Activity: Optimal Labor Income Taxes

Econ 308

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Assume that all individuals have the same utility function over consumption and labor given by:

$$u(c, l) = c - \frac{l^2}{2}$$

where c represents weekly consumption spending and l represents hours of labor per week. Everyone earns an hourly wage w that is taxed at rate τ. In addition, each individual receives a weekly cash transfer R from the government.

a. Determine an equation for each individual's budget constraint in terms of c, l, w, τ, and R.

$c = (1-\tau)wl + R$

b. Determine the individual's labor supply l^*. *Hint: Plug your budget constraint into the utility function and find the l that maximizes utility.*

$u = (1-\tau)wl + R - \frac{l^2}{2}$

$\frac{\partial u}{\partial l} = (1-\tau)w - l = 0$

$l^* = (1-\tau)w$

c. How does the net-of-tax wage $w(1-\tau)$ impact labor supply? How does R impact labor supply? Connect these observations to the existence or nonexistence of substitution and income effects for individuals in this economy.

$w(1-\tau) \uparrow \rightarrow$ substitution effect but no income effect.

d. Suppose that the cash transfer R that each person receives is equal to the average tax revenue collected by the government (i.e., the government has a balanced budget with no other expenditures or revenue sources). Determine R. It should depend on w and τ.

$R = w \tau \ell^*$

e. Determine the tax rate τ^* that maximizes (average) revenue.

$R = w^2 \tau (1-\tau)$ $\quad \frac{dR}{d\tau} = w^2(1-2\tau)$

$\tau^* = 0.5$