

Name _____ last 4 PSU ID _____

Please check section that you are registered in:

Section 002 - MWF 8:00 - 8:50 am: 102 Forum Building _____

Section 001 - MWF 1:25 - 2:15 pm: 101 Thomas Building _____

Fall 2014 Chuderewicz - YOU MUST HAND IN HW IN THE SECTION YOU ARE REGISTERED FOR - NO EXCEPTIONS

YOU MUST USE THIS AS A TEMPLATE – THAT IS – **MAKE SPACE FOR YOUR ANSWERS BY HITTING ENTER** (you certainly don't need to type this assignment)– LEAVE THE QUESTIONS AS THEY ARE – AND **PLEASE STAPLE! NOTEBOOK PAPER (OR ANY PAPER) STAPLED TO THE BACK IS NOT ACCEPTABLE (GETS A ZERO)**. ALSO, PLEASE **PUT THE FIRST TWO LETTERS OF YOUR LAST NAME IN THE TOP RIGHT HAND CORNER** OF THIS PAGE SO THAT WE CAN ALPHABETIZE THESE EASILY. THANKS IN ADVANCE!

Economics 304

**Homework #2 – The market for labor and the production function (Chapter 3)
Due Wednesday, 9/17 at the beginning of class – no late papers accepted!**

Instructions: Please show all work or points will be taken off. Good luck!

1. (55 points total – 5 points for each of 7 parts - a. through g., 10 points for part h. and the diagram plus 10 for diagram) The production technology of a firm is given in the table below.

Number of workers	Units of output	MPN
0	0	
1	48	
2	88	
3	118	
4	144	
5	166	
6	184	
7	196	

a. Define the marginal product of labor,, explain how it relates to the production function (with N on horizontal axis and Y on vertical axis) and find the marginal product of labor (MPN) for each level of employment (fill in the third column of table).

b. Assume that the price of a unit of output is \$10. Calculate the number of workers that will be hired if the nominal wage rate = \$290. Calculate the number of workers the firm will hire if the nominal wage is \$250. Calculate the number of workers that the firm will hire if the nominal wage is \$200.

Draw a production function and real labor demand curve vertically with the PF on top (like we do in class), labeling point A as the wage / price combo of \$290 / \$10, point B as the \$250 / \$10 combo, and point C as the \$200 / \$10 wage / price combo. Be sure to label your diagram completely.

A correct and completely labeled diagram is worth 10 points

- c. What could cause wages to fall like this (name and support 2 reasons)?
- d. Why exactly does the firm's behavior change when the nominal wage changes, all else constant? Make sure you refer to the **profit maximizing condition** when answering this question. Please discuss in real terms, not nominal terms.
- e. Let's return back to the initial conditions in the beginning of part b, with prices at \$10 and nominal wages at \$290 (point A). Now we let prices change and fall from \$10 to \$8, holding nominal wages constant at \$290. What could cause such a price change (name at least 2 reasons)? Hint, think of economics 102.
- f. Locate this 'new' point as point D on your two diagrams. Similar to part d) why exactly does the firm's behavior change when prices fall from \$10 to \$8, all else constant? Again, make sure you refer to the **profit maximizing condition** when answering this question. Please discuss in **real terms**, not nominal terms.
- g. Let's return to point A, the initial conditions where the nominal wage rate = \$290 and the price of a unit of output = \$10. Assume that a new technology increases the number of units of output that each worker can produce by 10 units of output (i.e., each worker's MPN rises by 10). Calculate the number of workers that the firm will hire and the number of units of output that will be produced (fill in the table below).

Number of workers	Units of output	MPN
0	0	
1		
2		
3		
4		
5		
6		
7		

Now locate this point as point E on both diagrams. Again, make sure you label diagram completely or points will be taken off.

- h. (10 points) Comment on the macroeconomic implications of this technology shock (as in assume many firms in the economy experience similar technology shocks) on prices

(inflation), employment and the unemployment rate, economic growth, pressure on real wages, the stock market via the profit implications, and the budgetary implications for the Federal Government (make sure you refer to each economic variable).

2. (50 points total – 5 for each of 8 parts and 10 for diagram)

This current event is no longer current but it still works!

□ January 28, 2014, 10:47 AM ET

Obama to Raise Minimum Wage for Federal Contractors, Asserting Executive Power

President Barack Obama plans to act unilaterally to raise the minimum wage for employees of federal contractors, a move that asserts his executive powers before his State of the Union address in which he will press Congress to approve a broader increase this year, write Carol E. Lee and Eric Morath. [Read the full WSJ story here.](#)

The executive order would raise the minimum wage for workers on new federal contracts to \$10.10 an hour, according to a fact sheet from a White House official. It said Mr. Obama would announce the new policy in his speech Tuesday, which is scheduled to begin at 9 p.m. Eastern Time.

The federal minimum wage is \$7.25 per hour, and hasn't been raised since July 2009. About 22,000 federal employees were paid at or below minimum wage in 2012, according to the Labor Department. The agency doesn't specify how many employees were government contractors.

Suppose the marginal productivity of labor for a federal employee is given by:

$$MPN = 51 - 2N.$$

The labor supply curve for federal employees is estimated to be:

$$N^S = 15 + w$$

N is denominated in thousands of workers

2a) Compute equilibrium values for the real wage and employment.

Illustrate this equilibrium on a labor market diagram in real wage space. Please be sure you label the diagram completely (with all the shift variable included) and **label** this initial equilibrium point as **point A**.

A correct and completely labeled diagram is worth 10 points