

# Problem Set 8

UCLA - Econ 102 - Fall 2018

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## Optimal Taxation: The “Supply Side” (Neoclassical) View

Let us go back to the labor market model of lecture 6. Denoting the (hourly) wage by  $w$ , the price of consumption by  $p$ , and the number of hours (per year) by  $l$ , assume that moreover  $\alpha = 0$  so that:

$$U(c, l) = c - B \frac{l^{1+\epsilon}}{1+\epsilon}, \quad f(l) = Al^{1-\alpha} = Al.$$

1. Derive the Labor Demand curve.
2. For labor supply, assume that the tax and transfer system is such that  $\tau$  is the marginal tax rate, and  $c_0$  is a real subsistence level of income given by the government:  $pc = (1 - \tau)wl + pc_0$ . Derive the Labor Supply curve.
3. Calculate the numbers of hours worked per year  $\underline{l}$ , as well real annual pre-tax income  $\underline{y} = (w/p) \cdot \underline{l}$ , as a function of the parameters of the model.
4. Compute the number of hours worked per year  $\underline{l}$ , as well as real pre-tax income  $\underline{y}$  if  $\epsilon = 2$ ,  $\underline{\tau} = 1/4$ ,  $\underline{A} = 1000000/28188 \approx 35.5$ ,  $\underline{B} = 3000000/491569855488 \approx 6.1 \cdot 10^{-6}$ .
5. Compute the number of hours worked per year  $\bar{l}$ , as well as real pre-tax income  $\bar{y}$  if  $\epsilon = 2$ ,  $\bar{\tau} = 1/2$ ,  $\bar{A} = 1000000/6264 \approx 159.6$ ,  $\bar{B} = 1000000/218475491328 \approx 4.6 \cdot 10^{-6}$ .
6. Assume that the population has  $N = 150$  million people, with a fraction  $\lambda = 0.9$  of the type described in question 4, and a fraction  $1 - \lambda = 0.1$  of the type described in question 5. What is total output in the economy?
7. Assume that the tax system has two marginal tax rates: one 25% marginal tax rate above 25K, one 50% marginal tax rate above 200K. In other words, if income is  $y$  then taxes are:

$$T(y) = -5K + 0.25 \cdot \max\{y - 25K, 0\} + 0.5 \cdot \max\{y - 200K, 0\}.$$

8. Assume a tax reform that lowers the marginal tax rate on the richest by 5 points, and compensates using  $c_0$  to collect revenue. What is the total tax cut? What is the impact on GDP?
9. Assume a tax reform that lowers the marginal tax rate on the poorest by 5 points, and compensates using  $c_0$  to collect revenue. What is the total tax cut? What is the impact on GDP?

## Paul Krugman VS Robert Barro on the Bush tax cuts

Watch this debate between Paul Krugman and Robert Barro, moderated by Charlie Rose.

# [1] "Sorry I don't know how to embed videos in PDF"

# [1] "Use the html version, or the link: <https://www.youtube.com/embed/077G0SaJv5M>"

1. Explain Robert Barro's view on taxes, using the previous exercise.
2. What is Paul Krugman's take on taxes?
3. What is the discussion on public debt, and the deficit ? Explain.
4. From 11:26 Robert Barro suggests to move from pay-as-you-go to “personal accounts”. Explain their discussion in terms of problem set 7.