

The Ohio State University  
Department of Economics  
Econ 501.02 Prof. James Peck  
**Homework #4 (due Thursday March 5)**

1. Binger and Hoffman, chapter 12, question for discussion #3, page 328. To clarify, your long-term contract fixes your capital equipment input, but the contract specifies that the amount you pay each month depends on the prime rate of interest, which fluctuates from month to month.

2. Consider the following production function

$$x = 32K^{1/4}L^{3/4}.$$

Suppose that input prices are given by  $w = 3$  and  $r = 1$ .

(a) In the short run, capital is fixed at one unit,  $\bar{K} = 1$ . **Find the firm's short run supply function.**

(b) If all firms in a perfectly competitive industry have this production function, what will be the **long run equilibrium price of good x**?

3. Consider the following market demand function and (short-run) market supply function

$$\begin{aligned}X^d &= 2900 - 100p_x \\X^s &= 200p_x - 400.\end{aligned}$$

(a) Find the short-run equilibrium price and quantity.

*For parts (b)-(d), suppose that a tax of \$1 per unit is imposed, to be paid by the firms. [That is, the new equilibrium price is the price paid by consumers. The net price received by firms is the new equilibrium price minus the \$1 tax.]*

(b) What will be the new short-run equilibrium price and quantity, after the tax is imposed?

(c) Explain how the burden of the tax is shared by consumers and firms in the short run.

(d) Assume that the market was in long-run equilibrium (as well as short-run equilibrium) before the tax was imposed. What will be the new long-run equilibrium price and quantity, as a result of the tax? [Hint: If the market was in long run equilibrium before the tax, and if you know what the price was from part (a), that tells you what the minimum LRAC was before the tax. What is the minimum LRAC after the tax?]