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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.

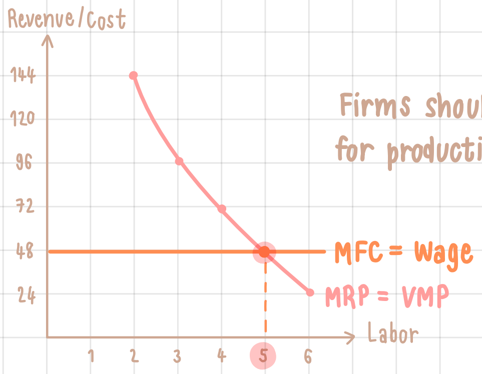
Unit of labor	Marginal product of labor
2	12
3	8
4	6
5	4
6	2

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

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.

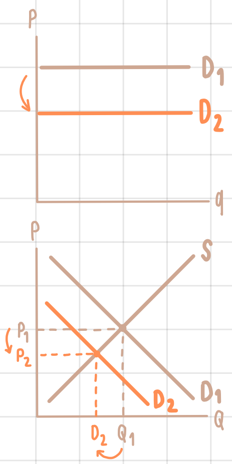
Firm will maximize profit when MRP = MFC
- MRP = MP × MR → in perfectly competitive market MRP = VMP → VMP = MP × P
- MFC = Wage

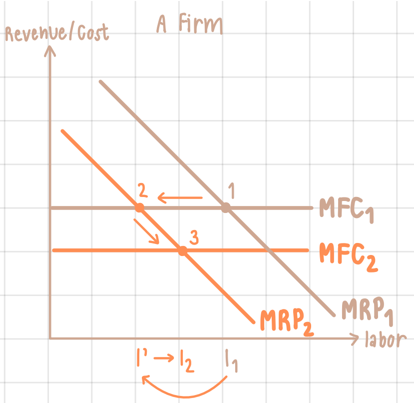
L	MP	P	VMP (MP×P)
2	12		144
3	8		96
4	6	12	72
5	4		48
6	2		24

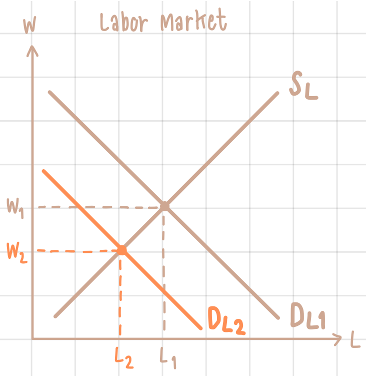


Firms should hired 5 units of labor for production to maximize profit #

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.







Reduce in purchasing power make demand in economy drop ($D_1 \to D_2$). Then price will drop ($P_1 \to P_2$) causing MRP shift downward ($MRP_1 \to MRP_2$). So the firm demand less labor ($l_1 \to l_2$). Total labor demand drop ($D_{L1} \to D_{L2}$) cause wage to decrease ($W_1 \to W_2$), leading to the decrease in MFC ($MFC_1 \to MFC_2$)

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.

Lerner's index : $L = \frac{P - MC}{P}$

$$L = \frac{1 - 0.2}{1} = \frac{0.8}{1} = 0.8 \#$$

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

$$HHI = \sum_{i=1}^{N} s_i^2 = (0.5)^2 + (0.2)^2 + (0.3)^2 = 0.25 + 0.04 + 0.09 = 0.38 \#$$

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

$$D+T = 0.2 + 0.3 = 0.5$$

$$HHI = \sum_{i=1}^{N} s_i^2 = (0.5)^2 + (0.5)^2 = 0.25 + 0.25 = 0.5 \#$$

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

Not a market failure

The market is doing what it is suppose to do. When the supply is tight relative to the demand, so the price has to risen. In order to restrain the demand and value the supply.

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

Externalities → Negative Externality

There is a negative effect (loud noise) incurred to a third-party (Morpheus)

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

Moral hazard

It is a situation when behavior changes after a contract is signed since another party can't keeps monitoring.

Employer
Trinity } Contract (receieve salary every month) → Trinity will receive full-benefit after works for 3 months

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

Public Goods

There is no earthquake alarming system in Chiang Mai since no private firm would invest in any public goods because they can't return any profit.

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

Market power

Starbucks has more market power than Amazon, so Starbucks can sell coffee at the higher price.