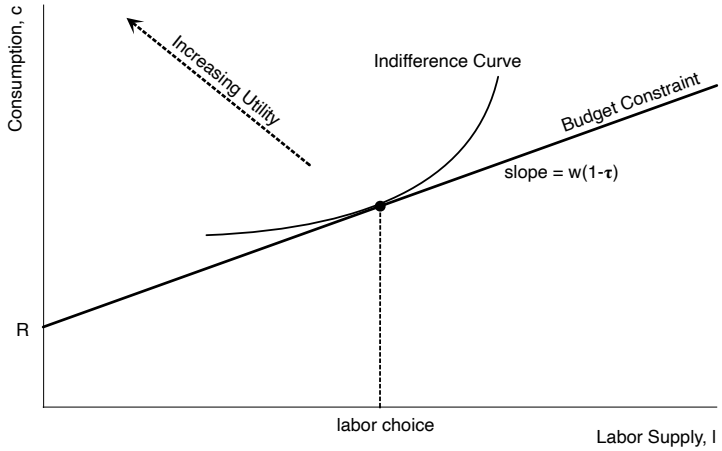
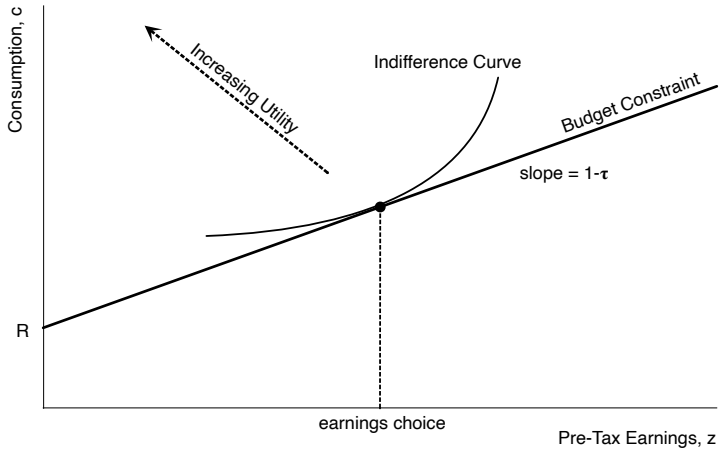
Labor Supply Theory

- Individual maximizes utility $u(c, l)$, increasing in consumption c and decreasing in labor l
- Budget Constraint: $c = (1 - \tau)wl + R$, where w is pre-tax wage, τ is tax rate, and R is non-labor income
- Because labor is a "bad," standard indifference curve diagram is flipped:



- Useful to write the utility maximization problem in terms of c and pre-tax earnings $z = wl$:

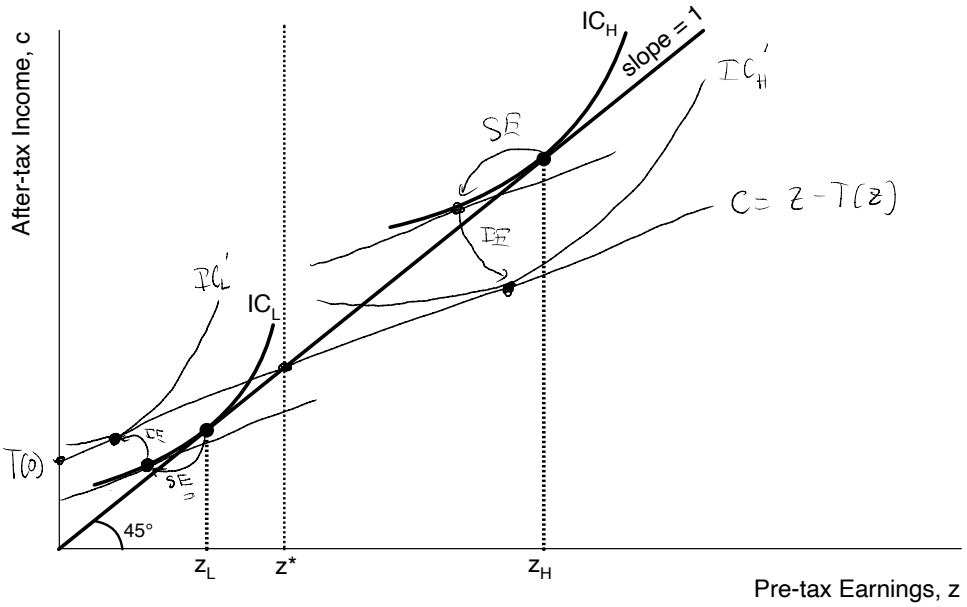
$$\max_{c,z} u(c, z/w) \quad \text{subject to} \quad c = (1 - \tau)z + R$$



- Consider a tax policy that changes the budget constraint. The **total effect** of the policy on behavior can be decomposed into the sum of a **substitution effect** and **income effect**:
  - Substitution effect is due to change in slope of budget constraint, holding utility constant
  - Income effect is due to change in "height" of budget constraint, i.e., disposable income

1 Tax Effect Decomposition

Suppose that there is initially no income tax. High-income Harry (H) and low-income Larry (L) each choose, given their wage rate and personal preferences, how much labor to supply. By choosing labor supply, they are also choosing their earnings (because earnings are just the wage times labor supply). Denote their utility-maximizing earnings choices by z_H and z_L. These choices are depicted in the figure.



a. Consider the introduction of an income tax $T(z)$ with a constant marginal tax rate $T'(z) \in (0, 1)$ and a demogrant $-T(0) > 0$. The break-even earnings point z^* (where $T(z^*) = 0$) is labeled in the figure. Sketch the budget constraint $c = z - T(z)$. Label the vertical intercept and the slope of this budget constraint.

The income tax creates both a substitution effect and an income effect for an individual's earnings choice z.

b. Consider Harry. Is the substitution effect an increase or decrease in z? Is the income effect an increase or decrease in z? What is the total effect of the income tax on z, or is the total effect theoretically ambiguous?

Substitution effect → less z → TE = ambiguous (positive IE)

c. Repeat part (b) for Larry.

Substitution → less z → TE = ↓