

CHAPTER 9

CHAPTER 9 - BUSINESSES AND THE COSTS OF PRODUCTION

Economic Costs

- Costs exist because resources are scarce, wants are unlimited
- In order to produce more of one good resources have to be shifted away from other goods - **opportunity cost**
- **Costs** - explicit vs implicit
 - **explicit** - labor, materials, fuel, transportation
 - **implicit** - the opportunity cost of using self-owned, self employed resources
- **Profit** - normal vs economic or pure profit
 - **normal profit** - entrepreneurial talent (included in implicit cost)
 - **economic or pure profit** - $TR - TC$
- **Short run vs long run**
 - **short run** - resources can be changed, *plant capacity is fixed*
 - **long run** - resources *and* plant capacity can be changed

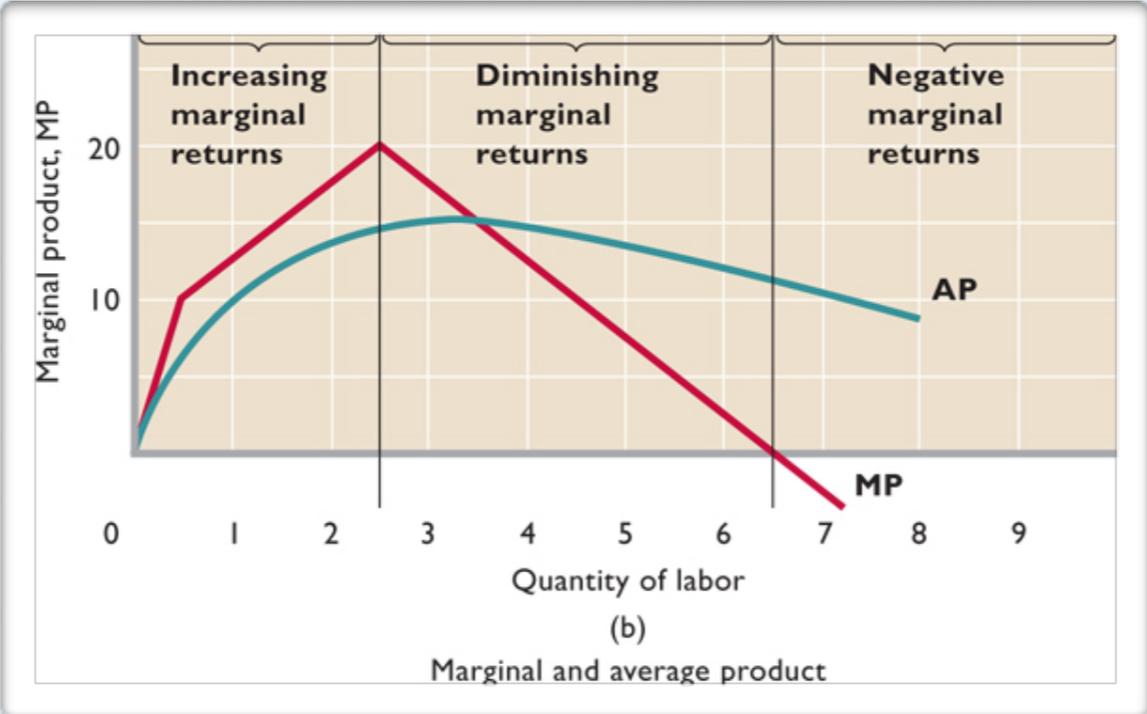
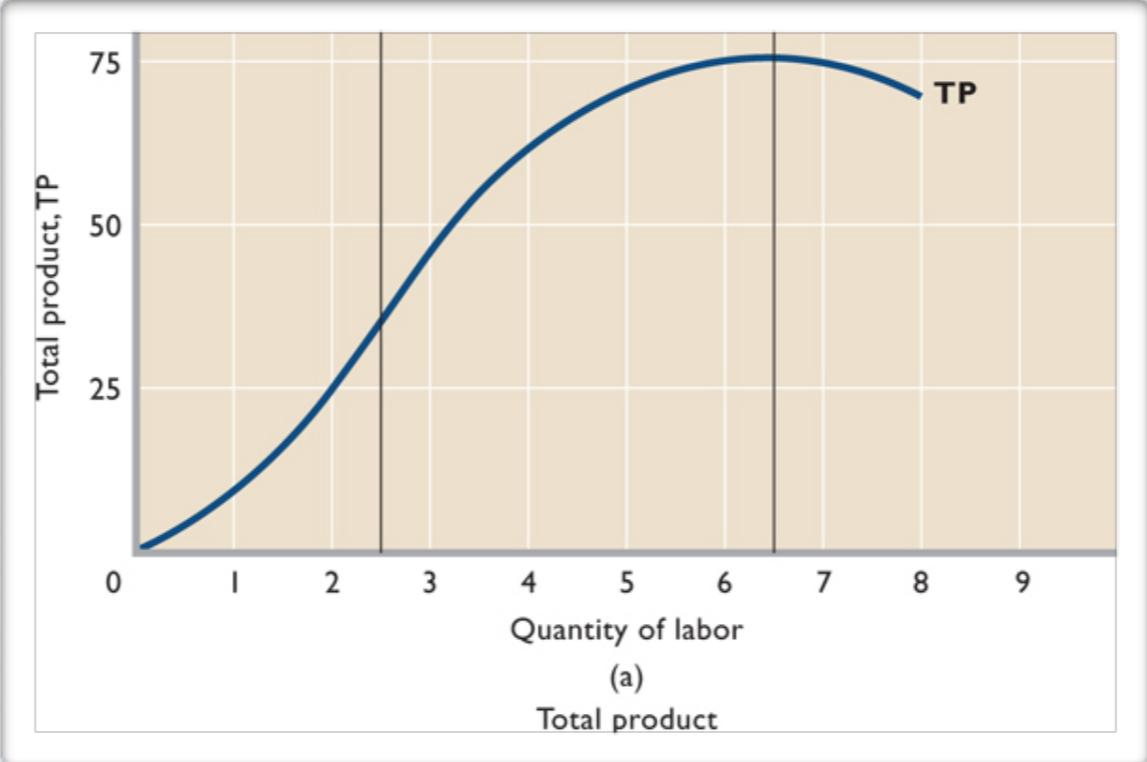
Short-Run Production Relationships

- **Short-run production** - examine labor - output relationship with fixed plant capacity
- **Total product (TP)** - is the total quantity, or total output, of a particular good or service produced
- **Marginal product (MP)** - is the extra output or added product associated with adding a unit of a variable resource, in this case labor, to the production process
$$\text{MP} = \frac{\text{change in total product}}{\text{change in labor input}}$$
- **Average product (AP)** - also called labor productivity, is output per unit of labor input
$$\text{AP} = \frac{\text{total product}}{\text{units of labor}}$$

Short-Run Production Relationships

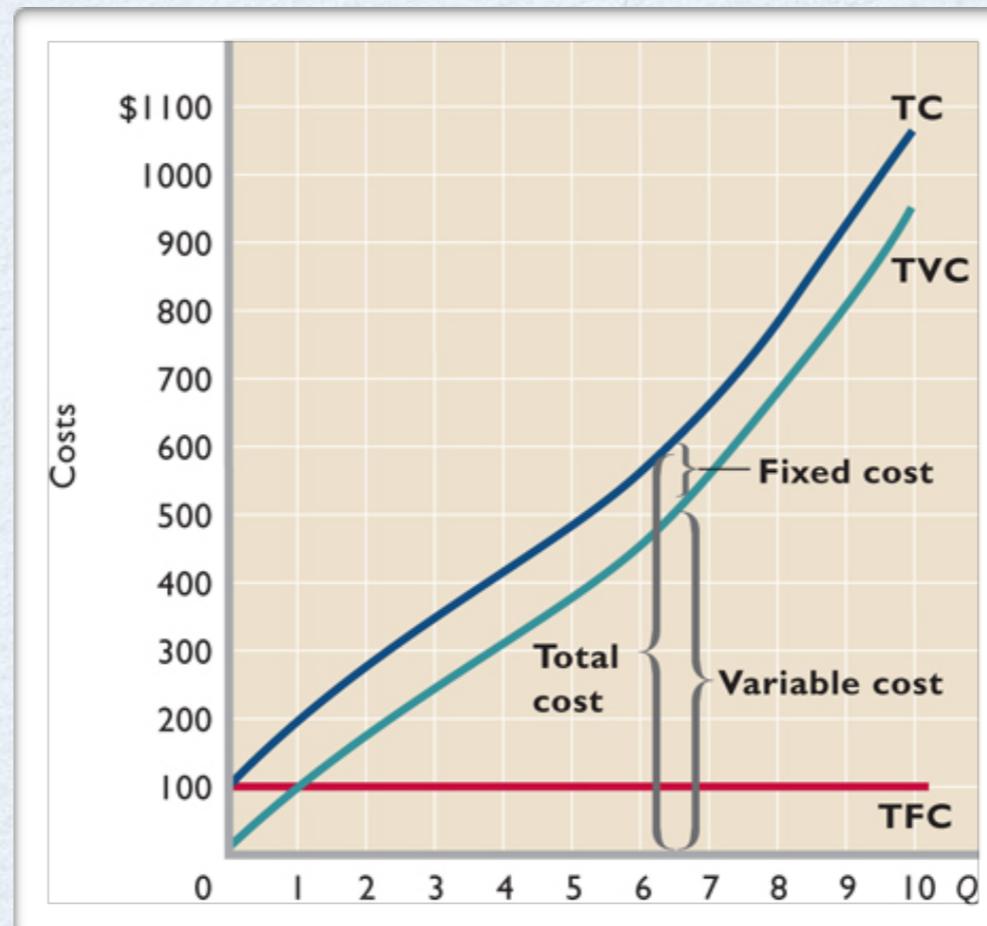
- *Assumption: technology is fixed*
- **Law of diminishing returns** - as successive units of a variable resource (labor) are added to a fixed resource (capital or land), beyond some point the extra, or marginal, product that can be attributed to each additional unit of the variable resource will decline.

Short-Run Production Relationships



Short-Run Production Costs

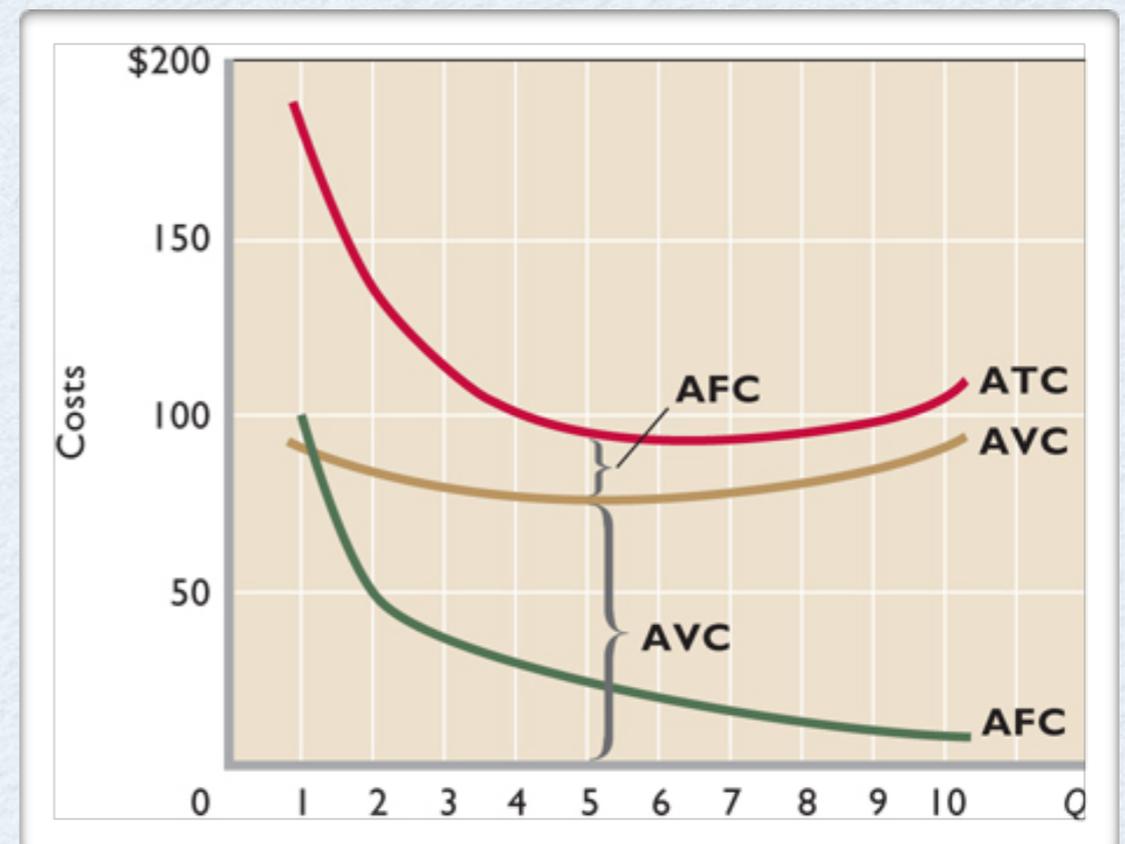
- **Fixed Cost (FC)** - do not vary with changes in output
- **Variable Cost (VC)** - change with the level of output
 - *Variable cost will increase, as production increases, but by decreasing amounts for a period then increases by increasing amounts*
- **Total Cost (TC)** - is the sum of fixed and variable costs
 - $TC = FC + VC$



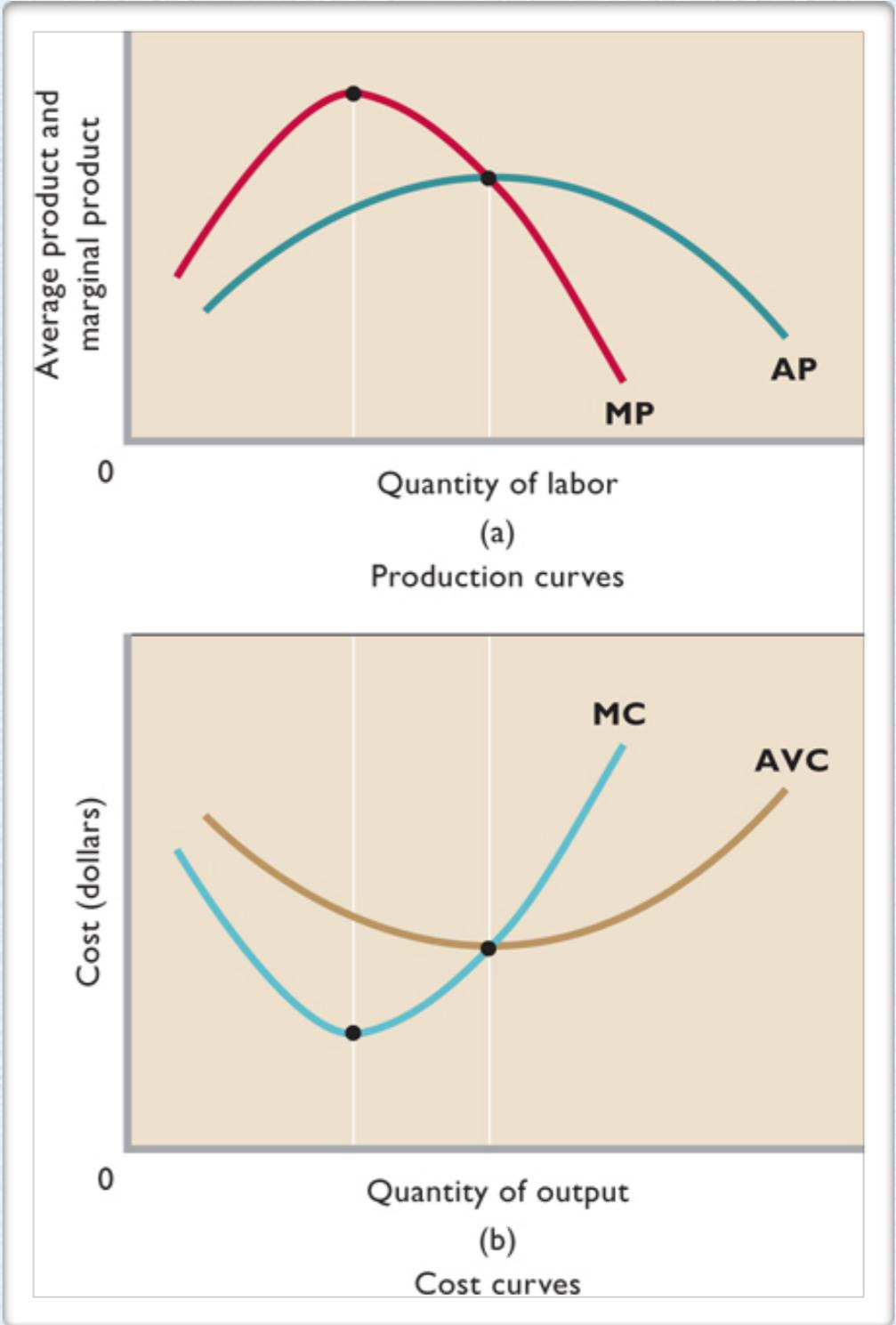
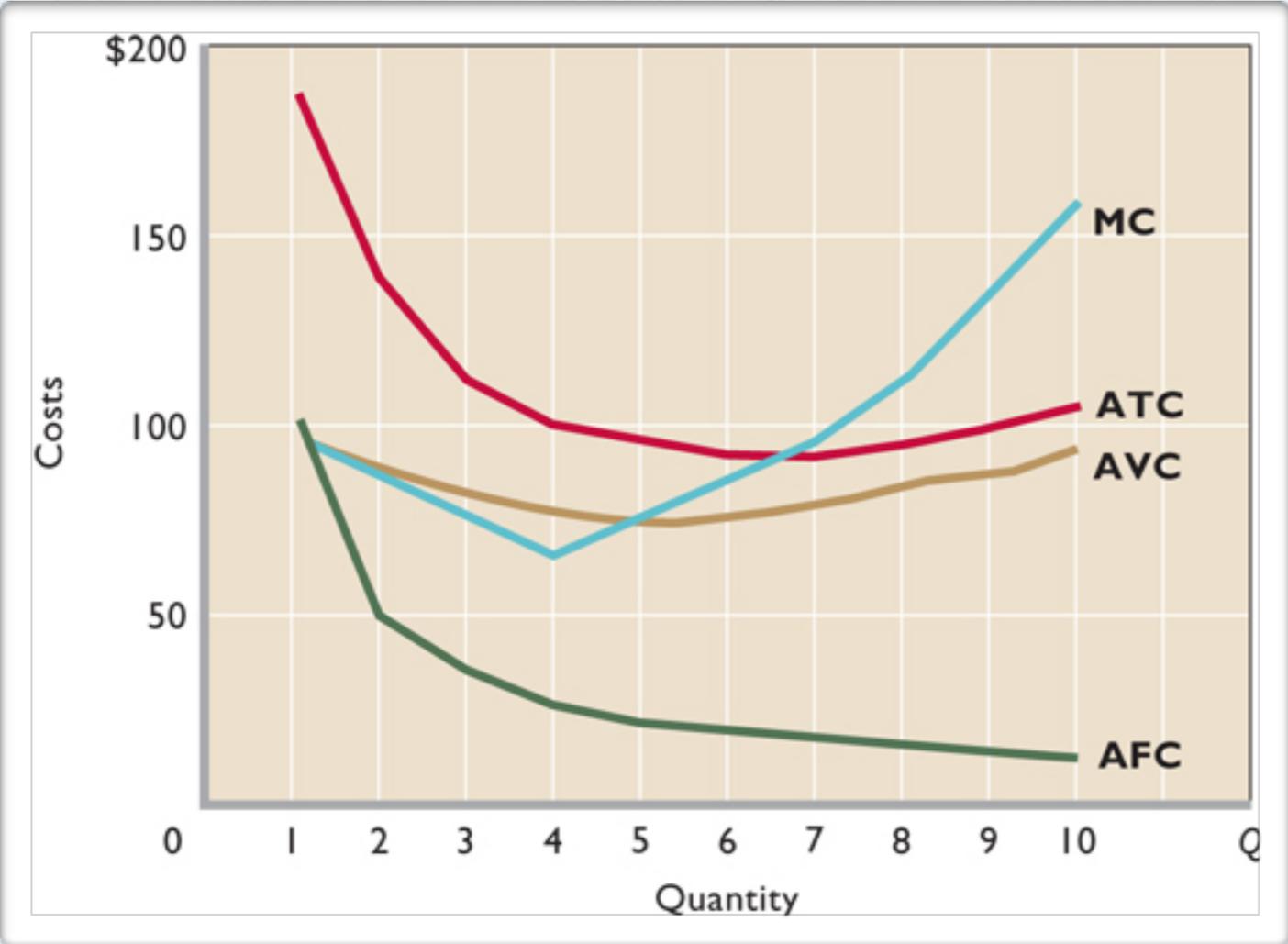
Short-Run Production Costs

Per Unit, or Average, Costs

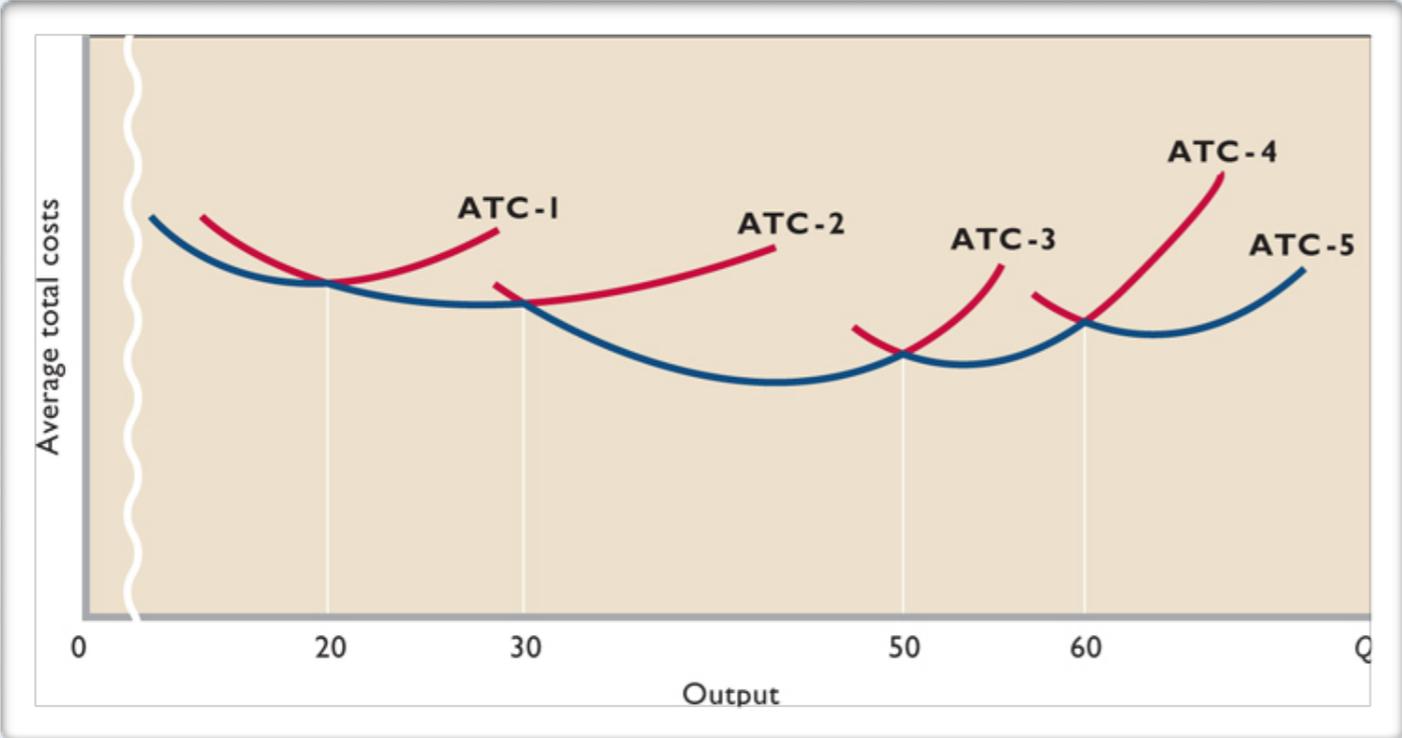
- **Average fixed cost (AFC = TFC/Q)** - total fixed cost per output
- **Average variable cost (AVC = TVC/Q)** - total variable cost per output
- **Average total cost (ATC = $TC/Q = (TFC + TVC)/Q = AFC + AVC$)** - total cost per output
- **Marginal cost (MC = *change in TC/change in Q*)** - is the extra or additional cost of producing one more unit of output



Short-Run Production Costs

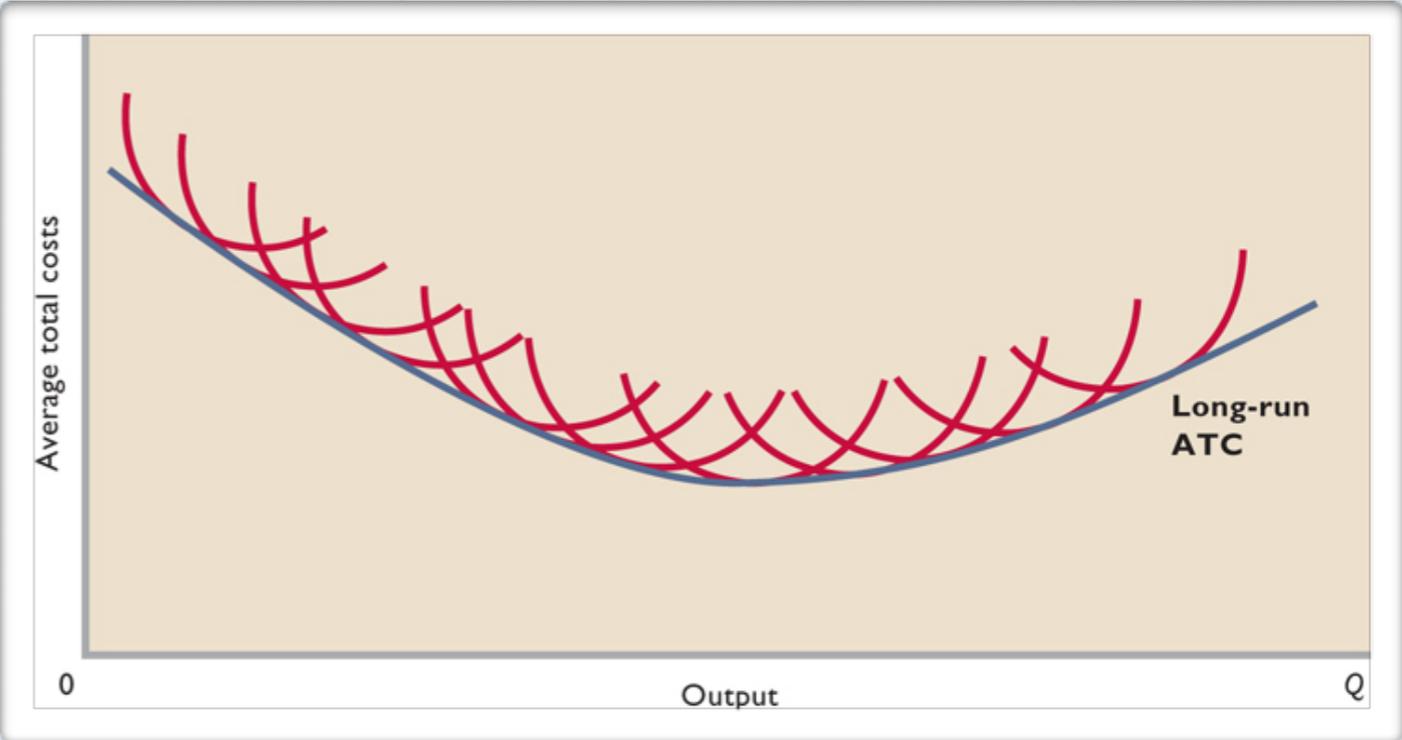


Long-Run Production Costs



- In the long-run firm size is *not* fixed

- Unlimited number of plant sizes



Long-Run Production Costs

- Economies and diseconomies of scale

