

ECON 110, Prof. Hogendorn, Spring 2009

Second Midterm Exam

Each part of each question (a, b, c, etc.) is worth 5 points. Make sure to allot your time accordingly. Total of 35 points, -1 for messiness, -2 for extreme messiness.

1. *USChinaWages*. Suppose the production functions of a US and a Chinese textile mill are the same:

$$q = f(L) = -(L - 10)^2 + 100$$

Assume that neither mill ever hires more than 10 workers, and both factories are perfect competitors in both the textile and labor markets.

- (a) Graph the production function. Are there diminishing, constant, or increasing returns to labor?
- (b) If the wage in China is \$0.57 and the wage in the United States is \$11, and the price per unit of output is \$1, how many workers will the Chinese mill hire? How many at the US mill?
- (c) True or false, and explain: If the production function and wages are exactly as described here, it shows that the workers at the US textile mill are more skilled than the workers at the Chinese textile mill.
- (d) Find the labor demand curve $L(w)$ for the factories. What is the elasticity of labor demanded with respect to the wage in the US? In China?

2. *Fear-goods*. This problem shows how in the neoclassical long-run macro model, widespread fear across an economy will not cause a recession! This is an important and comforting insight for the long run, but on the other hand, in the long run we are all dead...

Suppose the production function for the one representative firm in the economy is $Y = f(L) = 20L^{4/5}$. There are $\mathcal{L} = 40$ workers who inelastically supply labor.

- (a) Show that the labor demand curve is $L(w) = (16/w)^5$, graph the labor market, and show the equilibrium real wage.
- (b) Verify the national income accounts identity, i.e. that income from wages and dividends (which equals consumption) equals output (all of which is also consumption).
- (c) Now suppose that people in this country hear about the financial crisis. Everyone becomes very fearful of the future. The firm shifts down its labor demand curve to $L(w) = (8/w)^5$ – even though this is not profit maximizing because the production function remains unchanged. Assuming the labor market still clears, what happens to the wage, income from wages, income from dividends, and output?