ECON 202

Lesson 6: Cost Analysis
Reading: Chapter 20

In this lesson we will:
- Learn how businesses are structured and how they maximize profit
- Examine and graph the relationship between production and different costs
- Investigate what determine cost in the short and the long run

Business: An entity that organizes inputs (such as?), transforms them into commodities and sells them to consumers with the long-term goal of maximizing profit.

- All economies rely on firms to produce, but they give them varying degree of freedom. How do governments restrict firms’ behavior?
- Most firms in the US are privately own. Owners are residual claimants who take risk.
- Production is done both through team production and contracting. (Advantages?) In both cases the owner faces a principal-agent problem trying to get the job done well.
- 73% of all firms in the US are proprietorships (single owner), but they only generate 7% of revenue. Partnerships make 7% of firms & 5% of revenue and corporations (owned by shareholders) constitute 20% of firms but 88% of revenue. Advantages?

Incentive to maximize profit:
- Firms have the incentive to maximize profit by maximizing revenue (how?) and minimizing cost (how?). Managements who fail to max profit will see a reduction in their stocks value and bonuses (wage is only 9% of compensation) and can get taken over
- Economic profit includes explicit costs & normal profit (resources’ opportunity cost).
  - In competitive markets the normal profit rate is driven to zero (why?)
  - Accounting profits, which are widely reported, only include explicit costs
  - Demand for products determines the firm’s revenue while demand for other products determine the firms’ cost by affecting the resource prices. Which products matter?

\[ \Pi \text{ (Profit)} = \text{Revenue} - \text{Total Cost (Explicit + Implicit)} \]

Costs:
- Cost will vary in the short run and the long run. The short run is a period in which at least some of the factors of production (e.g., the plant size) are fixed. Some firms can adjust their factors quickly (e.g., internet firms) while others adjust slowly (examples?)
  - Total Cost = Total Fixed Cost + Total Variable Cost
  - Total Fixed Cost (TFC): does not vary with output in the short run (rent, etc.)
  - Total Variable Cost (TVC): increases with output (workers compensation, etc.)
  - Average Fixed Cost & Average Variable Cost equal TFC & TVC divided by quantity
  - ATC = AFC + AVC What are the fixed and variable costs for an airline?
  - Marginal Cost (MC): is the cost of producing an additional unit of the good

Each additional worker is going to increase total production. Example: Office workers.
- Since some factors are fixed in the short run and since firms hire the most productive workers first, the marginal product of each worker decreases. Other reasons?
Points below the curve are attainable but not technologically efficient

**The Law of Diminishing Returns:** As the firm uses more of a variable input (as Labor) with a given amount of fixed inputs (as Capital) the marginal product of the input eventually diminishes.

From production to marginal cost:
- MC equals the amount of labor needed to produce an additional unit times wage
- Because production exhibits diminishing returns, MC must be increasing at some point as shown in the table below. **Complete the table assuming** $w = $10 & $\text{TFC} = $50.

<table>
<thead>
<tr>
<th>Workers</th>
<th>Production</th>
<th>MP</th>
<th>TVC</th>
<th>TC</th>
<th>MC</th>
<th>AFC</th>
<th>AVC</th>
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<tr>
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<td>37</td>
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</tbody>
</table>

When the MC is higher (lower) than AVC or ATC it will cause them to increase (fall). **Example: grades.** Thus, the MC curve intersects AVC and ATC at their lowest points.

Changes in the price of inputs, taxes, regulations and technology can all shift the cost curves.

In the long run firms can change their fixed factors such as their plant size and will therefore end up on the Long Run Total Average Cost curve (LRAC)
- The LRAC curve connects all the lowest points of the short-run costs ATCs.
- The point where the LRAC bottoms out is the point of **minimum efficiency scale.**
- Most industries tend to have **economies of scale** where the LRAC decreases over some output range and **diseconomies of scale** above the ideal plant size. Economics of scale may occur because mass production is more efficient and **because …**
- Some of the cost that firms incur is **sunk** and should not influence their decisions.