Tutorial - 3

1. Production data for Bob's Bicycle Factory are as follows.

Number of Workers N	Bike Assembles per day TP (total product)
1	10
2	18
3	24
4	28
5	30

Equilibrium wage

$W = VMP_L$

value marginal product of labor

$VMP_L = P \times MP_L$

Other than wages, Bob has costs of $100 (for parts and so on) for each bike assembled.

a. Bikes sell for $130 each. Find the marginal product and the value of marginal product for each worker (don't forget about Bob's cost of parts)
b. Make a table showing Bob's demand curve for labour.
c. Repeat part (b) for the case in which bikes sell for $140 each.
d. Repeat part (b) for the case in which worker productivity increases by 50 percent. Bikes sell for $130 each.

MP + 50% (MP)
(1 + 0.5) MP

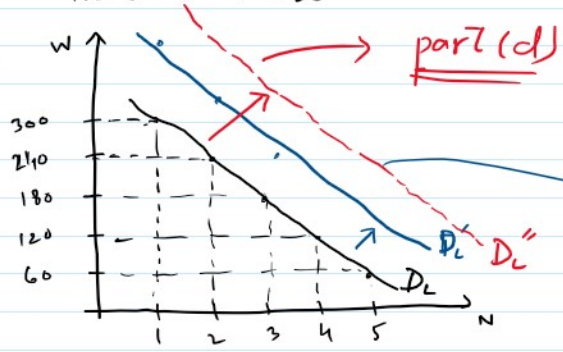
(a)

N	TP	MP	$W = VMP_L = 30 \times MP_L$	(c) $VMP_L = (140-100) \times MP_L = W'$	$MP' = 1.5(MP)$	$VMP_L' = 30 \times MP_L'$
1	10	10	300	400	15	450
2	18	18-10 = 8	240	320	12	360
3	24	24-18 = 6	180	240	9	270
4	28	28-24 = 4	120	160	6	180
5	30	2	60	80	3	90

$P = 130 \quad C = 100$

$R = (130-100) = 30$

(b)



part (d)

$W = VMP_L$

part (c)

when $P \uparrow \rightarrow W \uparrow \rightarrow D_L \rightarrow$

$W = VMP_L = P \times MP_L$

2. An economy with no foreign trade produces sweaters and dresses. There are 14 workers in the sweater industry and 26 workers in the dress industry. The marginal product of workers in the sweater industry, measured in sweaters produced per day, is $20 - NS$, where NS is the number of workers employed in the sweater industry. The marginal product of workers in the dress industry, measured in dresses produced per day, is $30 - ND$, where ND is the number of workers employed in the dress industry.
   a. Initially, sweaters sell for $40 apiece and dresses are $60 apiece. Find the equilibrium wage in each Industry.
   b. The economy opens up to trade. Foreign demand for domestically produced sweaters is strong, raising the price of sweaters to $50 each. But foreign competition reduces demand for domestically produced dresses so that they now sell for $50 each. Assuming that workers cannot move between industries, what are wages in each industry now? Who has been hurt and who has been helped by the opening up to trade?

$N_S + N_D$

c. Now suppose that workers can move freely from one industry to the other, and will always move to the industry that pays the higher wage. In the long run, how many of the 40 workers in the economy will be in each industry? What wages will they receive? In the long run, are domestic workers hurt or helped by the opening up to foreign trade? Assume that sweaters and dresses continue to sell for $50.

(a)

$P_S = 40$ | $P_D = 60$

$N_S = 14$ | $N_D = 26$

$MP_S = 20 - N_S$ | $MP_D = 30 - N_D$

$W_S = VMP_S = P_S \times MP_S$ | $W_D = VMP_D = P_D \times MP_D$

$W_S = 40(20-14) = \$240$ | $W_D = 60 \times (30-26) = \$240$

(b)

$P_S' = 50$ | $P_D' = 50$

$W_S = 50(20-14) = \$300$ | $W_D = 50(30-26) = \$200$

(c) migrate from dress to sweater

$P_S' = 50$

$N_S = ?$

$MP_S = 20 - N_S$

$N_S + N_D = 40$

$N_D = 40 - N_S$

$P_D' = 50$

$N_D = ?$

$MP_D = 30 - N_D$

$MP_D = 30 - [40 - N_S]$

$MP_D = -10 + N_S$

workers will move until:

$W_S = W_D$

$VMP_S = VMP_D$

$P_S \cdot MP_S = P_D \cdot MP_D$

$50(20 - N_S) = 50(-10 + N_S) \Rightarrow 20 + 10 = N_S + N_S \Rightarrow 30 = 2N_S$

$N_S = 15$ | $N_D = 40 - 15 = 25$

$W_S = 50(20-15) = 250$

$W_D = 50(30-25) = 250$

equilibrium wage

3. For each of the following scenarios, state whether the unemployment is frictional, structural, or cyclical. Justify your answer.

S a. Ted lost his job when the steel mill closed down. He lacks the skills to work in another industry and so has been unemployed over a year.

C b. Alice was laid off from her job at the auto plant because the recession reduced the demand for cars. She expects to get her job back when the economy picks up.

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b. Alice was laid off from her job at the auto plant because the recession reduced the demand for cars. She expects to get her job back when the economy picks up.

c. Lance is an unskilled worker who works for local moving companies during their busy seasons. The rest of the year he is unemployed.

d. Tao looked for a job for six weeks after finishing college. He turned down a couple of offers because they didn't let him use the skills he had acquired in university, but now he has a job in the area that he trained for.

e. Karen, a software engineer, lost her job when the start-up company she was working for went bankrupt. She interviewed at five companies before accepting a new job in another firm in the same industry.

structural unemp → skill mismatch + jobs unavailable in one's field

frictional unemp → " " + jobs available

cyclical → due to business cycles

4. From the homepage of the Reserve Bank of Australia (www.rba.gov.au), obtain quarterly data for real GDP for 2008 and 2009. See under 'Output and Labour' on http://www.rba.gov.au/statistics/tables/index.html and click on the table. Take the data series in the first column labelled 'GGDPCVGDP'.
Was there a recession in Australia during this period? Why or why not? Explain.