|  |
| --- |
| **Exercises from old exams to chapters in B & W with solutions.** |

|  |
| --- |
| **Chapter 4** |

**Exercise 1**

1. Define indifference curves and the marginal rate of substitution (MRS) in a model showing the household’s trade off between consumption and leisure.
2. Use the consumption – leisure trade off to explain the household’s optimal choice.
3. Explain how you can derive the labour supply curve from the consumption – leisure trade off model.
4. In the model used in this exercise, explain the difference between the substitution effect and the income effect, if the wage increases.
5. As a follow up to d): explain the slope of the labour supply curve if the substitution effect dominates.

**Answer:**

1. An indifference curve shows how readily a household is willing to substitute consumption for leisure. MRS is the rate of which a household is willing to give up consumption for leisure, holding satisfaction constant. An important principle is that as a good becomes increasingly scarce the MRS of other goods for that particular good increases.
2. Where an indifference curve is tangent to the budget line. At this point MRS = w (the real wage), where w is the slope of the budget line.
3. When the real wage increases, the budget line becomes steeper (the endowment of time remains unchanged).
4. The income effect: There is an incentive to work less and enjoy more leisure if the wage increase. The substitution effect: The relative attractiveness of leisure declines when the wage increase. This would be an incentive to take less leisure, work harder and consume more.
5. From d) it is clear that the two effects pull in opposite directions. If the substitution effect dominates, the labour supply curve will slope upwards.

**Exercise 2**

Consider a labour market model where household’s supply of labour is seen as a trade-off between consumption and leisure.

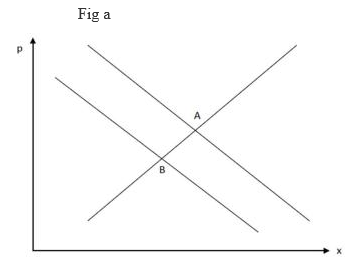
1. Define terms and explain by using a figure, the household’s optimal choice.
2. Use the model to discuss the reaction of the household to a real wage increase.
3. As a follow up to question b), describe the situation if the income effect dominates?

**Answer:**

1. Given the budget line with slope w (real wage), the highest possible utility is achieved where an indifference curve is tangent to the budget line. Students need to define the budget line and the indifference curve.
2. Students need to define the substitution- and income effect. If the substitution effect dominates the net effect of an increase in the wage leads to a decline in leisure and an increase in labour supply.
3. If the income effect dominates then the labour supply curve will bend backwards. An increase in the wage leads to an increase in leisure and a decline in labour supply.

**Exercise 3**

The diagram below (fig a) represents a market characterized by perfect competition. Now, assume that the diagram is a representation of two different equilibria in the labour market, where p refers to the wage rate and x refers to units of labor.



Assume that A is the old equilibrium and that B is the new equilibrium. What can explain the transition from the old to the new equilibrium?

a) There has taken place a decrease in labour supply, for example due to trade unions demanding higher wages.

b) There has taken place a decrease in labour demand, for example due to a negative shock to labor productivity.

c) There has taken place an increase in labour demand, for example due to a positive shock to labor productivity.

d) There has taken place an increase in labour supply, for example because households assign a lower value to leisure relative to consumption.

**Answer:**

b) There has taken place a decrease in labour demand, for example due to a negative shock to labor productivity.

**Exercise 4**

1. Define the unemployment rate.
2. Explain how the unemployment rate can go down without more people have found jobs.
3. What is business cycles and how is the unemployment rate related to the business cycle?
4. Use a diagram for the labour market with real wage on the vertical axis and labour on the horizontal axis. Define the supply and demand curves.
5. Use the model from d) to explain the difference between involuntary - and voluntary unemployment.
6. Suppose an extreme case where the labour supply decrease when the real wage increase. Use economic terms to explain reasons.

**Answer:**

1. The unemployment rate is the ratio of the number of unemployed workers to total labour force.
2. Every individual is on one of three states: employed, unemployed or out of the labour force. Then the reason could be discouraged people leaving the labour force.
3. Business cycles: successions of periods of growth and slowdowns or decline in which output fluctuates around its long-run trend. The unemployment rate is countercyclical: it moves against the cyclical behaviour of output.
4. Labour demand: the relationship linking the number of man-hours that firms wish to hire and the cost of labour. Labour supply: From a fig with consumption and leisure to the labour supply typically sloping upwards because the substitution effect dominates the income effect. In practice, the response to rising wages varies widely across individuals, depending on tastes, family circumstances, age etc.
5. To explain involuntary unemployment: The real wage is too high. To explain voluntary unemployment: With labour market equilibrium down compared to the total labour endowment level.
6. The reason could be that the income effect dominates the substitution effect. Students must define these two effects.

**Exercise 5**

In this exercise you are going to discuss different topics using a model for the household’s trade-off between consumption and leisure.

1. Define indifference curves and the budget line in a model showing the household’s trade-off between consumption and leisure.
2. What do the shape of a typically indifference curve tell about a household’s trade-off between consumption and leisure?
3. In a diagram with leisure on the horizontal axis and consumption on the vertical axis. Suppose a household’s marginal rate of substitution (MRS) = 2 while the real wage (w) = 1. In what way is it not optimal?
4. Using a diagram, how do you explain that the real wage (w) increase and how does such a change affect the trade-off between consumption and leisure?
5. Explain the difference between the substitution effect and the income effect in this model.
6. According to Burda & Wyplosz the response to rising wages varies widely across individuals. Give examples of such factors and explain the typical case using the two effects from e).
7. According to Burda & Wyplosz what are the very long run results of increasing real wage on labour supply? Also, use the two effects from e) to explain this result.

**Answer:**

1. Indifference curves shows how readily a household is willing to substitute consumption for leisure. Along one curve the satisfaction is constant. The budget line states all possible combinations of consumption and leisure that can be afforded.
2. The shape is a convex curve. The less leisure you have, the less leisure you are willing to sacrifice for one more unit of consumption.
3. It is optimal if MRS=w. In this case it would be higher possible utility if more leisure, less consumption.
4. The budget line becomes steeper. It rotates from the horizontal axis (leisure). A steeper curve means that a unit of leisure is exchanges for more units of consumption.
5. How the household react to an increase in the real wage can be divided into the substitution effect (The relative attractiveness of leisure declines because its relative price has risen) and the income effect (both increase in consumption and leisure because income increase).
6. Examples are tastes, family circumstances and age. It also depends on the time horizon. The typical case is an increasing labour supply curve when real wage increase. Then the substitution effect dominates.
7. Over the very long run, increasing real wage have led to decreasing labour supply as the income effect dominates.