# The Competitive Firm Part IV

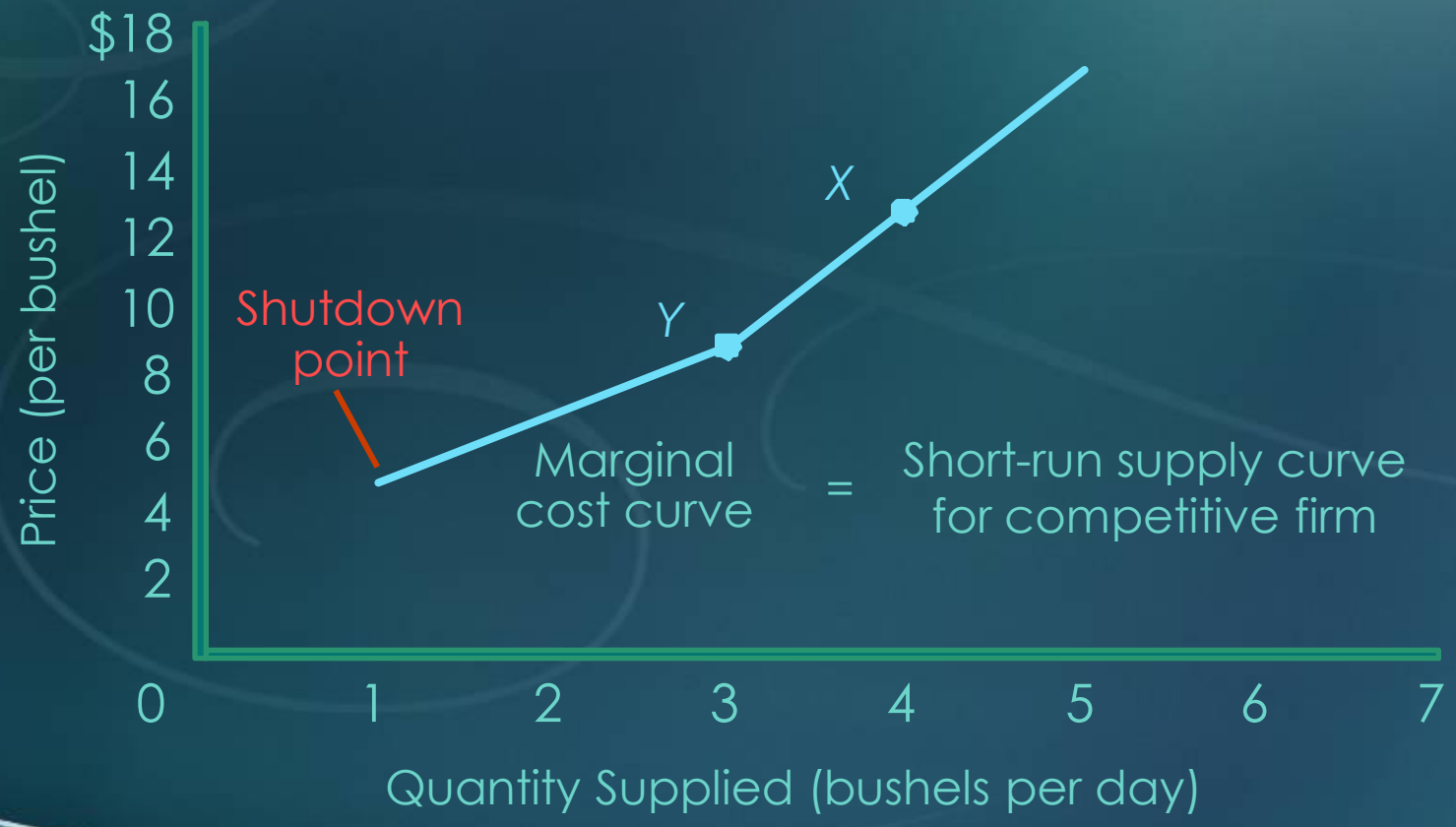
Whoever claims that economic competition represents 'survival of the fittest' in the sense of the law of the jungle, provides the clearest possible evidence of his lack of knowledge of economics.

-George Reisman

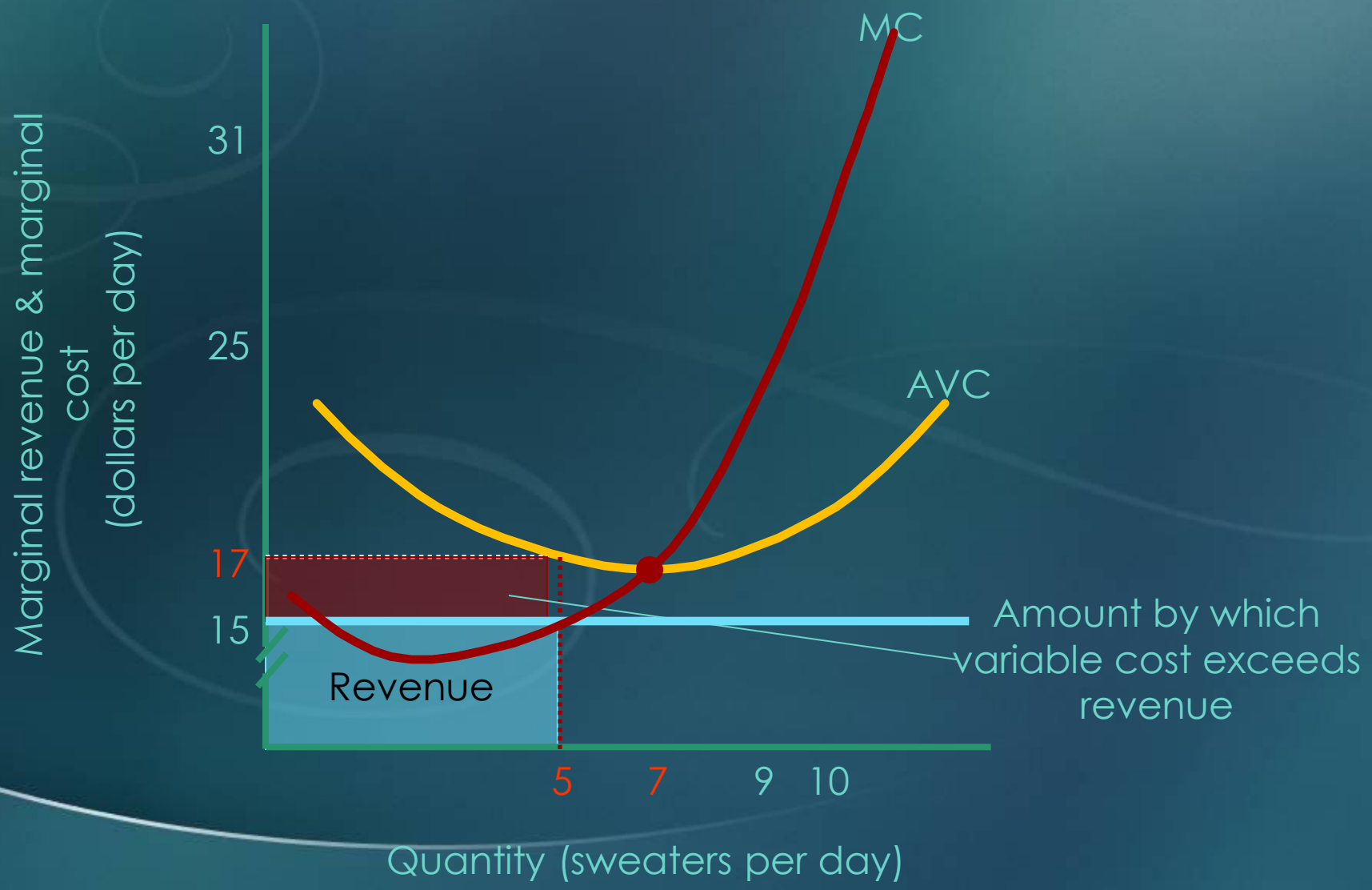
# Short-Run Supply Curve

- The marginal cost curve is the short-run supply curve for a competitive firm.
  - **Supply curve** – A curve describing the quantities of a good a producer is willing and able to sell (produce) at alternative prices in a given time period, *ceteris paribus*.

# Chart: Short-Run Supply Curve



# Chart: A Firm's Supply Curve



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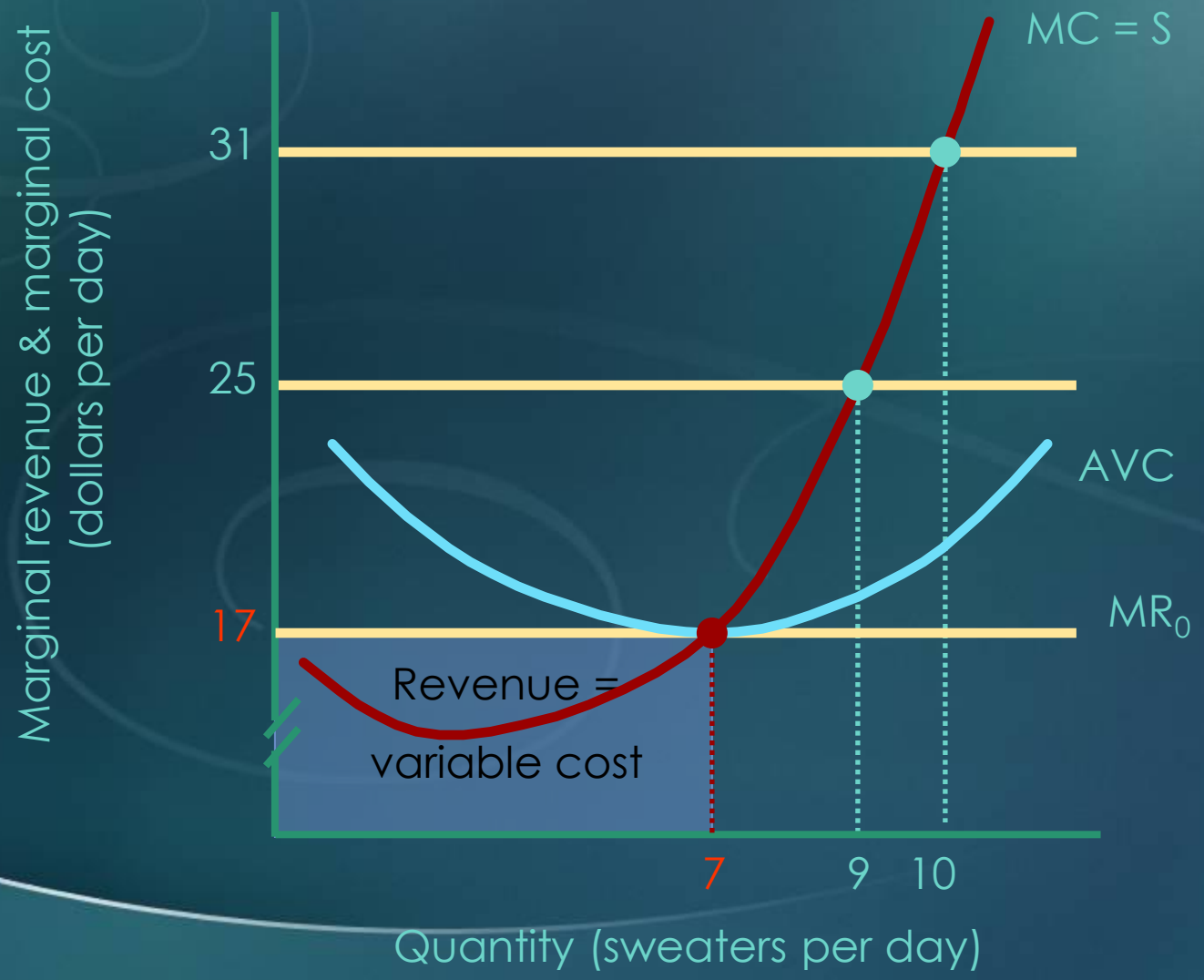

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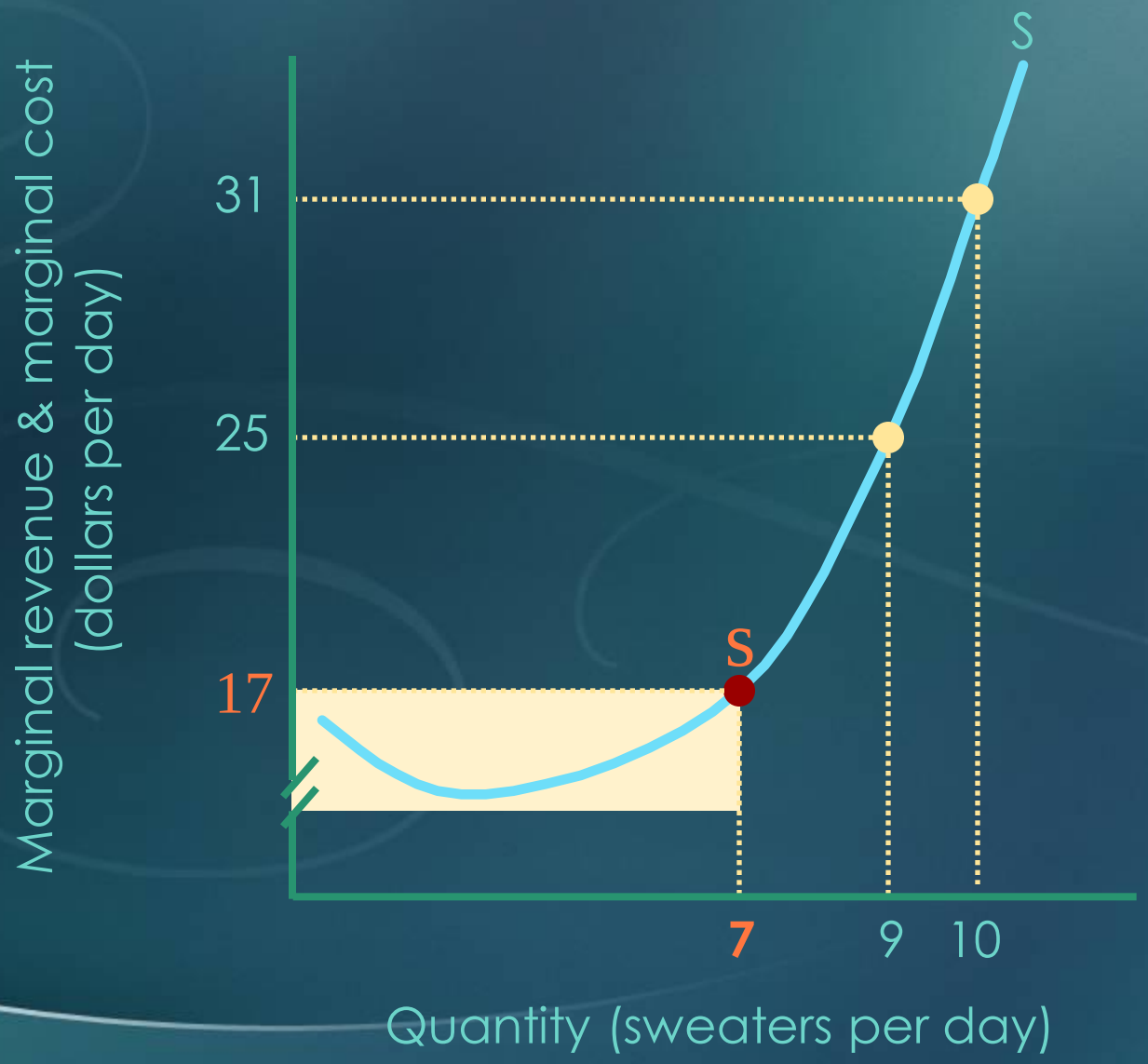
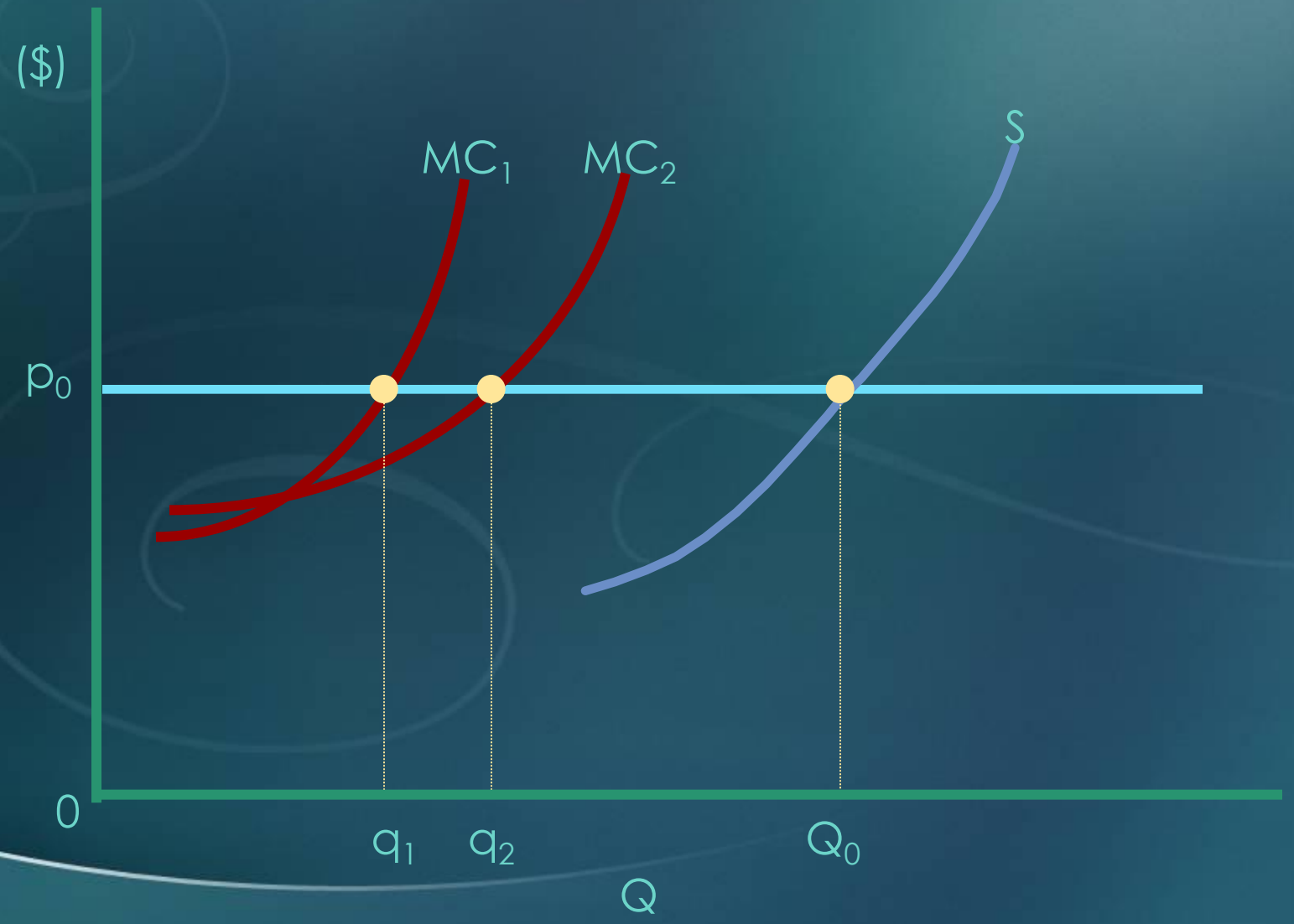


# Short-Run Industry Supply

- Short-run industry supply curve
  - Shows the quantity supplied by the industry at each price
    - plant size of each firm constant
    - the number of firms constant
  - It is constructed by the horizontal summation of all firm's supply curves.

# Chart: Example of Industry Supply Curve with 2 Firms



# Determinants of Supply

The quantity of a good supplied is affected by all forces that alter marginal cost.

# Short-Run Determinants

- The determinants of a firm's supply include:
  - The price of factor inputs
  - Technology (the available production function)
  - Expectations (for costs, sales, technology)
  - Taxes and subsidies

# Supply Shifts

If any determinant of supply changes, the supply curve shifts.

# The Investment Decision

- The **investment decision** is the decision to build, buy or lease plant and equipment.
- It also involves the decision to enter or exit an industry.

# The Investment Decision

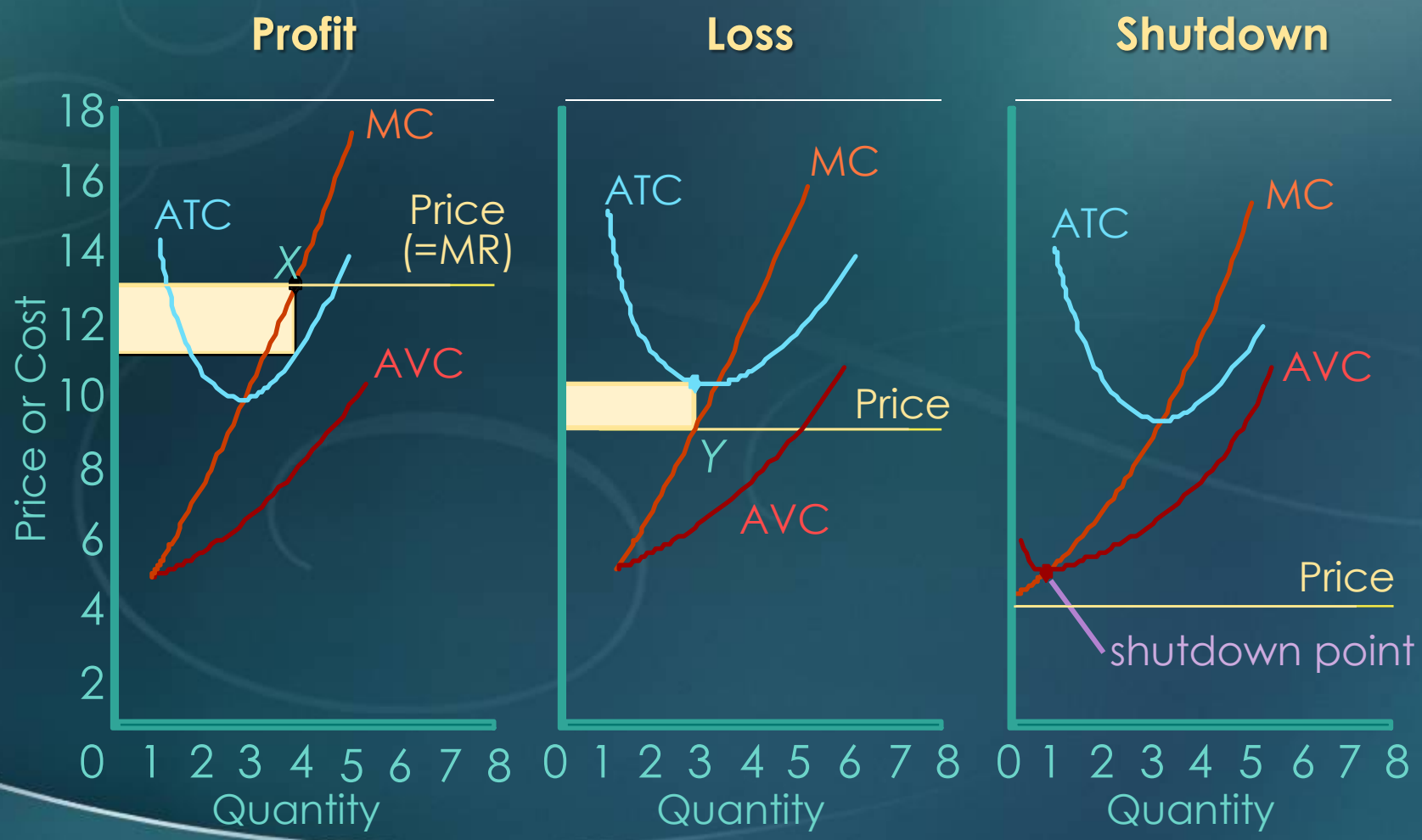
- The shut-down decision is a short-run response. In the short-run, the firm must decide:
  - Whether to produce or to shut down.
  - If produce, what quantity? Start with quantity decision
- Investment decisions are long-run decisions.
  - **Long-run** – A period of time long enough for all inputs to be varied (no fixed costs).

# The Shutdown Point

- When price does not cover average variable costs at any rate of output, production should cease.
- The **shutdown point** is that rate of output where price equals minimum AVC.

shutdown point → price = minimum AVC

# Charts: The Shutdown Point



# The Shutdown Decision

- The short-run profit maximization rule does not guarantee any profits.
- Fixed costs must be paid even if all output ceases.
- A firm should shut down only if the losses from continuing production exceed fixed costs.

# Long-Run Cost

- In the **long-run**, all inputs are variable.
- There is no fixed cost.

# Long-Run Costs

- In making long-run decisions, the producer is confronted with many possible cost figures.
- A producer will want to build, buy or lease a plant that is most efficient for the anticipated rate of output.

# Long-Run Cost

- Long-run cost
  - The firm uses the economically efficient quantities of labor and capital (least cost for the output).
  - This generates a firm's long-run average cost curve.

# The Long-Run Average Cost Curve

- The long run average total cost curve is derived from the short-run average total cost curves.

# Tax Effects

- Some tax changes alter short-run supply behavior.
- Others affect only long-run supply decisions.

# Property Taxes

- Property taxes are a fixed cost.
- They raise average costs and reduce profit.
- Because they don't affect marginal costs, they leave the profit-maximizing output unchanged.

# Payroll Taxes

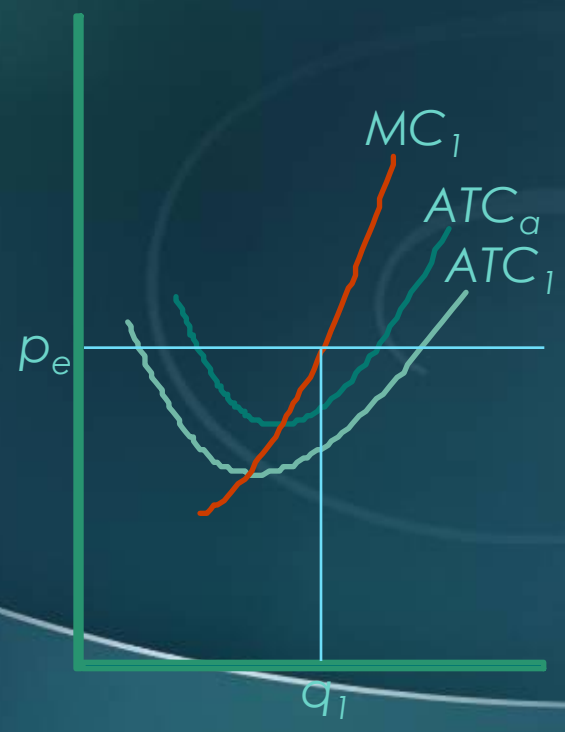
- Payroll taxes increase marginal costs.
- They reduce the profit maximizing rate of output.
- They increase average costs and lower total and per-unit profits.

# Profit Taxes

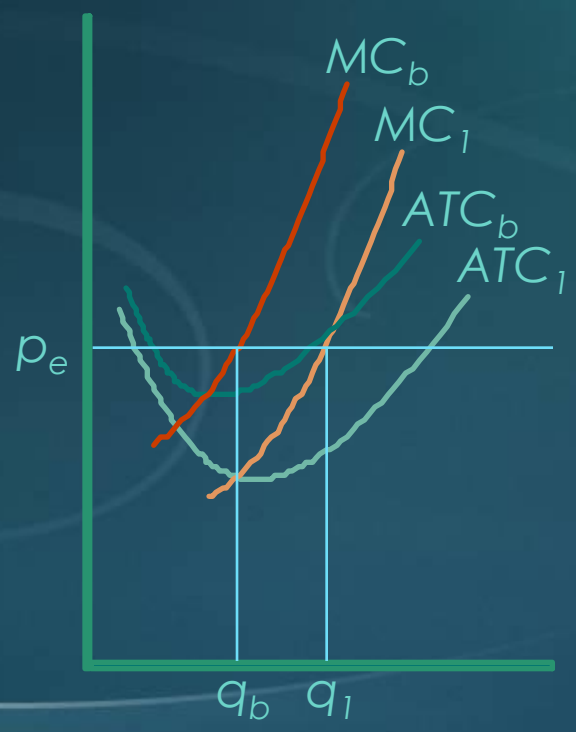
- Profit taxes are neither a fixed cost nor a variable cost.
- They don't affect marginal cost or prices.
- They don't affect production level decisions but may affect investment decisions.

# Charts: Impact of Taxes on Business Decisions

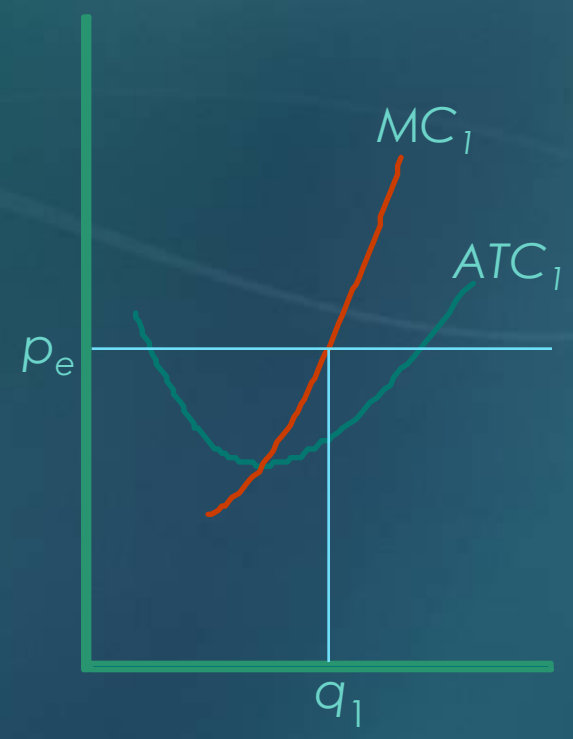
Property taxes affect fixed costs.




Payroll taxes alter marginal costs.




Profit taxes don't change costs.



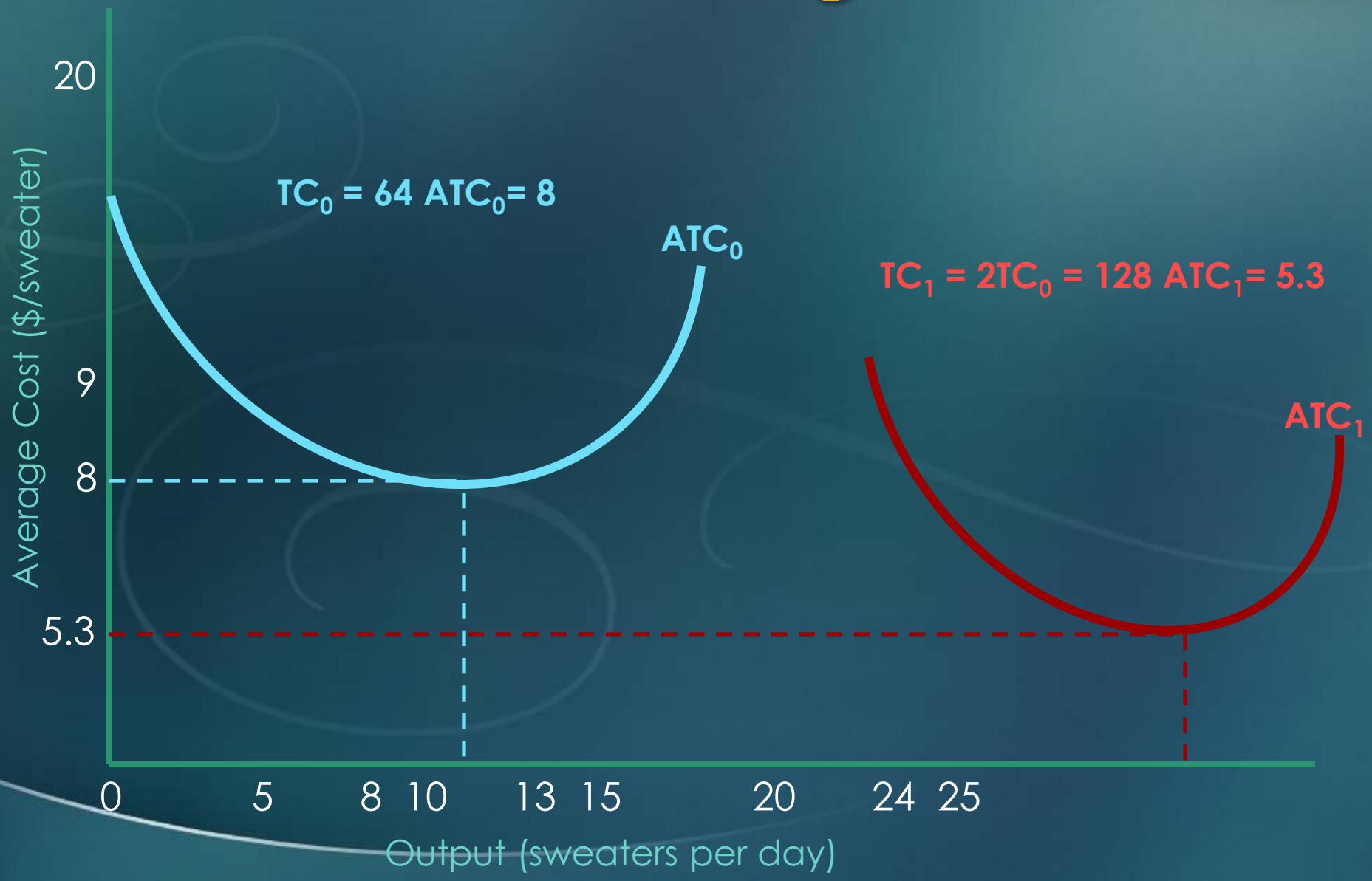
# Returns to Scale

- Returns to scale refer to the increases in output that result from increasing all inputs by the same percentage.
- Also referred to as economies of scale.

# Increasing Returns to Scale

- A given % increase in all the firm's inputs results in a larger % increase in output.
  - $ATC_0 = TC/q$
  - $ATC_1 = 2TC/3q < ATC_0$

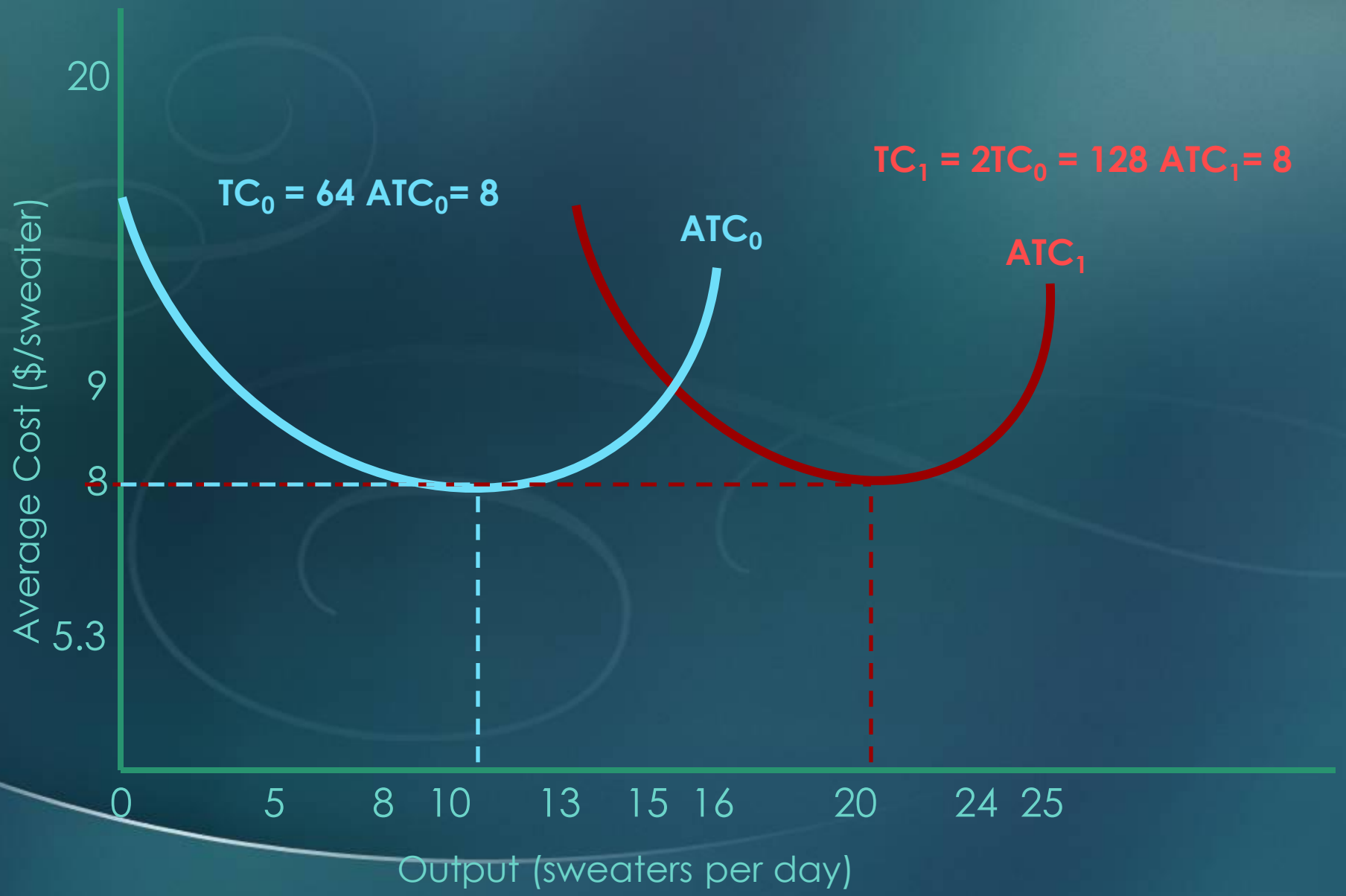
# Chart: Increasing Returns



# Constant Returns to Scale

- A given % increase in all the firm's inputs results in the same % increase in output.
  - $ATC_0 = TC/q$
  - $ATC_1 = 2TC/2q = ATC_0$

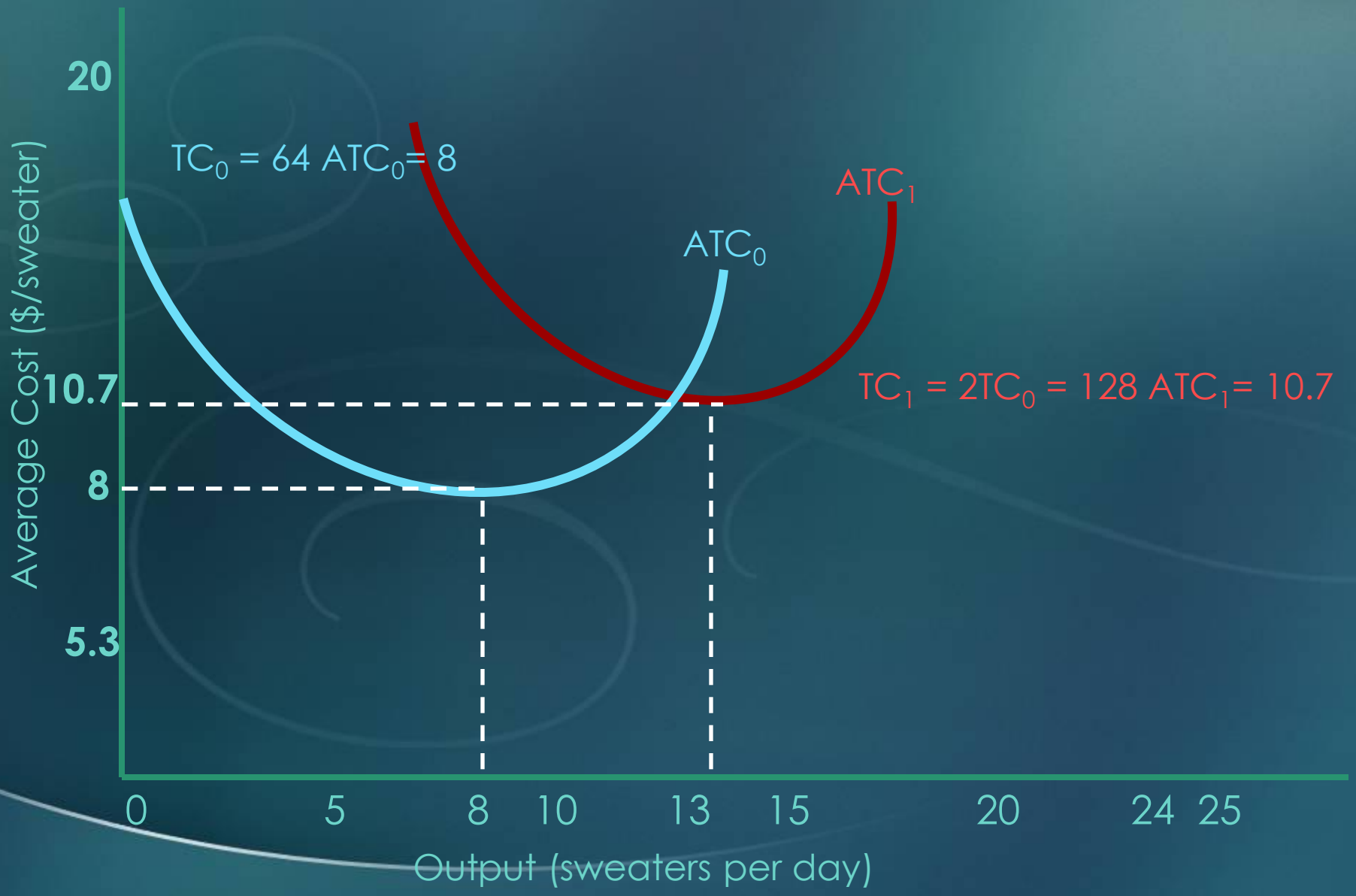
# Chart: Constant Returns



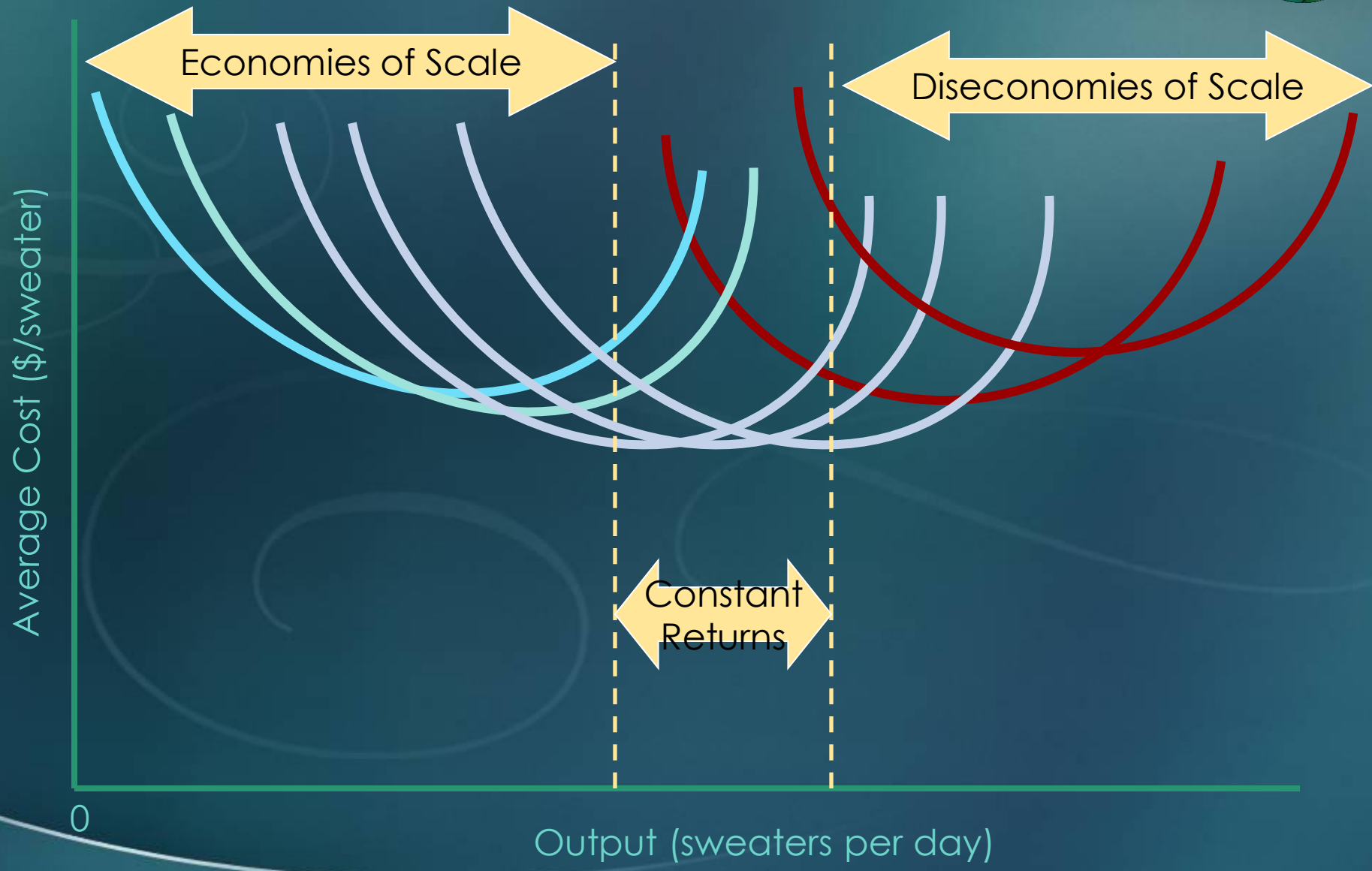
# Decreasing Returns to Scale

- A given % increase in all the firm's inputs results in a smaller % increase in output
- $ATC_0 = TC/q$
- $ATC_1 = 2TC/1.5q > ATC_0$

# Chart: Decreasing Returns



# Chart: LRAC and Returns to Scale



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