# CHAPTER 6

## 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

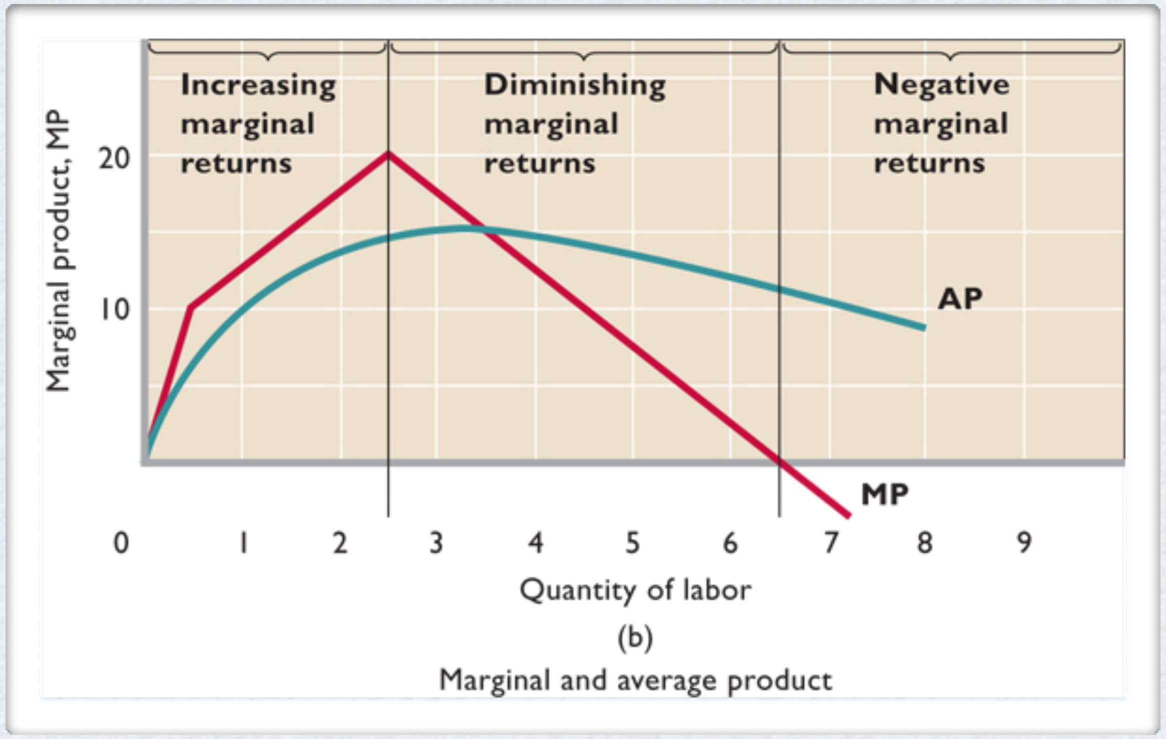
# Short-Run Production Relationships

- **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

  $$\mathbf{MP} = \frac{\textbf{change in total product}}{\textbf{change in labor input}}$$
- **Average product (AP)** - also called labor productivity, is output per unit of labor input

  $$\mathbf{AP} = \frac{\textbf{total product}}{\textbf{units of labor}}$$

# Short-Run Production Relationships

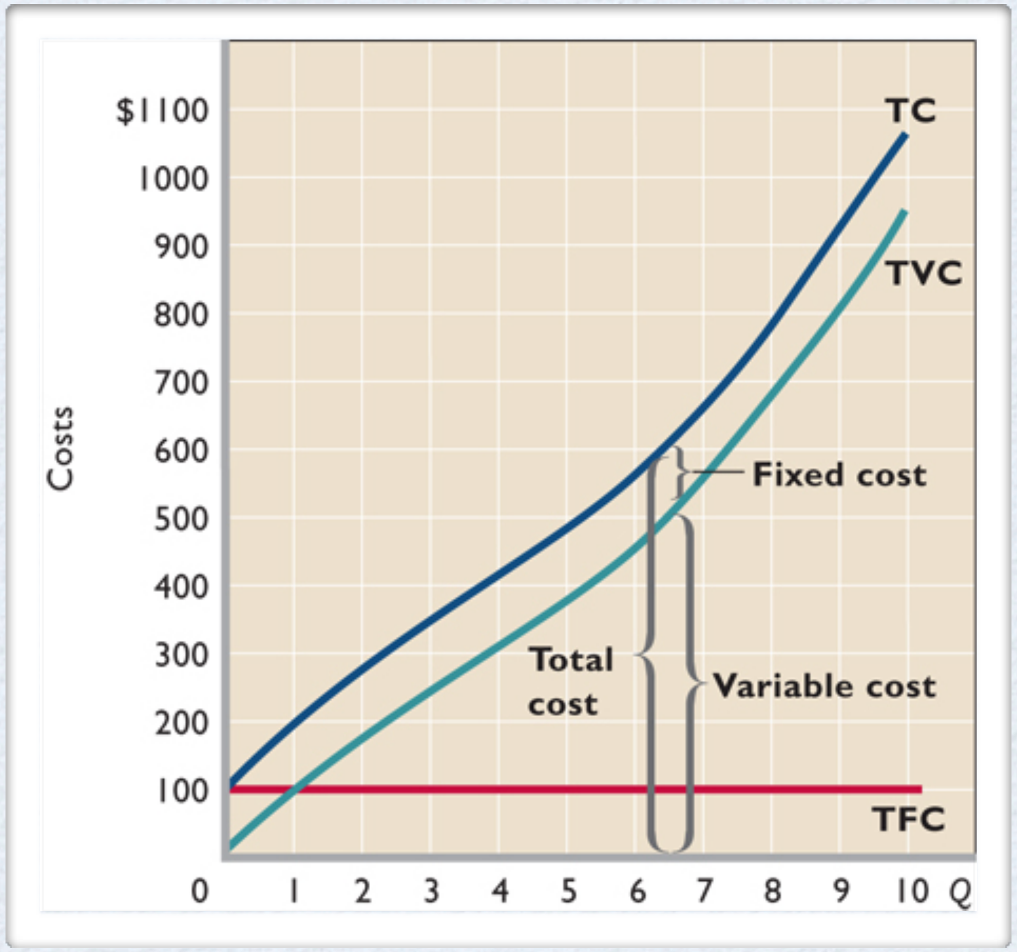



## Short-Run Production Relationships

- *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 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

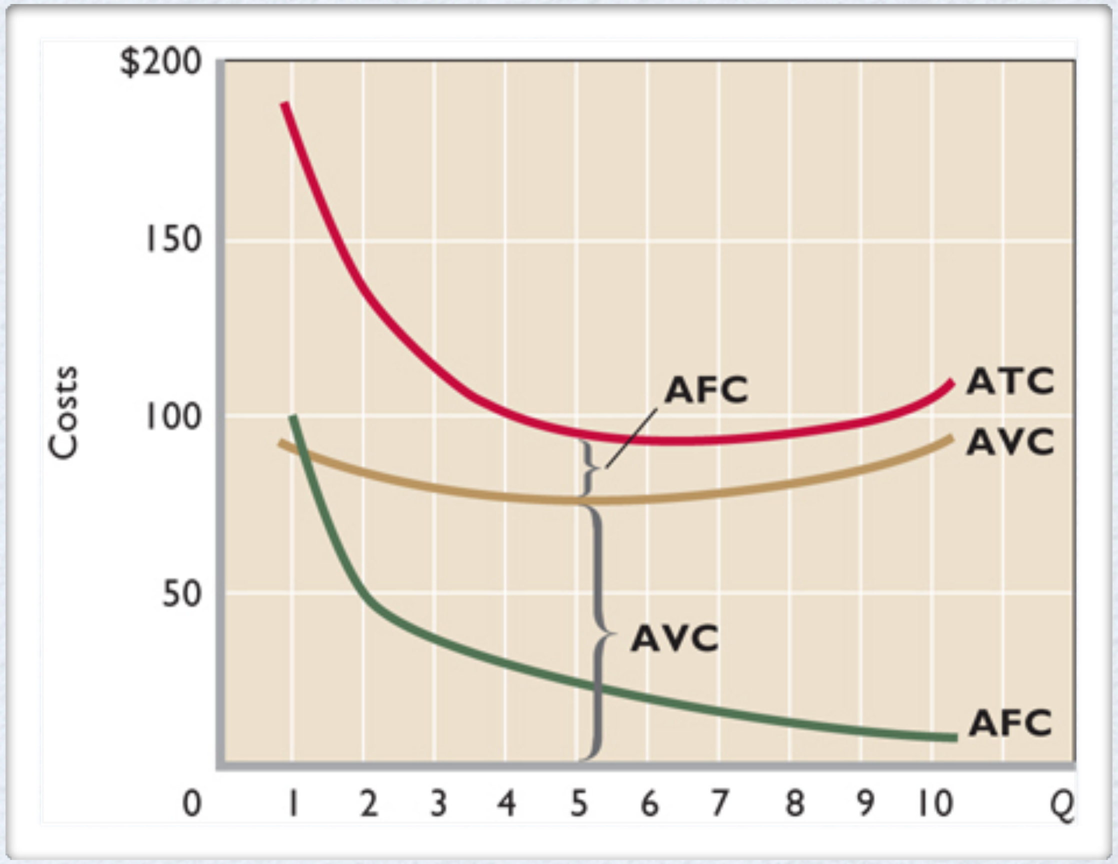
## Per Unit, or Average, Costs

- **Average fixed cost (AFC = TFC/Q)** - total fixed cost per output

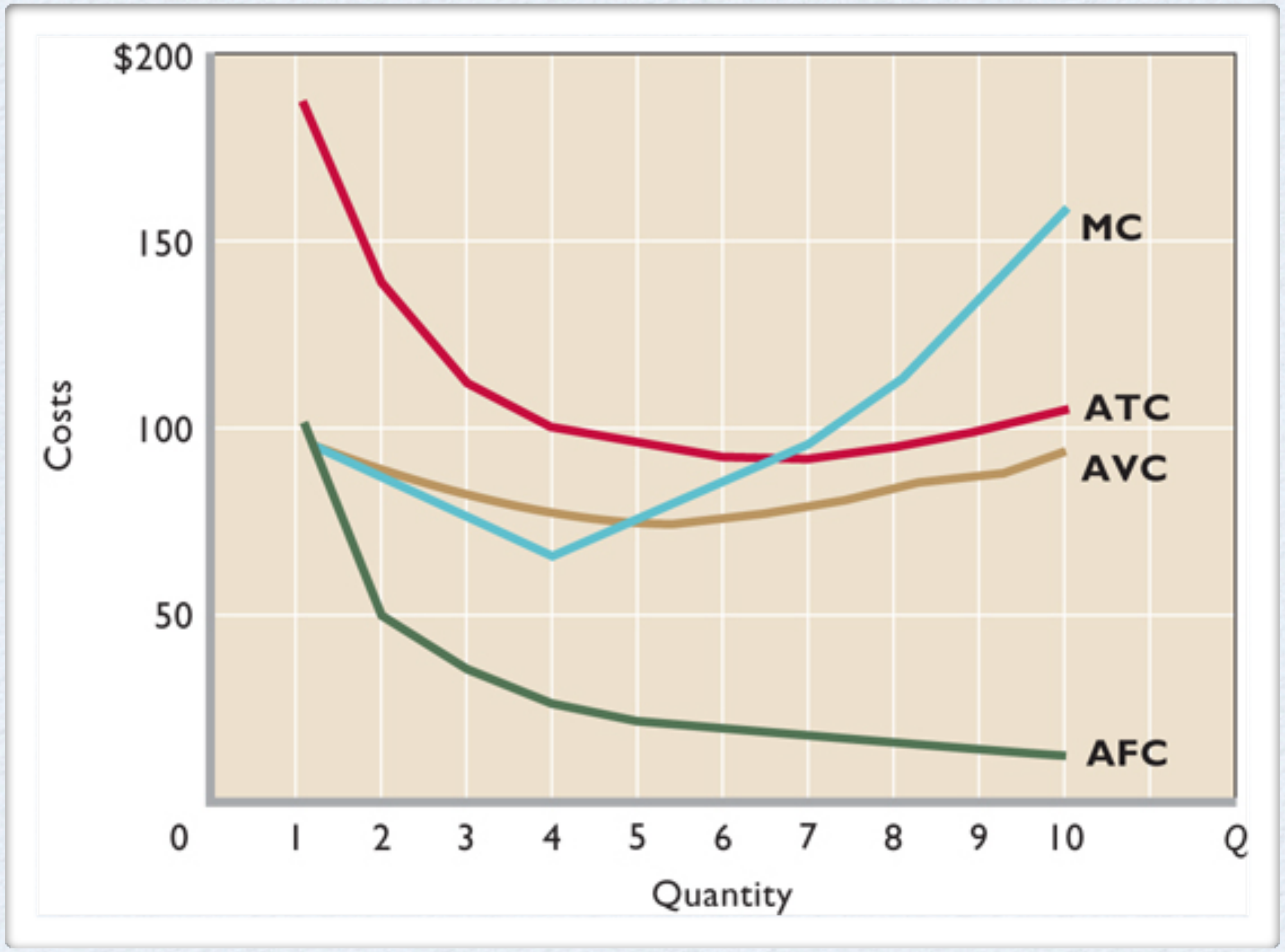
- **Average variable cost (AVC = TVC/Q)** - total variable cost per output

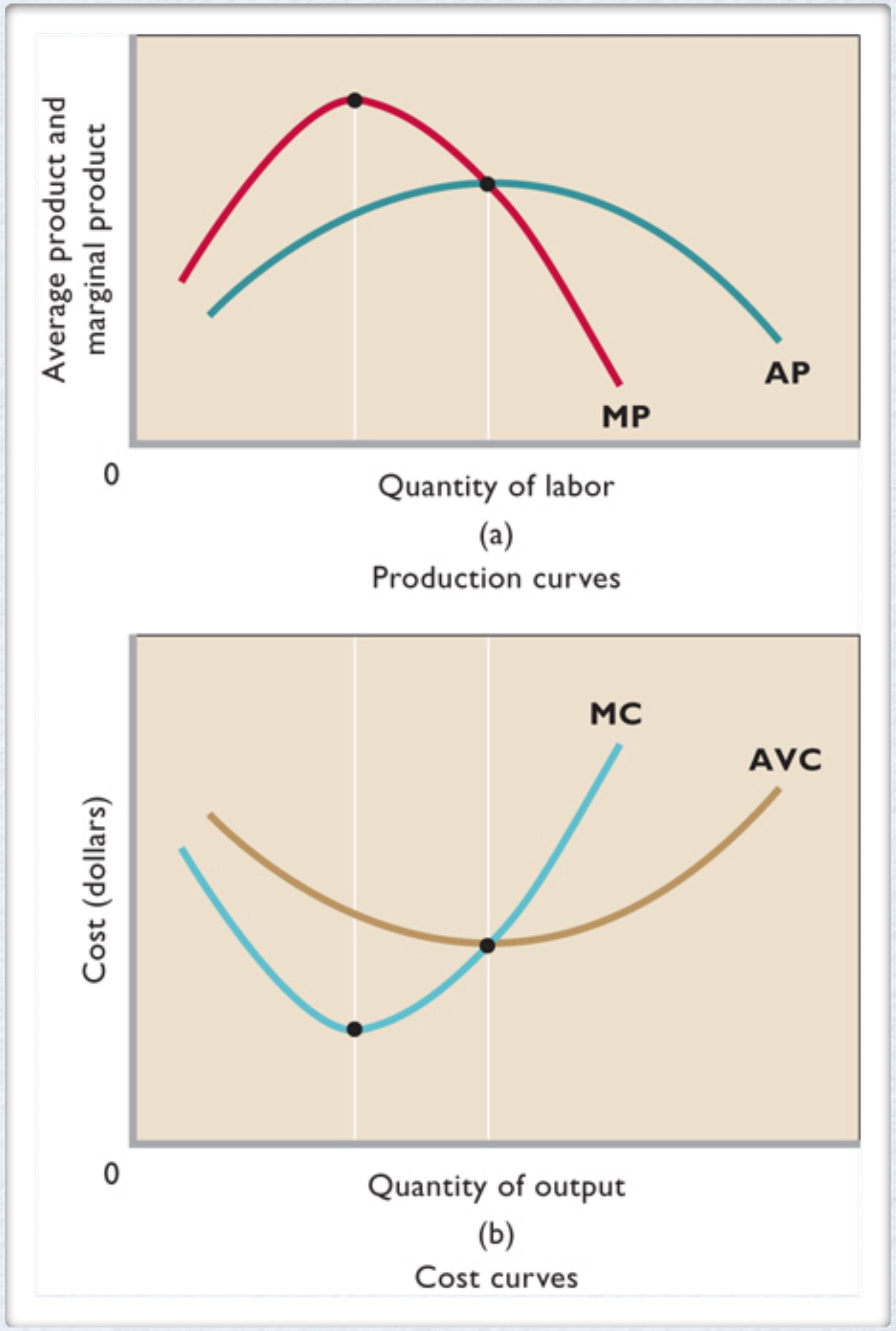
- **Average total cost (ATC = TC/Q =(TFC + TVC)/Q = AFC + AVC** - total cost per output

- **Marginal cost (MC = *change* in TC/*change* in Q)** - is the extra or additional cost of producing one more unit of output

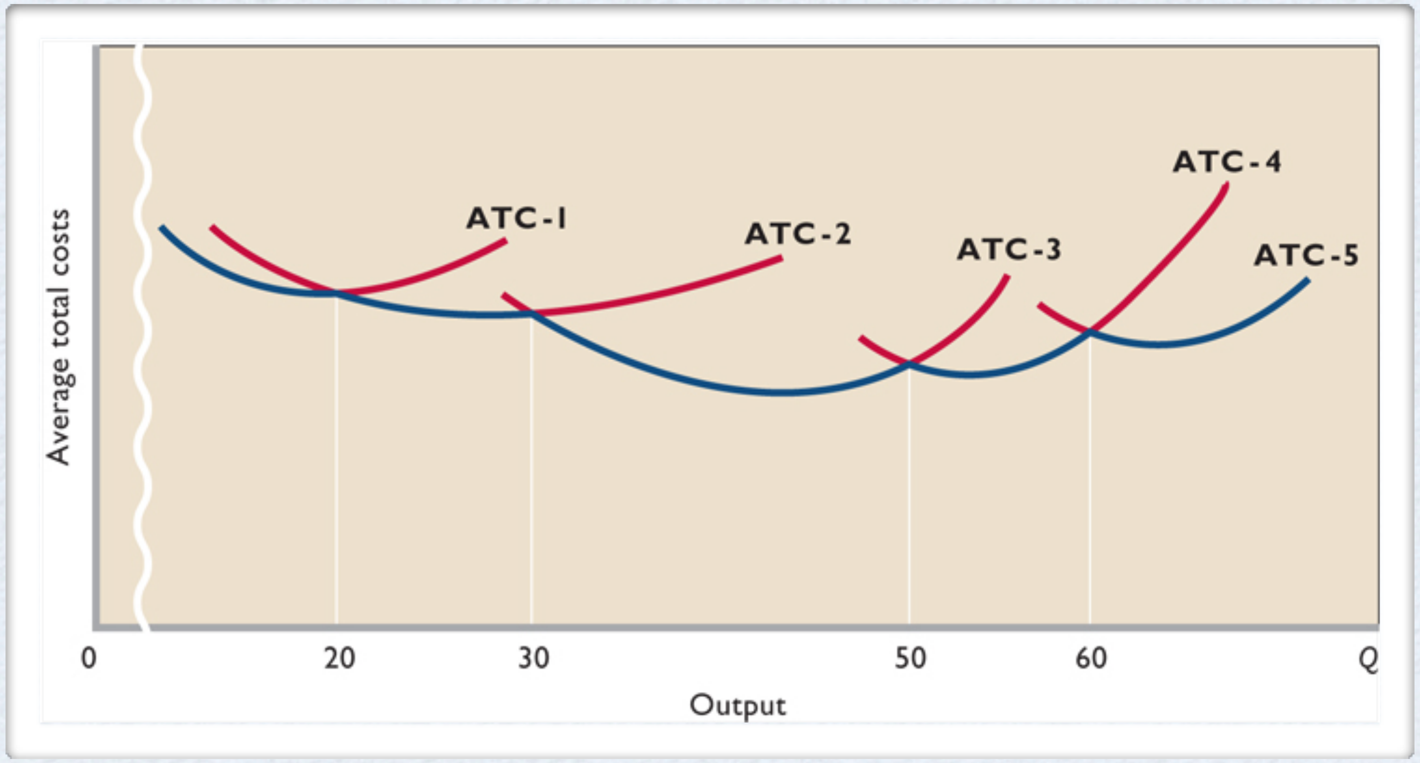


# Short-Run Production Costs



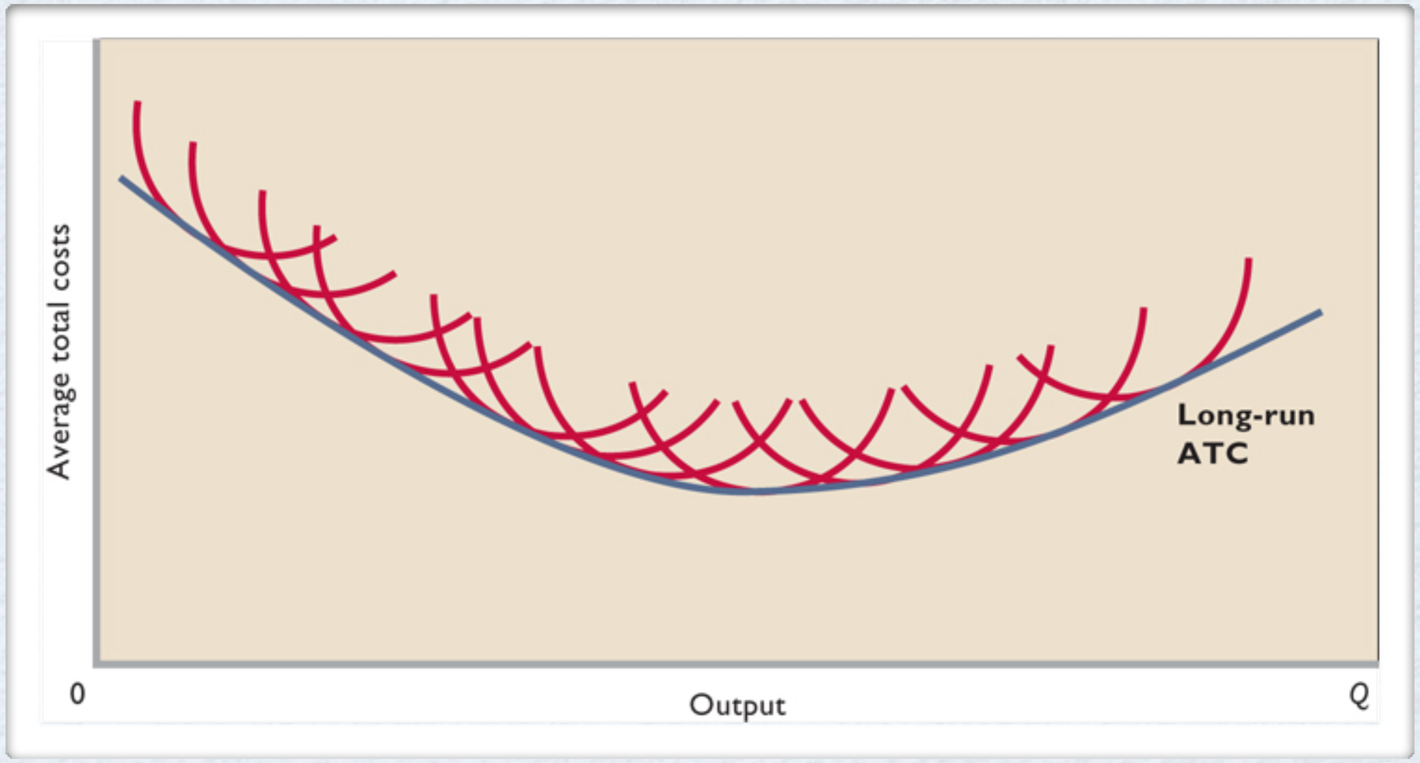



# Long-Run Production Costs




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

- Unlimited number of plant sizes



# Long-Run Production Costs

- Economies and diseconomies of scale