

Problem Set 2

Due Lecture 3 in class on paper

1. GLS Chapter 3, Question 6

(a) What is the equilibrium wage and quantity of low-skilled labor working in equilibrium?

Find the equilibrium at the intersection of demand and supply:

$$\begin{aligned}Q_S &= Q_D \\10W &= 240 - 20W \\30W &= 240 \\W &= 8\end{aligned}$$

When $W^* = 8$, then find $Q_S = 10(W) = 80$. You can verify that you also find a quantity of 80 using the demand curve.

(b) If the government passes a minimum wage of \$9 per hour, what will the new quantity of labor hired be? Will there be an excess supply of labor? How large?

Since this wage is higher than the equilibrium wage, you know in advance that more workers will want work at \$9/hour than there will be employers to hire them.

Mathematically, at a wage of 9, the supply of workers is $Q_S = 10(W) = 90$.

At a wage of \$9, employers want $Q_D = 240 - 20(W) = 240 - 20(9) = 240 - 180 = 60$.

There are 30 more workers who want to work than employers that want to hire them.

(c) What is the deadweight loss of a \$9 minimum wage?

To do this, draw yourself a diagram, like the one at the end of these answers. I know that at a wage of \$9, 60 workers are willing to work. To calculate deadweight loss and all the surplus values, I need to know the wage associated with a quantity of 60 on the supply curve. To this, write $Q_S = 10W$, or $60 = 10W$, or $W = 6$. With these values, I can calculate the area of all the triangles labeled in the first picture.

The deadweight loss is areas E and F, which total to $\frac{1}{2}(3)(20) = 30$.

(d) How much better off does the \$9 minimum wage make low-skilled workers (in other words, how much does producer surplus change), and how much worse off are employers?

To answer this question, we need to know consumer and producer surplus both before and after the wage change.

Before, consumer surplus is triangles A, B and E, and this is $CS = \frac{1}{2}(4)(80) = 160$. And producer surplus is triangles C, F and D, $PS = \frac{1}{2}(80)(8) = 320$. (Note that total surplus is $160 + 320 = 480$.)

After, consumer surplus shrinks just to triangle A, so $CS = \frac{1}{2}(60)(3) = 90$. Producer surplus is triangles C, D and B, or $PS = (60)(2) + \frac{1}{2}(60)(6) + 60 = 120 + 180 + 60 = 360$.

Notice that the new consumer surplus, the new producer surplus and the deadweight loss should equal to the total of consumer and producer surplus before the change.

Producer surplus increases by 40. Employers (demanders of labor) have a decrease of 70.

(e) How do your answers to (c) and (d) change if the minimum wage is set at \$11 rather than at \$9?

See the second figure at the end of the problem set. Using the same methods as before, I find that the new consumer surplus is A, which is 10. The producer surplus after is B, C and D, which totals to 200. The deadweight loss is 270. (Note that these three total to 480, which is the total surplus before any changes.)

2. GLS Chapter 3, Question 13

See Figure 3.8 in the book. There are larger changes in quantity for the more elastic good (manicures). Thus, the government would likely be more involved in the more elastic sector.

An alternative argument is that bread producers are more harmed by the large change in price. Any well-reasoned argument here is acceptable.

3. Price regulations

Give a specific example of a price ceiling or floor – not one from class or from the textbook. Roughly, what was the impact of this regulation on quantity supplied and quantity demanded?

Here we accept any reasonably argued answer.

Q6

