Ch 13. The Cost of Production

- The Firm's goal is to maximize profit
- Profit = Total revenue – Total cost
  - TR, the amount a firm receives from the sale of its output
  - TC, the market value of the inputs a firm uses in production
  - **Opportunity cost : The cost of something is what you give up to get it**
- Total Cost = Explicit cost + Implicit cost
- **Implicit cost : do not require a cash outlay**
  - **Ex.** the opportunity cost of the owner's time
- Accounting profit (TR – explicit cost) vs. Economic Profit (TR - Explicit cost + Implicit cost)
  - Accounting profit ignores implicit costs, so it's higher than economic profit.

- **Production function**: Relationship between Q of inputs and Q of outputs
- Gets Flat as production rises.
- Marginal product : slope of production function
- Marginal product of Labor, MPL = $\Delta Q / \Delta L$
- Diminishing marginal product
- Why MPL is important, and why diminishes?

- Total Cost Curve, TC
- **MC, marginal cost** : Increase in total cost arising from and extra unit of production
- MC = ΔTC / ΔQ
- Why MC is important?
- To maximize profit, MC = MR
  - We will learn about MR in Chapter 14

- Fixed Cost : Do not vary with Q, ex. rent, interest
- Variable Cost : Wary with Q, ex. Labor cost, cost of materials
- TC = Fixed cost + Variable cost
- Divide by Q
- AFC + AVC = ATC
- ATC, average total cost is usually U-shaped
  - At the beginning, as Q rises, falling AFC pulls ATC down.
  - Eventually, rising AVC pulls ATC up.
- Efficient scale: the Q where ATC is lowest.

- ATC and MC
  - See the graph
  - **MC curve crosses the ATC curve at the ATC curve's minimum.**

- Cost in the Short Run and Long Run
  - Short run and long run in economics
- Short run : Some inputs are fixed
  - The costs of these inputs are FC
- Long run : All inputs are variable
  - Able to build new factories or sell existing ones.
  - No Fixed costs in the long run, because all inputs are variable in the long run.
  - Only Total cost

- Long run average total cost: LRATC with 3 factory sizes
  - Small, Medium, Large size factory
  - The firm can change to a different factory size in the long run, but not in the short run.
  - For 3 factory sizes, we have 3 short run average total cost SRATC curves.

- Connect the lowest parts of individual SRATCs, we have LRATC.
- LRATC tells you the most efficient factory size that minimizes the average production cost.
- A typical LRATC looks like a salad bowl.
- Economies of Scale
  - ATC falls as Q increase
  - Specialization among workers
  - More common when Q is low
- Constant returns to scale
  - ATC stays same as Q increase
- Diseconomies of Scale
  - ATC rises as Q increases.
  - Coordination problems in large organizations.
  - More common when Q is high.