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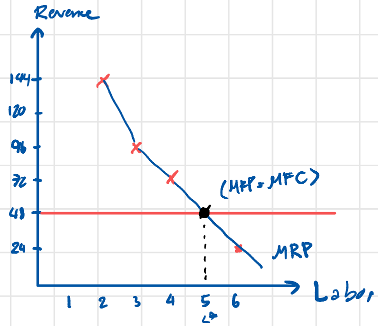
1. Assumed both a product market and a labor market are perfectly competitive, a table of marginal product is given below.

Unit of labor	Marginal product of labor	
2	12	144
3	8	96
4	6	72
5	4	48
6	2	24

This product can be sold in the market for $12 each while labor wage is $48, answer the following questions clearly.

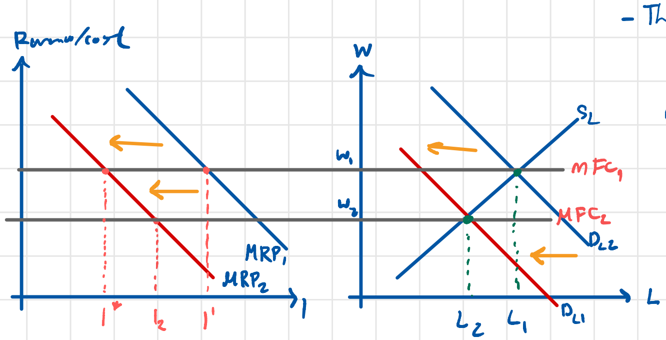
MFC = 48

1.a) Figure out how many units of labor this firm will choose as input for its production to maximize profit. Illustrate a graph to support your answer and explain.



Firm will mazimize their profit when the marginal benefit and marginal cost are equal
→ MRP = MFC
→ In this case the firm has to use 5 unit of labors to mazimize profit

1.b) Supposed that there is a sudden economic recession driving consumers' purchasing power downward, what would happen to the units of labor hired by this firm? Support your answer with illustrations that also show a connection between product market and labor market.



- The price is driven downward due to the decrease in consumers' purchasing power MRP1 shift to MRP2
- Firms demands less labor from l' to l*, driving total demand in this industry from D_{L_1} to D_{L_2}

- The decrease in demand for labor cause wage to decrease from w_1 to w_2, leading to a decrease in MFC → from MFC_1 to MFC_2

2. In a telecommunication sector where there are 3 companies namely A, D and T, at first, these companies can capture 50%, 20% and 30% of market share respectively. All of them share the same marginal cost of $0.2 on average for a unit of service per minute. Answer the following questions

2.a) If company A can charge users for $1 on average for a unit of service, figure out the Lerner's index for company A.

$$L = \frac{P - MC}{P}$$

$$= \frac{1 - 0.2}{1}$$

$$= 0.8$$

2.b) Figure out the HHI index for this industry at the current state.

Company A : 50%

Company D : 20%

Company T : 30%

$$HHI = S_1^2 + S_2^2 + S_3^2$$

$$= 50^2 + 20^2 + 30^2$$

$$= 2500 + 400 + 900$$

$$= 3,800$$

2.c) If D and T decide to merge their companies, figure out the new HHI index.

Company D + Company T : 20% + 30%

: 50% share

$$HHI : S_1^2 + S_2^2$$

$$: 50^2 + 50^2$$

$$= 5,000$$

3. Consider these statements and indicate which one of the choices fits with each statement and roughly explain why.

Choices

1. Not a market failure
2. Market power
3. Externalities
4. Public goods
5. Moral hazard
6. Adverse selection

3.a) People feel that price level is hiking.

3.b) Morpheus always hears a loud fight coming from a room next to his.

3.c) Trinity does not receive her full-benefit until her first 3-month of her work position.

3.d) In Chiang Mai, there is no earthquake alarming system.

3.e) Starbucks coffee is more expensive than Amazon coffee.

3.a) Market Power: People may feel that the price is increase or decrease due to the market power.

3.b) Externalities: Because Morpheus got negative externally from his neighbourhood that maybe due to a low quality of material, using to build the building.

3.c) Moral hazard: Trinity may got deceived by her boss.

3.d) Public goods: Earthquake Alarming system is a public goods.

3.e) Market power: Starbucks coffee are more expensive than Amazon coffee BC of the quality, branding and the target customers.

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