

LABOR ECONOMICS (EE 471)

😊😊 Practice questions 😊😊

Chapter 4

1. Figure 4-9 discusses the changes to a labor market equilibrium when the government mandates an employee benefit for which the cost exceeds the worker's valuation (panel a) and for which the cost equals the worker's valuation (panel b).

(a) Provide a similar graph to those in Figure 4-9 when the cost of the benefit is less than the worker's valuation, and discuss how the equilibrium level of employment and wages have changed. Is there deadweight loss associated with the mandated benefit?

(b) Why is the situation in which a mandated benefit would cost less than the worker's valuation less important for public policy purposes than when the cost of the mandated benefit exceeds the worker's valuation?

2. An economy consists of two regions, the North and the South. The short-run elasticity of labor demand in each region is -0.5 . Labor supply is perfectly inelastic within both regions. The labor market is initially in an economy-wide equilibrium, with 600,000 people employed in the North and 400,000 in the South at a wage of \$15 per hour. Suddenly, 20,000 people immigrate from abroad and initially settle in the South. They possess the same skills as the native residents and also supply their labor inelastically.

(a) What will be the effect of this immigration on wages in each of the regions in the short run (before any migration between the North and the South occurs)?

(b) Why is the situation in which a mandated benefit would cost less than the worker's valuation less important for public policy purposes than when the cost of the mandated benefit exceeds the worker's valuation?

3. An economy consists of two regions, the North and the South. The short-run elasticity of labor demand in each region is -0.5 . Labor supply is perfectly inelastic within both regions. The labor market is initially in an economy-wide equilibrium, with 600,000 people employed in the North and 400,000 in the South at a wage of \$15 per hour. Suddenly, 20,000 people immigrate from abroad and initially settle in the South. They possess the same skills as the native residents and also supply their labor inelastically.

(a) What will be the effect of this immigration on wages in each of the regions in the short run (before any migration between the North and the South occurs)?

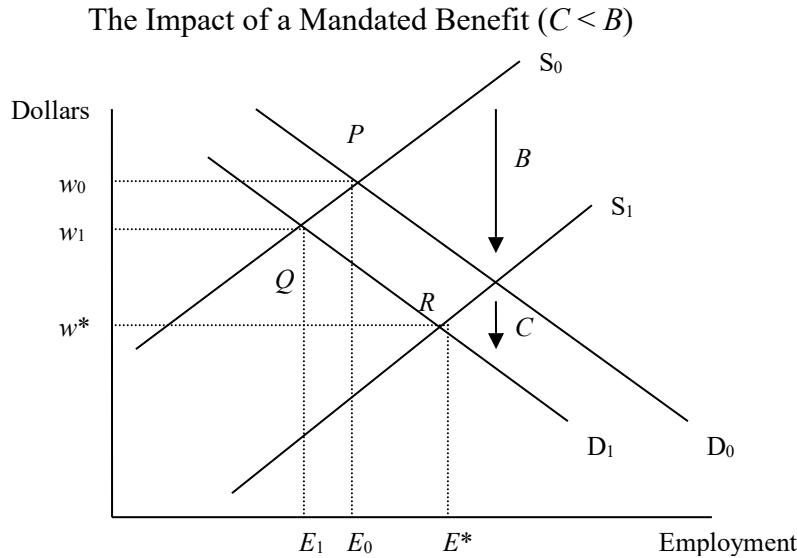
(b) Suppose 1,000 native-born persons per year migrate from the South to the North in response to every dollar differential in the hourly wage between the two regions. What will be the ratio of wages in the two regions after the first year native labor responds to the entry of the immigrants?

(c) What will be the effect of this immigration on wages and employment in each of the regions in the long run (after native workers respond by moving across regions to take advantage of whatever wage differentials may exist)? Assume labor demand does not change in either region.

ANSWERS

1. Figure 4-9 discusses the changes to a labor market equilibrium when the government mandates an employee benefit for which the cost exceeds the worker's valuation (panel a) and for which the cost equals the worker's valuation (panel b).

(a) Provide a similar graph to those in Figure 4-9 when the cost of the benefit is less than the worker's valuation, and discuss how the equilibrium level of employment and wages have changed. Is there deadweight loss associated with the mandated benefit?



Without the mandate, the original equilibrium is at point P with an employment level of E_0 and a wage level of w_0 . When the government mandates the benefit, labor demand shifts down by C as C is the per employee cost of the mandate. At the same time, however, supply shifts down by B as each worker values the benefit at B . As drawn, the cost is less than the benefit as stipulated in the problem. In this case, the new equilibrium is at R with an employment level of E^* and a wage level of w^* . Notice that the mandate has increased employment. It has also lowered the wage, by more than C but not by more than B . Consequently, firms and workers both benefit from this form of government intervention. Thus, there is no deadweight loss but rather new found surplus to be shared by firms and workers. Note: all of this analysis is predicated on firms and workers being unable to recognize the surplus gain without the government's assistance (see part b below).

(b) Why is the situation in which a mandated benefit would cost less than the worker's valuation less important for public policy purposes than when the cost of the mandated benefit exceeds the worker's valuation?

The reason why this situation is less important for public policy purposes is that this is a situation of a "free lunch" that is not taken advantage of by firms and workers but it is observed by the government. Economists don't tend to devote much attention to such problems as it is believed that the firms and workers would come to realize the potential for mutual gain (in which case the above figure would have originally been at point R and the mandate would have had no effect on the labor market equilibrium).

2. An economy consists of two regions, the North and the South. The short-run elasticity of labor demand in each region is -0.5 . Labor supply is perfectly inelastic within both regions. The labor market is initially in an economy-wide equilibrium, with 600,000 people employed in the North and 400,000 in the South at a wage of \$15 per hour. Suddenly, 20,000 people immigrate from abroad and initially settle in the South. They possess the same skills as the native residents and also supply their labor inelastically.

(a) What will be the effect of this immigration on wages in each of the regions in the short run (before any migration between the North and the South occurs)?

There will be no effect on the North's labor supply in the short run, so the wage rate will not change there. In the South, labor supply will have increased by 5 percent, so the wage rate must fall by $5/(0.5) = 10$ percent (recall that the elasticity of labor demand is -0.5 , so a one percent decrease in wages would have been generated by a 0.5 percent expansion of the labor supply). The new hourly wage in the South, therefore, is \$13.50 and total employment in the South is 420,000.

(b) Suppose 1,000 native-born persons per year migrate from the South to the North in response to every dollar differential in the hourly wage between the two regions. What will be the ratio of wages in the two regions after the first year native labor responds to the entry of the immigrants?

After the initial migration, we have seen that wages in the South are \$13.50 while wages in the North are \$15. This difference leads 1,500 natives migrating from the South to the North in the first year. Employment in the North after one year, therefore is 601,500. Moreover, as the elasticity of labor demand in the North is -0.5 and employment has increased by 0.25 percent, the Northern wage falls by 0.5 percent to roughly \$14.93. Likewise, employment in the South after one year is 418,500. As the elasticity of labor demand is -0.5 and employment has decreased by 0.3571 percent, the Southern wage increases by 0.71428 percent to roughly \$13.60. Thus, the ratio of the Northern to Southern wage after one year is 1.09779.

(c) What will be the effect of this immigration on wages and employment in each of the regions in the long run (after native workers respond by moving across regions to take advantage of whatever wage differentials may exist)? Assume labor demand does not change in either region.

In the long run, people must move from the South to the North to equalize the wage rates in the two regions. Since the wages were equal in the two regions before the influx of immigrants, and they also must be equal after things settle down, the proportional decrease in the wage rate should be the same in the North and in the South. Because the elasticity of labor demand is the same in the two regions, this last observation implies that the percentage increase in employment in the North must be the same as the percentage increase in employment in the South. Thus, as 60 percent of the original workers were employed in the North, 60 percent of the 20,000 increase in Southern employment will eventually migrate to the North. In the long run, therefore, total Northern employment will be 612,000 while total Southern employment will be 408,000. (Note: there is no presumption that only immigrants further migrate to the North.) In each region, therefore, employment increases by 2 percent in the long run, i.e., 12,000 is 2 percent of 600,000 and 8,000 is 2 percent of 400,000. This also could have been seen immediately as 20,000 is 2 percent of the 1 million workers. Now, given that the elasticity of labor demand is -0.5, the 2 percent increase in employment will cause the wage rate to fall by 4 percent. Hence, the long-run equilibrium hourly wage will be \$14.40 in both regions.

3. A firm faces a perfectly elastic demand for its output at a price of \$6 per unit of output. The firm, however, faces an upward-sloped labor supply curve of

$$E = 20w - 120$$

where E is the number of workers hired each hour and w is the hourly wage rate. Thus, the firm faces an upward-sloped marginal cost of labor curve of

$$MC_E = 6 + 0.1E$$

Each hour of labor produces five units of output. How many workers should the firm hire each hour to maximize profits? What wage will the firm pay? What are the firm's hourly profits?

First, solve for the labor demand curve: $VMP_E = P \cdot MP_E = \$6 \times 5 = \30 . Thus, every worker is valued at \$30 per hour by the firm. Now, setting $VMP_E = MC_E$ yields $30 = 6 + .1E$ which yields $E^* = 240$. Thus, the firm will hire 240 workers every hour. Further, according to the labor supply curve, 240 workers can be hired at an hourly wage of \$18 as $240 = 20(18) - 120$. Finally, the firm's hourly profits are:

$$\pi = 240(5)(\$6) - 240(18) = \$2, 880.$$