

Problem set 3

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Question 1:

a)

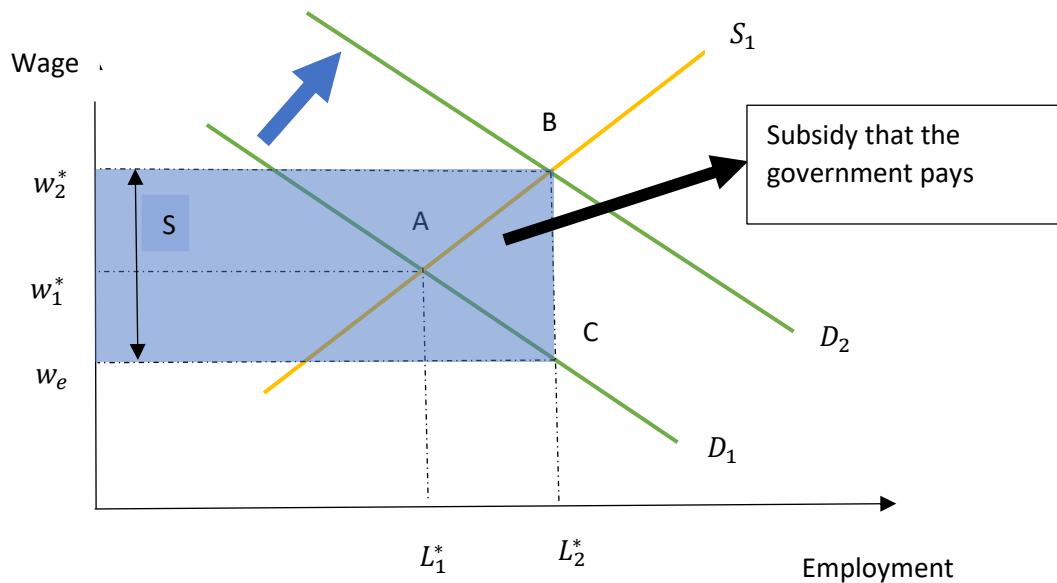


Figure 1

As it is shown in the Figure 1, by introducing the wage subsidy by the government, the equilibrium point moves from A to B. This means that equilibrium wage (wage received by the workers) will increase to w_2^* , and the equilibrium employment will be increased to L_2^* .

The wage cost before the wage subsidy introduction is:

$$\text{wage cost} = w_1^* \cdot L_1^*$$

But after the wage subsidy introduction, it is:

$$\text{wage cost} = w_2^* \cdot L_2^* - S \cdot L_2^* = w_e \cdot L_2^*$$

where S is the fixed subsidy amount for each worker.

And Finally, the total cost of subsidy for the government is:

$$\text{Cost of subsidy} = S \cdot L_2^*$$

b) According to unit 9 part 11, implementing the wage subsidy will shift the price setting curve upward and move the equilibrium point up and right. As the result, the unemployment will be decreased, which is the same result as what we derived with the competitive model.

c)

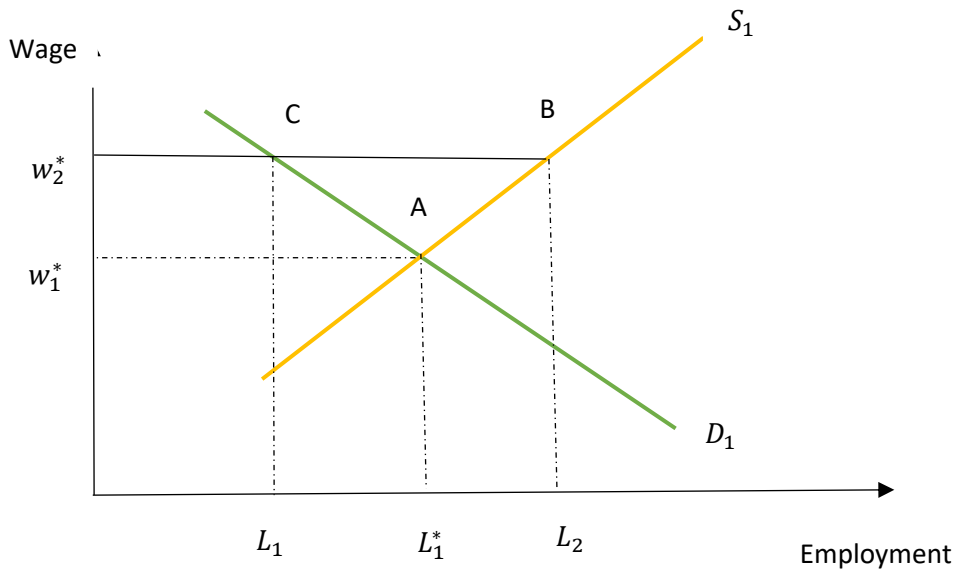


Figure 2

So, consider the case when we set a minimum wage w_2^* . Unlike the previous case, we do not have an equilibrium at point B or C. In this amount of the wage, labour supply (L_2) is greater than the labour demand (L_1), and this means that we will have unemployment as a result of this policy.

It should be obvious that in this case the government does not pay any subsidy so there is no need for the government to collect extra tax.

Question 2:

- Increasing the productivity of the labour will shift the price setting curve upward. It might be for the fact that the market is competitive and the cost has been decreasing for all of the firms. On the other hand, the reservation wage will be increased because of the higher expectations of the workers, so the wage setting curve will also be shifted upward. Since both the price setting curve and the wage setting curve are shifting upward, predicting the resulting unemployment trend is not possible.
- The key point is that we have skilled workers who are mostly natives and we have unskilled workers who are mostly natives and they are **complements** to each other. If it is harder to find unskilled workers, it is definitely more costly to employ them and the cost of the skilled workers (who employ unskilled workers) is going to be higher. As the result, their returns and wages are going to be decreased at the end.

Question 3:

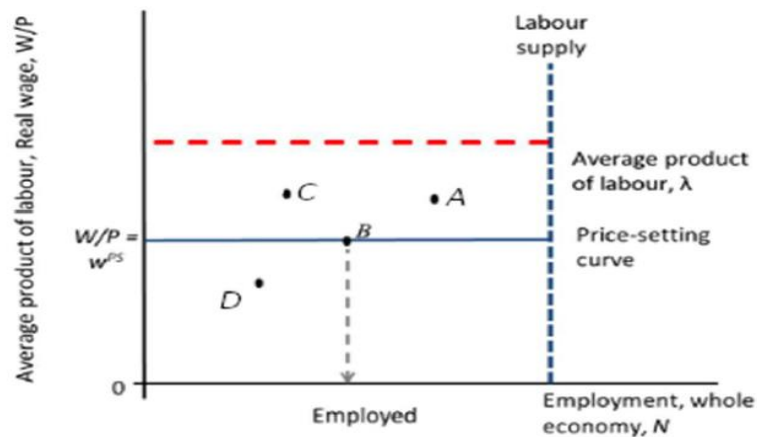


Figure 3

- a) At D, the markup is below the firm's profit maximizing level.
This is **False**. At point C the difference between the price setting curve and the average product of labour (markup) is higher than the profit maximizing value (at point B)
- b) To go from A to B, the firm would be raising its price.
This is **True**. At point A the real wage is higher than the profit maximizing amount and the markup is too low. Consequently, the firm increases its price to go to the point B.
- c) The firm's profit is higher at A than at D.
This is **False**. All we know is that the profit is higher at B than at A and D, but we do not know enough to compare the profit at points A and D.
- d) C is not a feasible choice for a firm.
It is **False**. At point C we are above the wage setting curve, so the real wage is higher than the profit maximizing amount. In other words, we can decrease the real wage or increase the unemployment and workers will still work.

Question 4:

- a) The real concern is that the worker will change his behavior after the employment and it will be the same as the best response function. We can not conduct a perfect monitoring protocol so he will shirk in his job, because he is under the best response function. Yes. The firm is doing the best it can, given the effort levels being supplied at the current wage. Similarly, workers are supplying the exact level of effort that is compatible with the going wage. This means that we have a Nash equilibrium here.
- b) According to the literature, Nash equilibrium is a stable state of a game, in which no participant can gain by any change of strategy, if the strategies of the others remain unchanged.
As it was mentioned in the last part (part A): Assuming other players do not change their strategies, none of the participants can gain by any deviation from their own strategies, and this is equivalent to the Nash equilibrium.
- c) Workers are worried about their future so they accept offers to work lower wages, so the wage setting curve will shift downward.
- d) Since the competition in the market has been increased the firm should choose lower prices and the markup will be decreased. As the result the price setting curve will be shifted upward and the real wage set by firms will be increased. The increase in the real wage also causes the natural rate of unemployment to decrease. The economy moves left along the wage setting curve, and a new equilibrium in the labour market is reached. In the new equilibrium real wage is higher and the new unemployment rate is lower.