

Finance 30220
Problem Set #4

- 1) Suppose you have the following information about widget production. The wage rate is \$10/hr and widgets cost \$2.

<u># of Labor Hours</u>	<u># of Widgets</u>
1	25
2	45
3	60
4	70
5	75
6	78
7	80

- a) Calculate the marginal product of labor. How many hours of labor would you hire?
 - b) Suppose the wage rate rises to \$20/hr. How many hours of labor would you hire? Sketch your demand for labor.
 - c) Suppose that the price of widgets rose to \$5 and the wage rate rises to \$25/hr. How many labor hours would you hire? What does this tell you about labor demand and wages?
 - d) Suppose that computerization allows each hour of labor to produce twice as many widgets. Redo part (b). What happens to labor demand?
- 2) Suppose that the nominal wage rate is \$10/hr, the average price of consumption goods is \$2 and that you have 80 hours available per week to work. Assume that working is your only source of income.
- a) Sketch out your budget line representing all the affordable combinations of leisure and consumption. Suppose that you currently decide to work 35 hours per week. Indicate this point on your graph.
 - b) Suppose that your wage rate increases to \$15. Show how this wage increase effects your budget set. What would be the effect on your labor decision? Indicate a new labor decision on the budget set.
 - c) Use your answers to (a) and (b) to sketch your labor supply curve.
- 3) Empirical studies of labor supply show that the elasticity of labor supply is very close to zero (ie, the labor supply curve is vertical – a rise in the real wage has no impact on the amount of hours supplied.). In fact, some studies have found that a rise in the real wage actually causes aggregate labor supply to *fall* (the infamous “backward bending labor supply curve”). How can we account for this observation?

- 4) Consider an economy with 500 people in the labor force. At the beginning of every month, 5 people lose their jobs and remain unemployed for exactly one month; one month later, they find new jobs and become employed. In addition, on January 1 of each year, 20 people lose their job and remain unemployed for 6 months. Finally, on July 1 of each year, 20 people lose their jobs and remain unemployed for 1 year.
- What is the unemployment rate in this economy in a typical month?
 - What fraction of unemployment spells last for one month? What fraction lasts for six months?
 - What is the average duration of unemployment?
- 5) During WWII, Germany lost a large portion of their capital stock. What would be the result of this loss on labor demand, labor supply, and the real wage in post war Germany?