

Week 10 (relates to material in Week 9 lectures)

Labour markets

1. H2OClean Ltd supplies domestic kitchen water filters to the retail market and hires workers to assemble the components. A water filter sells for £26, and H2OClean can buy the components for each filter for £1. Kevin and Sharon are two workers for H2OClean Ltd. Sharon can assemble 60 water filters per month, and Kevin can assemble 70. If the labour market is perfectly competitive, how much will each be paid?

Sharon's marginal product is 60 air filters per month, and the value of her marginal product (VMP) is $(60)(£26-£1) = £1,500/\text{month}$. Kevin's VMP is $(70)(£26-£1) = £1,750/\text{month}$. Since the labour market is competitive, Sharon and Kevin will earn exactly their respective VMPs each month.

2. Stone Inc. owns a clothing factory, hiring workers in a competitive market to cut denim to make jeans. The fabric costs £5 per pair. The company's weekly output varies with labour usage, as shown in the table below.

Number of workers	Jeans (pairs/week)
0	0
1	25
2	45
3	60
4	72
5	80
6	85

- a. If the jeans sell for £35 a pair, and the competitive market wage is £250 per week, how many workers should Stone hire? How many pairs of jeans will the company produce each week?
- b. Suppose the Clothing Workers Union now sets a minimum acceptable wage of £230 per week. All the workers Stone hires belong to the union. How does the minimum wage affect Stone's decision about how many workers to hire?
- c. If the minimum wage set by the union had been £400 per week, how would the minimum wage affect Stone's decision about how many workers to hire?
- d. If Stone again faces a market wage of £250 per week but the price of jeans rises to £45, how many workers will the company now hire?

After deducting the £5 cost of the fabric, the company received £30 from the sale of each pair of jeans. The marginal product of labour and the value of the marginal product of labour are shown in the following table:

Number of workers	Jeans (pairs/week)	Marginal product of labour (pairs per worker)	VMP (£/week)
0	0	25	750
1	25	20	600
2	45	15	450
3	60	12	360
4	72	8	240
5	80	5	150
6	85		

Since the market wage is £250/week, it is not worthwhile to hire the fifth worker, whose VMP is only £240/week. The firm hires 4 workers and produces 72 pairs of jeans per week.

A minimum wage (£230) that is below the equilibrium wage (£250) will have no effect on Stone's decision.

If the minimum wage is £400/week, the union wage is now higher than the equilibrium wage. Stone will no longer hire the fourth worker.

If the market price of jeans rises to £45 a pair, the final column of the table now looks like this:

Number of workers	VMP (£/week)
0	1,000
1	800
2	600
3	480
4	320
5	200
6	

If the equilibrium wage is £250/week, Stone will now hire a fifth worker.

3. Jones, who is currently unemployed, is a participant in three means-tested welfare programmes: food vouchers, rent vouchers and day care vouchers. Each programme grants him £150 per month in vouchers, which can be used like cash to purchase the good or service they cover.
 - a. If benefits in each programme are reduced by 40 pence for each additional pound Jones earns in the labour market, how will Jones' economic position change if he accepts a job paying £120 per month?
 - b. In the light of your answer to part (a), explain why means testing for welfare recipients has undesirable effects on work incentives.

Jones's benefits will go down by $(0.40)(£120/\text{month}) = £48/\text{month}$ in each programme. The total benefit reduction is $3 \times £48 = £144/\text{month}$.

When means-testing applied to multiple programmes results in effective marginal tax rates above 100 percent, as in this case, a person's net income goes down as a result of earning money in the labour market. This creates a powerful incentive not to work.

4. Sue is offered a job re-shelving books in the University library from 12:00 to 13:00 each Friday. Her reservation wage for this task is £10 per hour.
 - a. If the library director offers Sue £100 per hour, how much economic surplus will she enjoy as a result of accepting the job?
 - b. Now suppose the library director announces that the earnings from the job will be divided equally among the 400 students who live in Sue's residence. Will Sue still accept?
 - c. Explain how your answers to parts (a) and (b) illustrate one of the incentive problems inherent in income redistribution programmes.

When the £100/hour is paid directly to Sue, she accepts the job and enjoys an economic surplus of $£100 - £10 = £90$.

If the £100 were divided equally among the 400 residents of Sue's residence, however, each resident's share would be only 25 pence. Accepting the job would thus mean a negative surplus for Sue of $£0.25 - £10 = -£9.75$, so she will not accept the job.

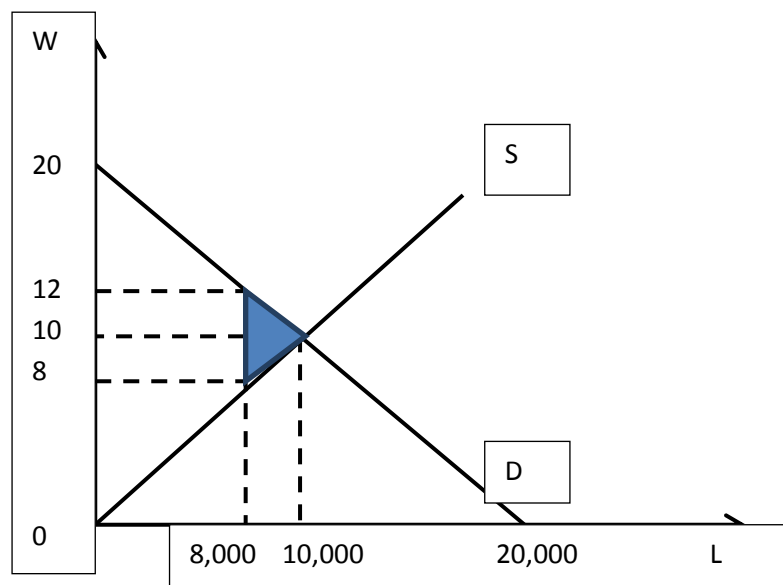
The income sharing arrangement is income redistribution of the most extreme form. Such measures reduce the amount of income available by reducing Sue's incentive to accept employment that would have generated an economic surplus.

5. Can you explain why professional golfers earn more from endorsements than professional snooker players?

The higher endorsement wage suggests that the value marginal product of a professional golfer is greater than that of a snooker player, i.e. the golfer is more valuable to the advertising firm than the snooker player. This reflects the much larger market size and fan base of golf (as measured by TV

viewing figures): many more people play or, even more importantly, watch golf than snooker. So professional golfers are more famous than professional snooker players.

6. Suppose the demand and supply curves for unskilled labour are as shown in the graph below. By how much will the imposition of a minimum wage of £12 per hour reduce total economic surplus? Calculate the amounts by which employer surplus and worker surplus change as a result of the minimum wage.



Without a minimum wage, both employers and workers would enjoy economic surplus of £50,000 a day ($= 0.5 \times (£20 - £10) \times (10,000)$).

With a minimum wage set at £12/hour, employer surplus is now $0.5 \times (£20 - £12) \times (8,000) = £32,000$ a day, while worker surplus is now $0.5 \times (£12 + (£12 - £8)) \times 8,000 = £64,000$ a day. The minimum wage thus reduces employer surplus by £18,000 a day, and increases worker surplus by £14,000 a day. The net reduction in surplus is the area of the shaded triangle, $0.5 \times (£12 - £8) \times 2,000 = £4,000$ a day.