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Econ Notes: Chapter 13

Total Revenue, Total Cost, Profit

- We assume that the firm's goal is to maximize profit.
- **Profit**=**Total Revenue**- **Total Cost**
    - **Total Revenue**: the amount a firm receives from the sales of its output.
    - **Total Cost**: the market value of the inputs a firm uses in production.

Costs: Explicit vs. Implicit

- **Explicit Cost** require an outlay of money, e.g., paying wages to workers
- **Implicit costs** do not require a cash outlay, e.g., the opportunity cost of the owner's time
- Remember one of the Ten Principles:
    - The cost of something is what you give up to get it.
- This is true whether the costs are implicit or explicit. Both matter for firms' decisions.

Economic Profit vs. Accounting Profit

- **Accounting profit**
    - = total revenue minus total explicit
- **Economic profit**
    - = total revenue minus total costs (including explicit and implicit costs)
- Accounting profit ignores implicit costs, so it's higher than economic profit.

Production Function

- A **production function** shows the relationship between the quantity of inputs used to produce a good and the quantity of output of that good.
- It can be represented by a table, equation, or graph.
- Ex 1
    - Farmer Jack grows wheat
    - He has 5 acres of land
    - He can hire as many workers as he wants.

Marginal Product

- If Jack hires one more worker, his output rises by the marginal product of labor
- The **marginal product** of any input is the increase in output arising from an additional unit of that input, holding all other inputs constant.
    - Change in output as you hire or use another unit of an input
- Notation:
    - Δ Delta="change in…"
- Examples: Δ Q: change in output, Δ L= change in labor
- Marginal product of labor (MPL)= Δ Q/ Δ L

- MPL equals the slop of the production function.
- *Notice MPL diminishes as L increases.
- This explains why the production function gets flatter as L increases.

Why MPL is Important

- Recall one of the Ten Princniples:
  - *Rational people think at the margin*
- When farmer Jack hires an extra worker,
  - His cost rise by the wage he pays the worker
  - His output rises by MPL
- Comparing them helps Jack decide whether he would benefit from hiring the worker.

Why MPL Diminishes

- Farmer Jack's output rises by a smaller and smaller amount for each additional worker. Why?
- As Jack adds workers, the average worker has less land to work with and will be less productive
- In general, MPL diminishes as L rises whether the fixed input is land or capital (equipment, machines, etc.)
- **Diminishing marginal product**: the marginal product of an input declines as the quantity of the input increases (other things equal)

Fixed and Variable Costs

- **Fixed costs (FC)** do not vary with quantity of output produced
  - For Farmer Jack, FC=1000 for his land
  - Other examples: cost of equipment, loan payments, rent
    - Straight line
- **Variable costs (VC)** vary with the quantity produced.
  - For Farmer Jack VC= wages he pays workers
  - Other examples: cost of materials
    - Something is always Zero?
- **Total Cost (TC)=** FC+VC
  - Above fixed cost'
- **Average fixed cost (AFC)** is fixed cost divided by the quantity of output:
  - AFC=FC/Q
  - Always fall, never reaches zero
  - Notice the AFC falls as Q rises: The firm is spreading its fixed costs over a larger and larger number of units.

- **Average variable cost (AVC)** is variable cost divided by the quantity of output:
- AVC=VC/Q

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- As Q rises, AVC may fall initially. In most cases, AVC will eventually rise as output rises.

- **Average total cost (ATC)** equal total cost divided by quantity of output
    - ATC=TC/Q
    - ATC= AFC+AVC
    - General ATC is U-Shaped