Firm Supply Slides

Econ 360

Summer 2025

BINGHAMTON UNIVERSITY
STATE UNIVERSITY OF NEW YORK

Learning Outcomes/Goals

1. Algebraically/Graphically determine a perfectly competitive firm's profit using firm cost curves and market supply and demand.

2. Describe a firm's optimal short-run and long-run decision based on your findings in 1.

3. Describe a firm's supply curve based on 1. and 2.

Where We Are

- We know how to draw cost-curves for a given firm and how to derive many different cost curves from a total cost function.

- We know from profit maximization that $\pi = pq - c(q)$.

Why Perfectly Competitive Firms?

- A firm's supply decision is based on several factors, including:
  - A firm's cost functions.
  - Market demand.
  - **How many other firms exist in the market.**
  - **Whether a firm has market power or is a price taker.**
  - **How large the firm is relative to the industry.**
- These conditions in bold all relate to the structure of the market a firm is in.
- Perfect competition is most often what economists assume, so we will start with that.
- We will revisit other market structures when we get to Monopolies.

To Supply or Not To Supply

Situation 1

- Suppose Lucy runs a lemonade stand.
- She charges/earns $2 per lemonade which the equilibrium lemonade price in her neighborhood.
- She paid her parents a one-time payment of $10 for a table, lemonade jug, and chair.
- On average, for the supplies she needs to make lemonade it costs her $1.
- **Should Lucy sell lemonade this month or not?**

To Supply or Not To Supply

Situation 2

- Now suppose Lucy has to pay her parents those $10 at the start of each month.
- The price is still $2.
- Now taking into account Lucy's fixed costs, her average cost to make a lemonade is those $1 for supplies plus $1.50 for the fixed cost=$2.50.
- **Should Lucy decide to produce next month?**

To Supply or Not To Supply

Situation 1

- Lucy has already paid her **Fixed costs**.
- Her **Variable costs** of $1 is less than the price of $2.
- So Lucy should **produce** in the short-run.

Situation 2

- Lucy has not yet paid those fixed costs ($10) for next month.
- At a price of $2, Lucy will not cover both her fixed costs ($1.50) and variable costs ($1).
- Therefore Lucy is losing money at a price of $2, so she should **exit the market** in the long-run.

Firm Supply

If you can understand Lucy's decisions, you can understand the short-run **Produce or Not-Produce** decision and the long-run **Exit or Remain** decision!

Cost Curves Review

$$TC = 1 + q + q^2$$

- Average Variable Cost: $AVC = \frac{VC}{q} = 1 + q$.
- Average Total Cost: $ATC = \frac{TC}{q} = \frac{1}{q} + 1 + q$.
- Marginal Cost: $MC = \frac{dTC}{dq} = \frac{dVC}{dq} = 1 + 2q$.
- **Produce if** $MR = P >= AVC$.
- **Remain if** $MR = P >= ATC$.
- *Note that MR=P comes from the market, the firm takes this as given!

How Much to Supply?

- We know a firm's marginal cost for the n^{th} unit is how much it costs to make that n^{th} unit.
- Therefore $MC(n)$ is also the lowest price at which a firm is willing to sell that n^{th} unit.
- Therefore if a firm is Producing/Remaining their supply curve is the Marginal Cost Curve!

Example

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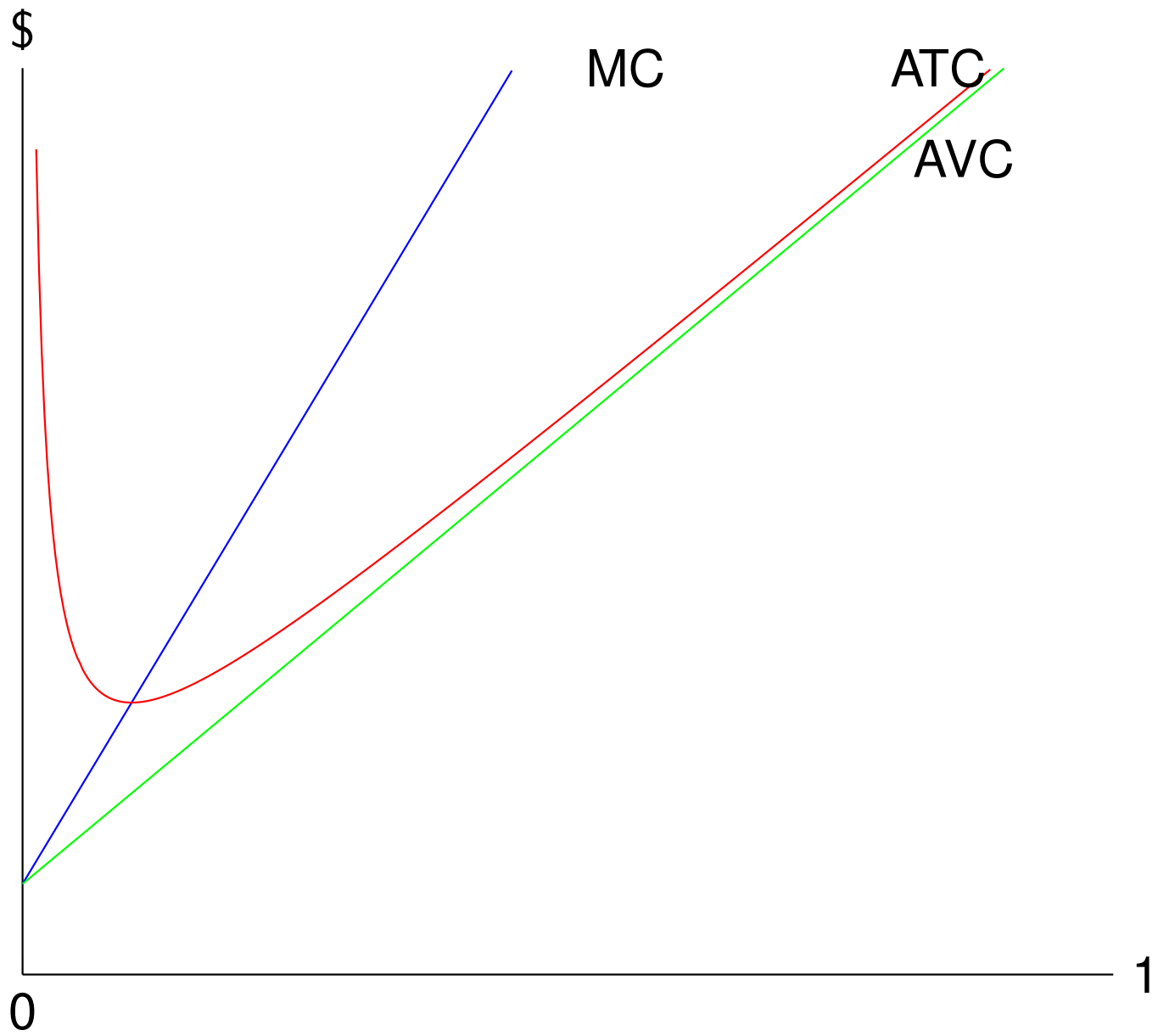
Example–Graphed



Questions

1. Where is the firm's short-run supply curve?
2. Where is the firm's long-run supply curve?
3. How could you derive profit graphically using this graph?