# 1.12 — New Trade Theory II

ECON 324 • International Trade • Fall 2020

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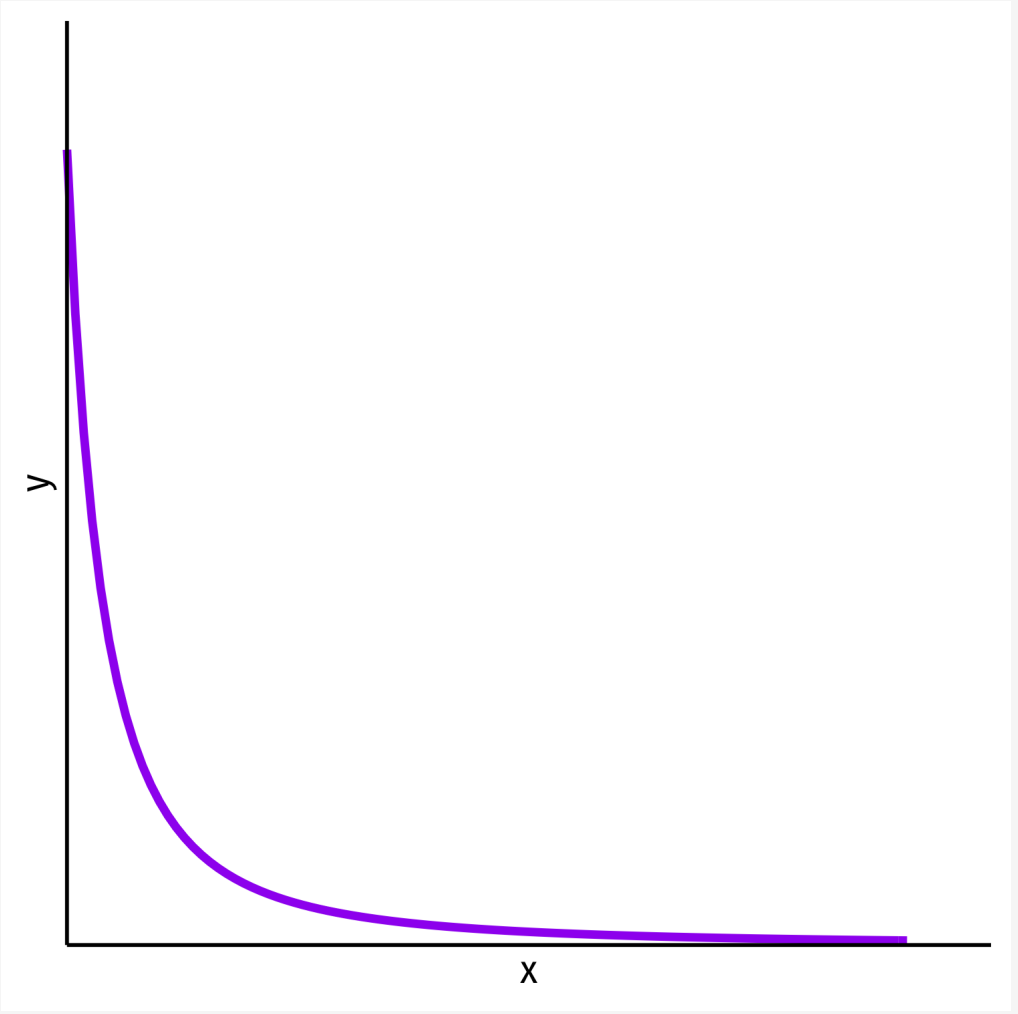
# Outline

# Increasing Returns

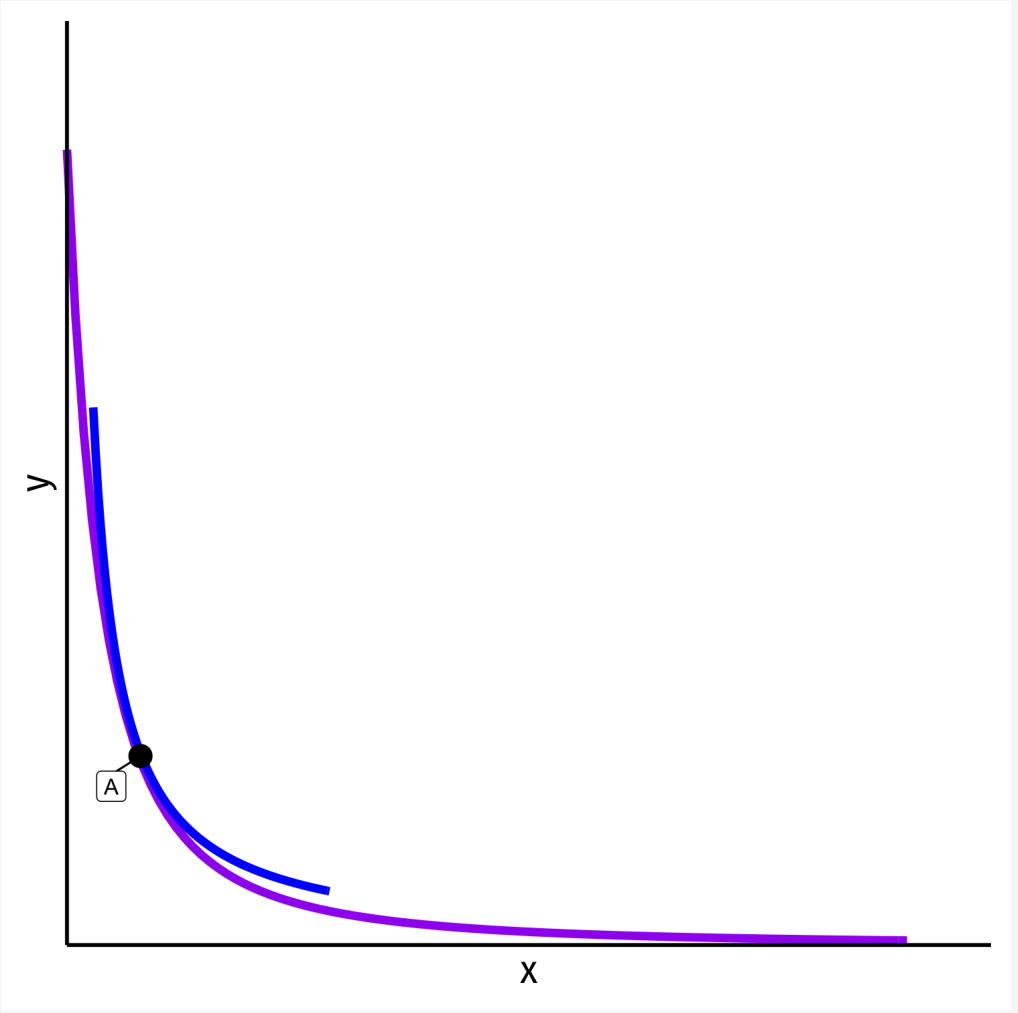
# PPF: Decreasing Costs

- Increasing returns $\iff$ decreasing costs
- PPF is *convex* to origin
- **Marginal rate of transformation (MRT)** ***decreases*** as we produce more of a good
  - Again: **"slope"**, **"relative price of x"**, **"opportunity cost of x"**
  - Amount of y given up to get 1 more x



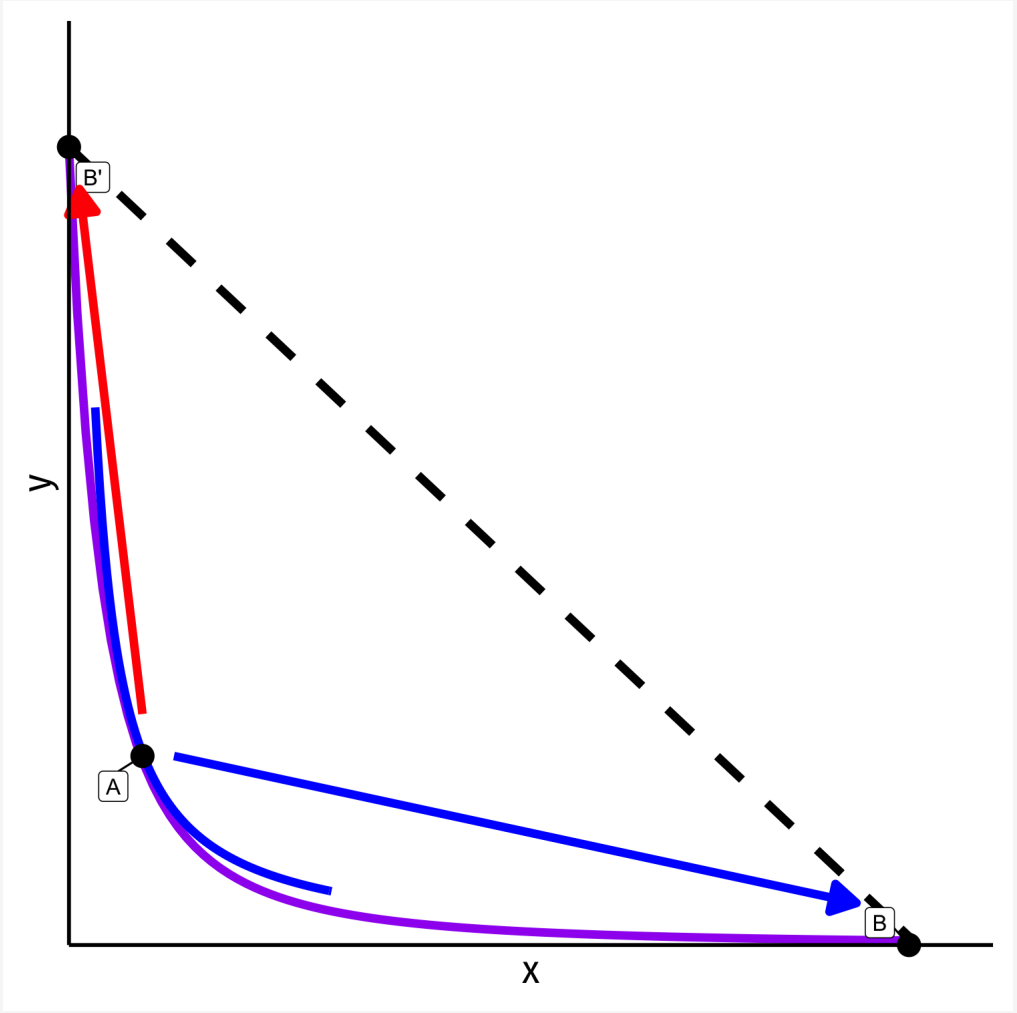
# PPF: Decreasing Costs

- To simplify our graph, assume Home and Foreign have identical preferences (same indifference curve), and identical endowments (both start at A)



# PPF: Decreasing Costs

- Countries open up trade, face same relative prices
- Each country exploits economies of scale, producing only one good
  - Home produces x, Foreign produces y
  - Points B and B'



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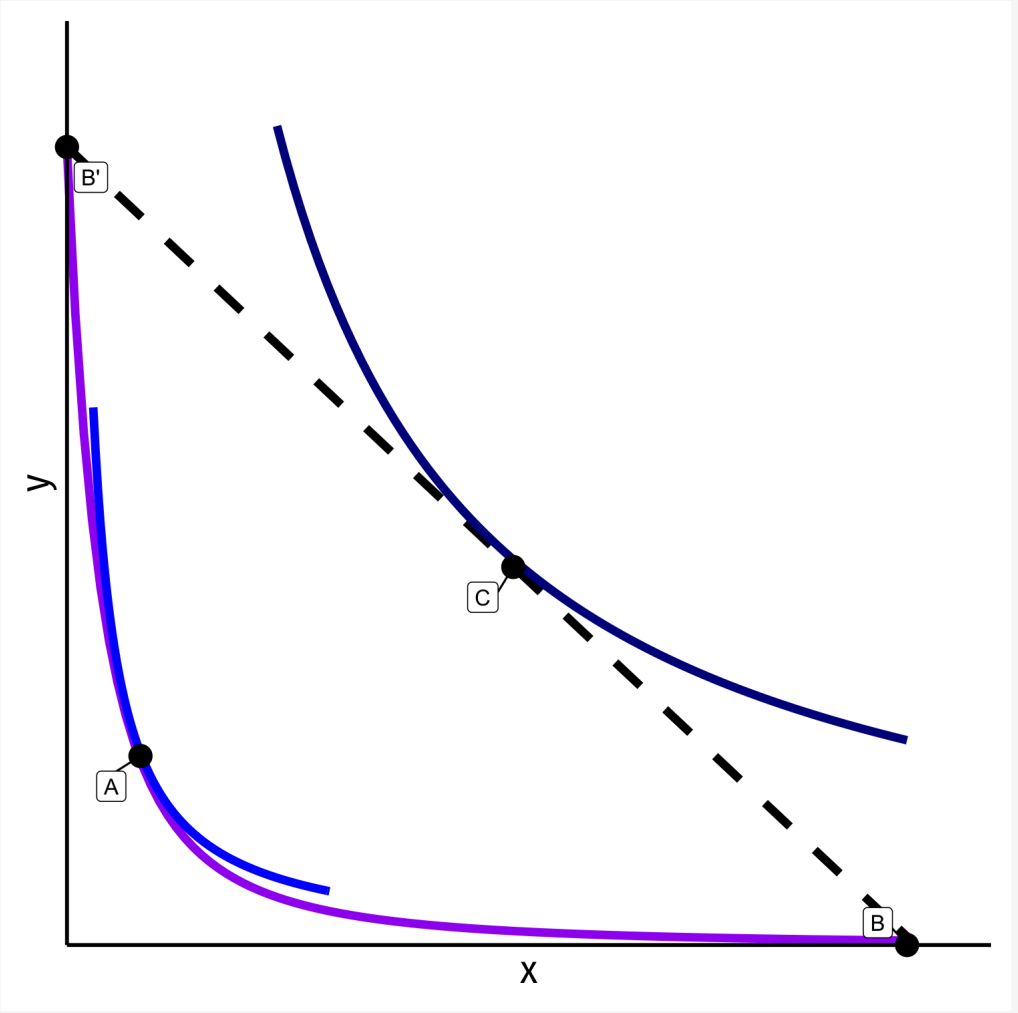

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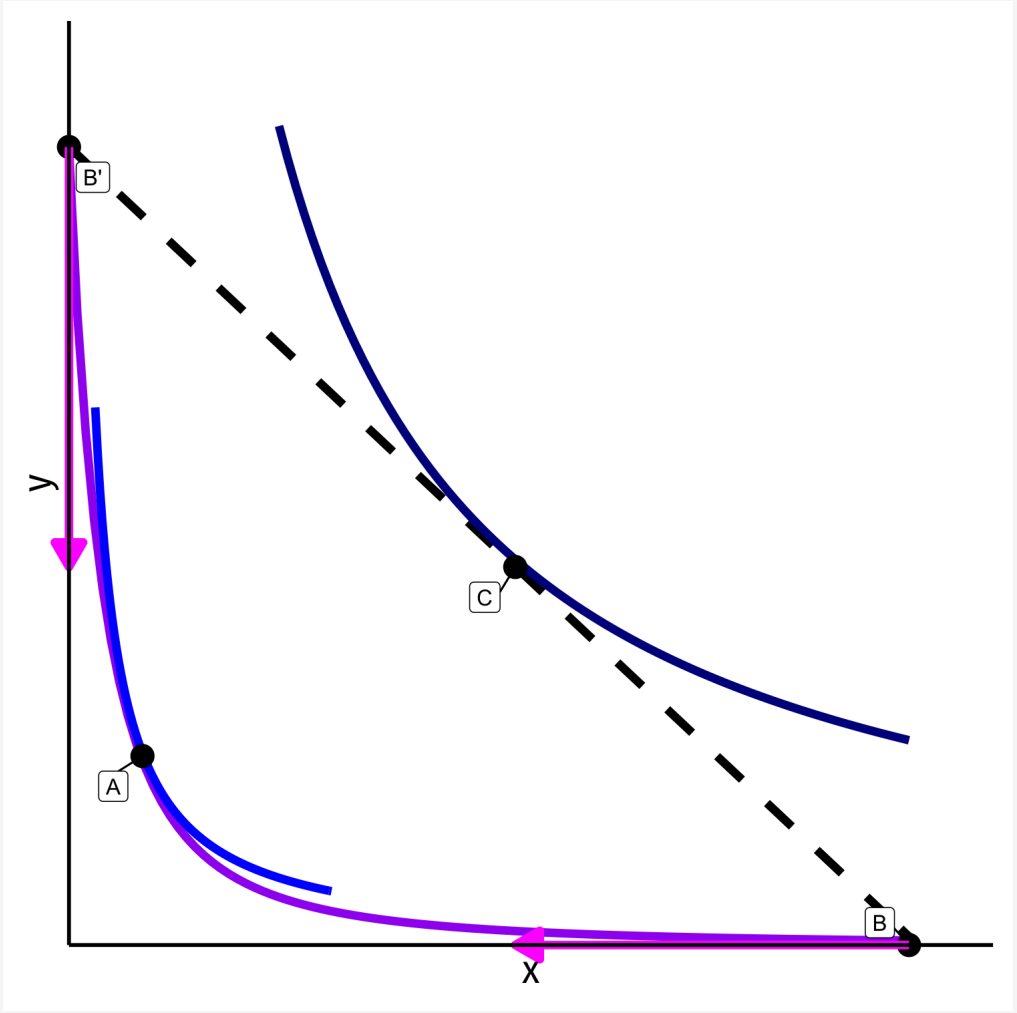

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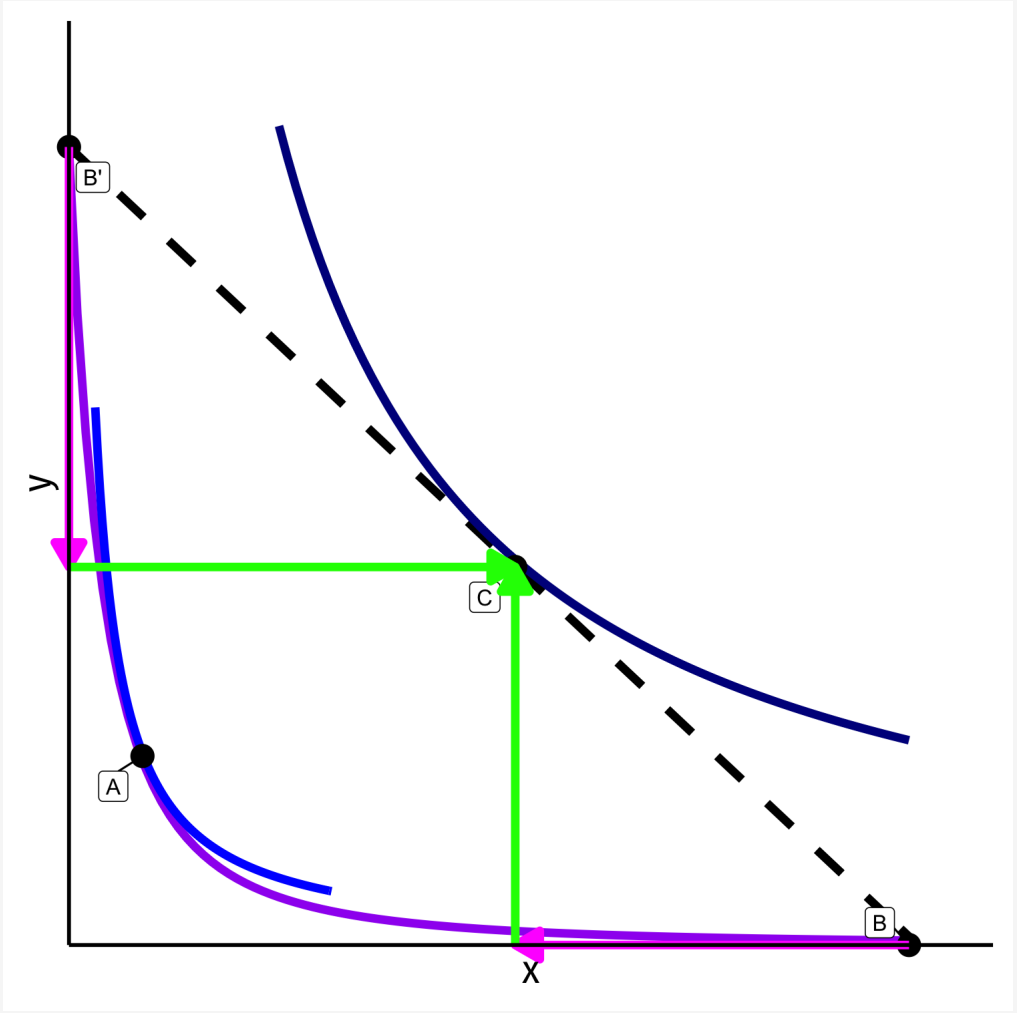
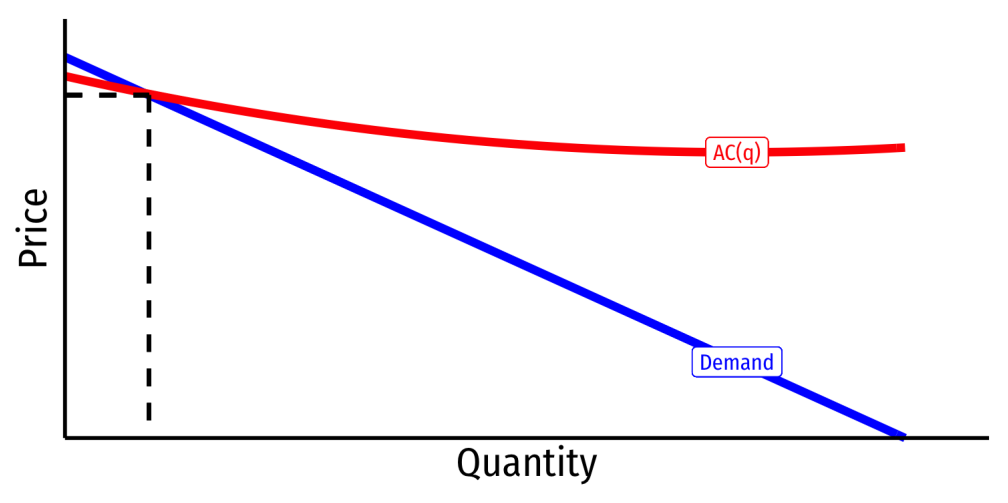
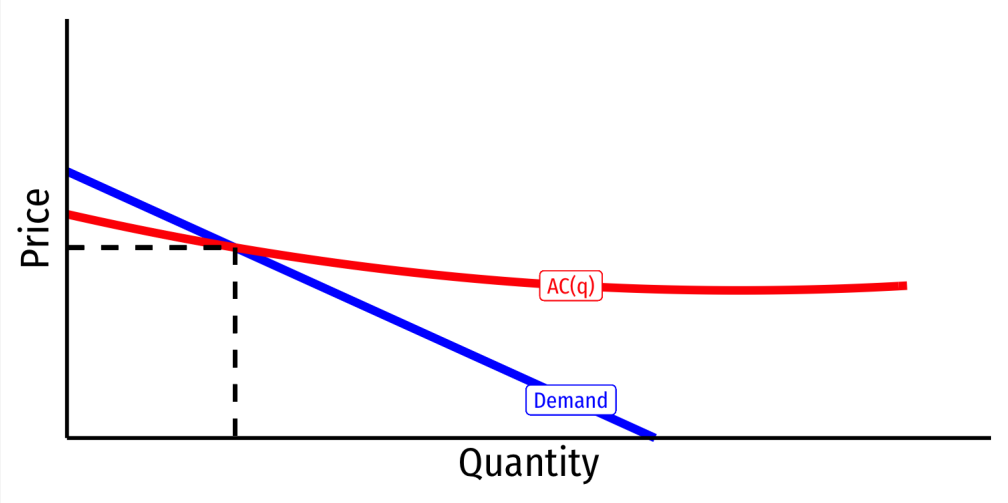


# (Anti-)Competitive Implications of Economies of Scale

## U.S.




## China

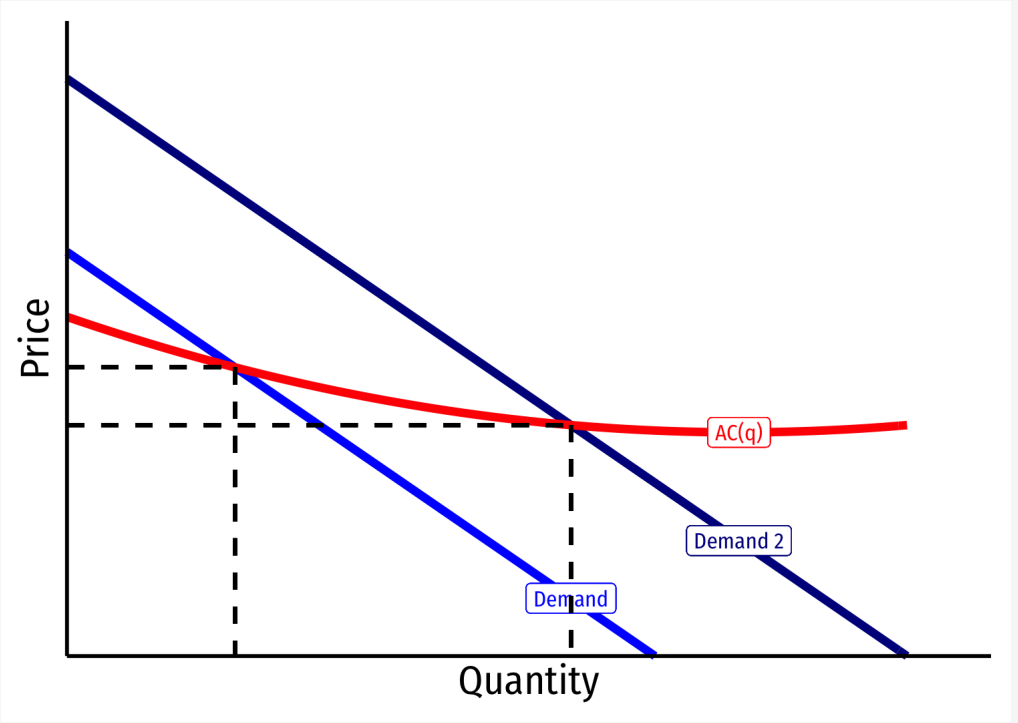



- Before trade, China has lower $AC$ and $p$ than U.S.

# (Anti-)Competitive Implications of Economies of Scale

- Trade increases demand for China's output
- Lowers $AC$ and $p$ even further, further outcompeting U.S.

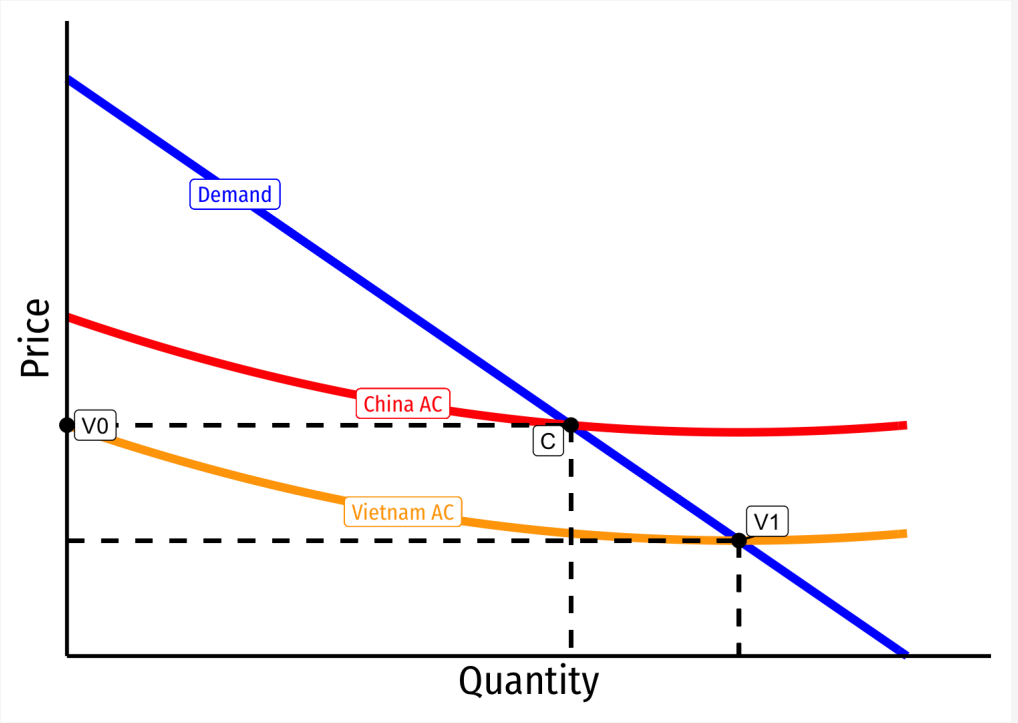
## China



# (Anti-)Competitive Implications of Economies of Scale

- Suppose **Vietnam** actually has lower $AC$ than **China**, once it gets up to scale (V1)
- Chinese economies of scale have world market price at C
- Current market price provides no profit to Vietnamese producers starting production at V0
- World is **inefficiently "locked in"** to Chinese production, **sub-optimal path dependence**

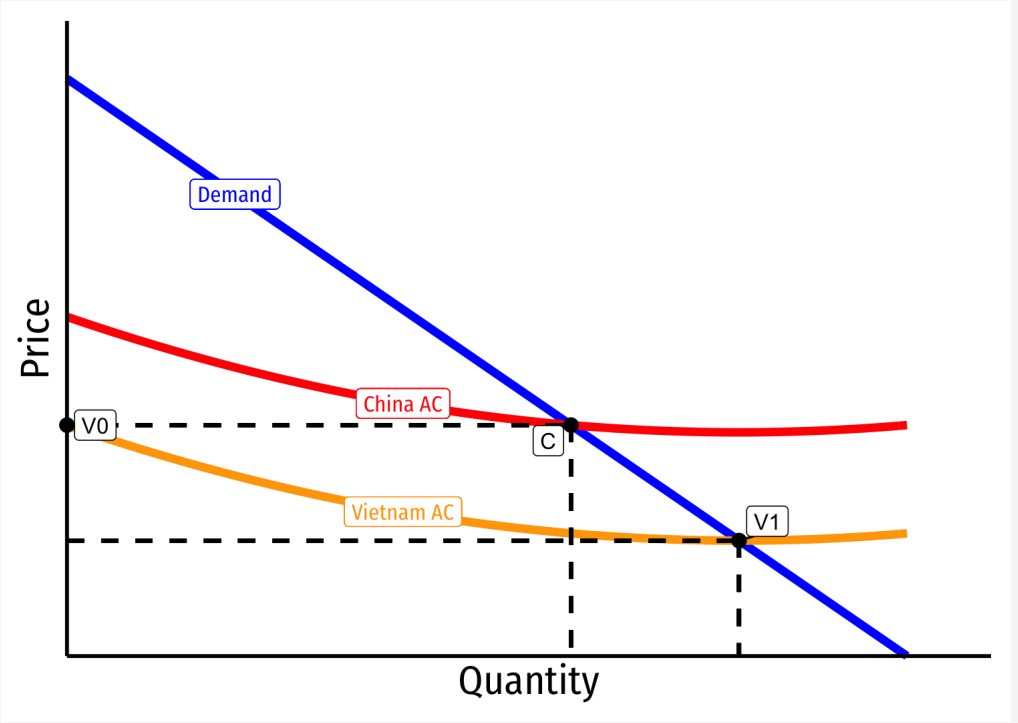
**China** and **Vietnam**



# (Anti-)Competitive Implications of Economies of Scale

- **Policy implication for Vietnam**: shut out imports from China with tariffs, and subsidize this industry to get it up to scale
- In the long run, Vietnam can become the least-cost producer, increasing welfare

## China and Vietnam



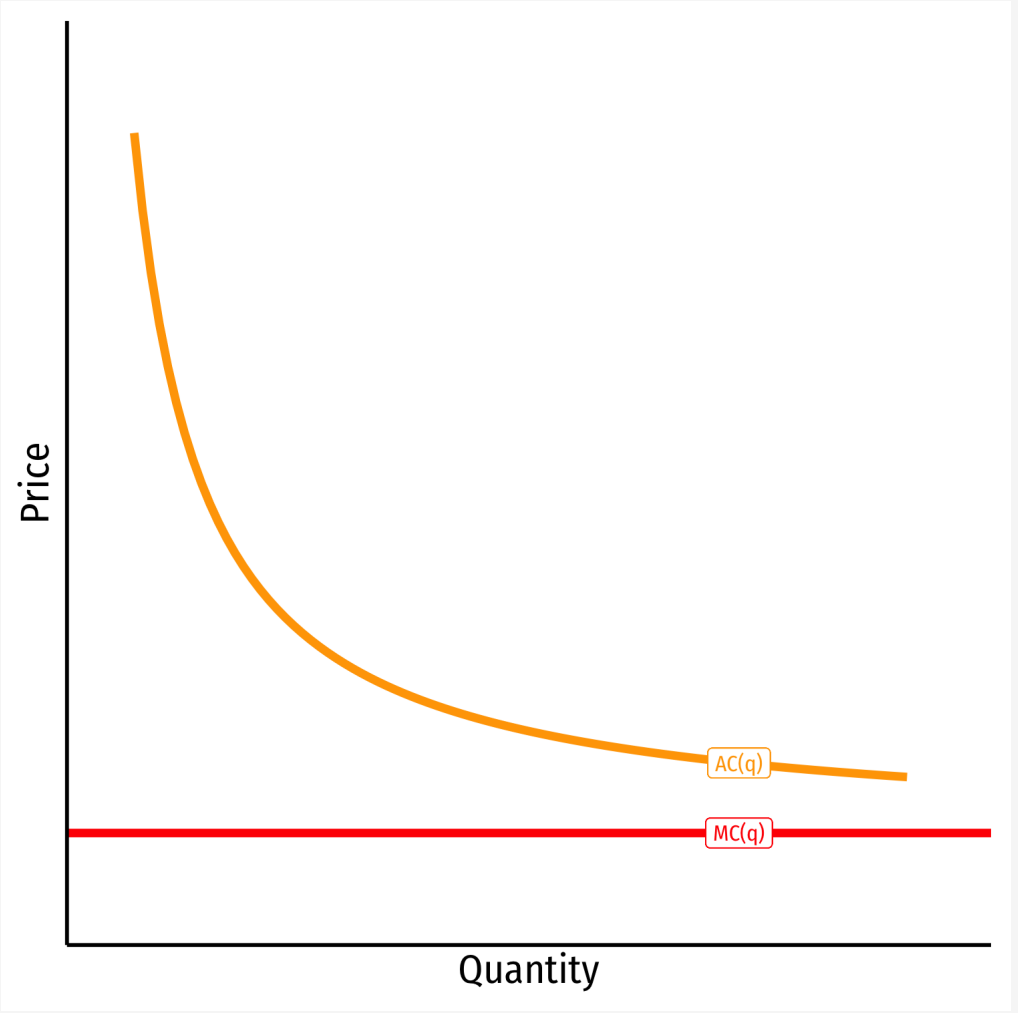
# Trade and Variety

# Trade and Variety

- Consumers are better off with more variety
- Two interpretations of why:
    1. **Love of variety**: consumers value variety for its own sake (directly enters utility function)
    2. **Ideal variety**: consumers have an ideal variety in mind, and having more varieties available increases probability that each consumer matches with their ideal variety

# Trade & Variety: Tradeoff Between Variety & Cost

- Why can't consumers each always have their favorite variety?
- Tradeoff between variety and (average) cost



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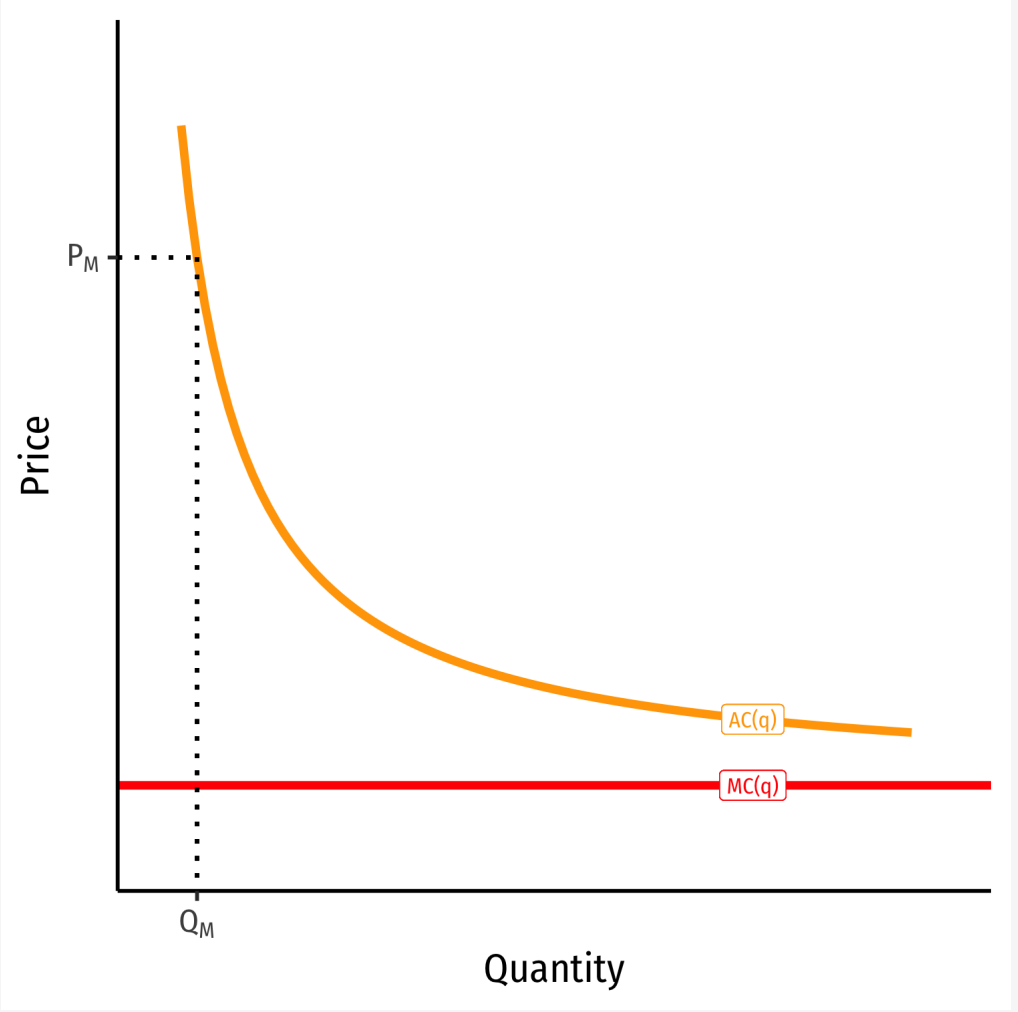

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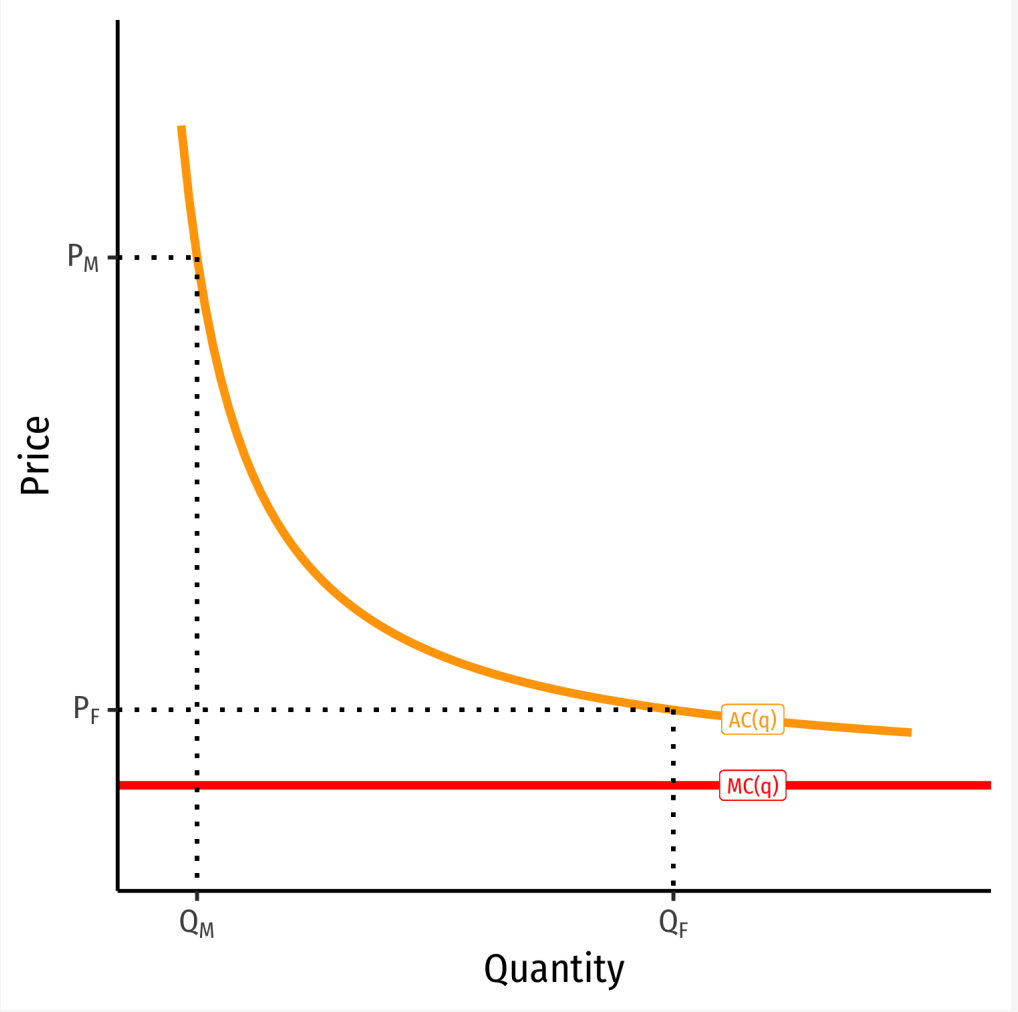
- If every consumer had their favorite variety: many varieties, each firm produces very few units at a very high price $(Q_M, P_M)$
- If there are only a few varieties, few firms produce many units at very low price $(Q_F, P_F)$

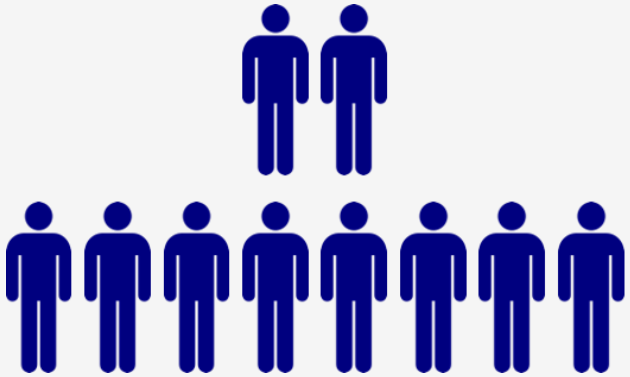


# International Trade and Variety

## Example

- Suppose it takes 2 workers to design a motorcyle
- Once designed, it takes 1 worker to produce a motorcycle
- There are 2 countries, each with 10 workers

Without trade, in each country:



8 units of 1 variety

# International Trade and Variety

### Example

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- Once designed, it takes 1 worker to produce a motorcycle
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Alternatively:

4 units each of 2 varieties

# International Trade and Variety

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With trade:

Each country specializes in one variety

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- Once designed, it takes 1 worker to produce a motorcycle
- There are 2 countries, each with 10 workers

With trade:

Each country ends up with 4 units of 2 varieties

# International Trade and Variety

- Globalization reduces geographic variation (more places look the same, have same amenities)
- But increases varieties available to individuals in each area

# Monopolistic Competition

# The Role of the Firm in Trade

- Classical trade theory (Ricardo, Hecksher-Ohlin, etc) has no role for the firm!
    - might as well be people directly selling wheat or computers, etc.
- Once we jettison the unrealistic assumption of perfect competition ($p = MC$), we can say a lot more about firms and trade
- We move to a theory of **imperfect competition**: where firms have market power (but not full market power, as in a monopoly)

# Imperfect Competition

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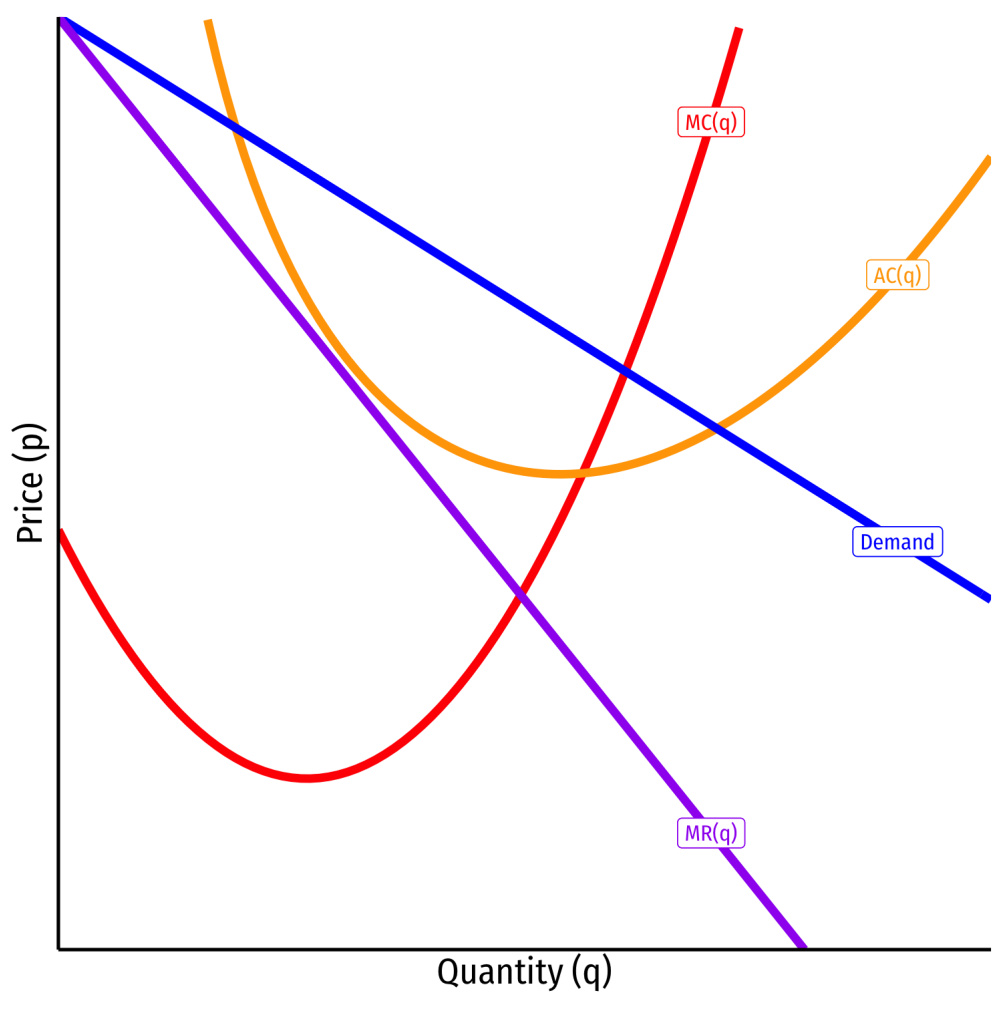
# Monopolistic Competition

- **Monopolistic competition**: hybrid of monopoly and competition, where **each firm has *some* market power**

1. Goods are ***imperfect* substitutes**
    - consumers recognize non-price differences between sellers' goods
2. **Free Entry and exit** (no barriers)
3. Each firm is a **price-searcher**
    - faces own downward-sloping demand

# Monopolistic Competition Model: Short Run




- **Short Run**: Firm acts as a monopolist

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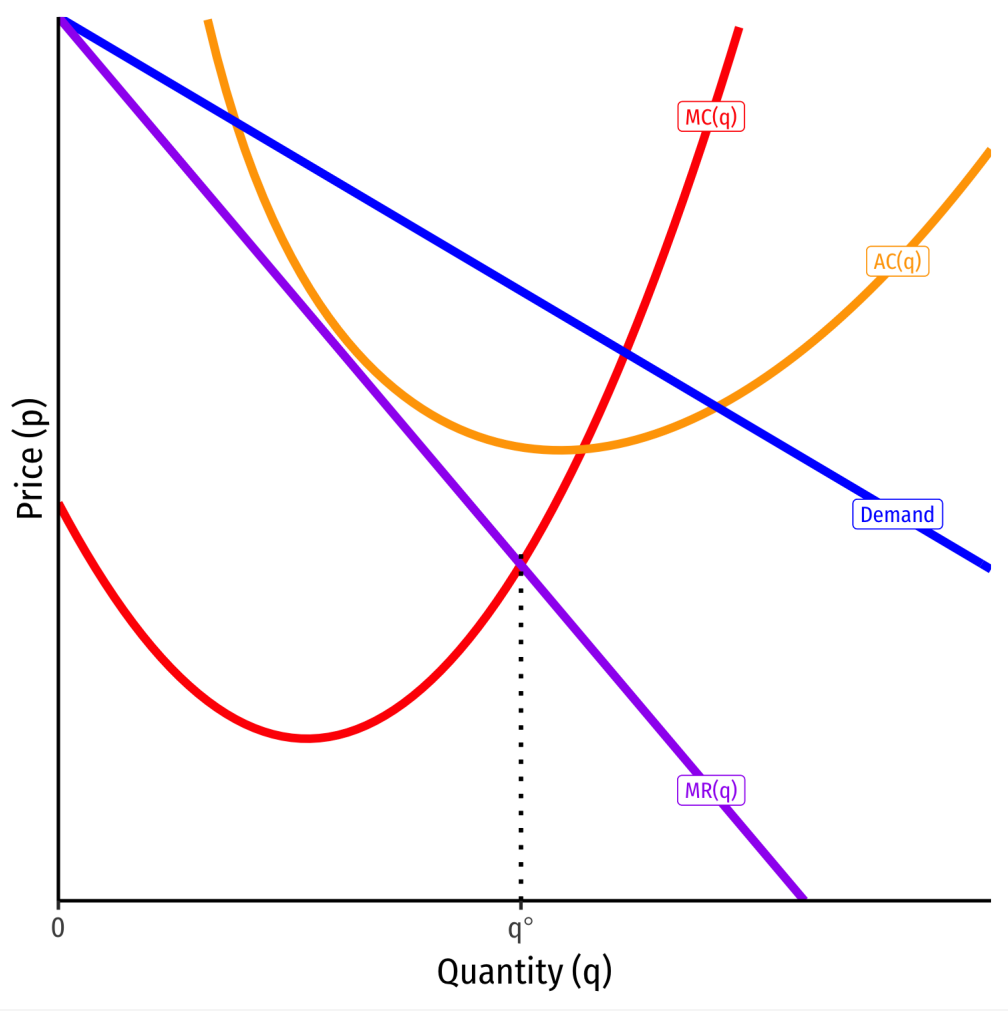


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- $q^*$: where $MR(q) = MC(q)$

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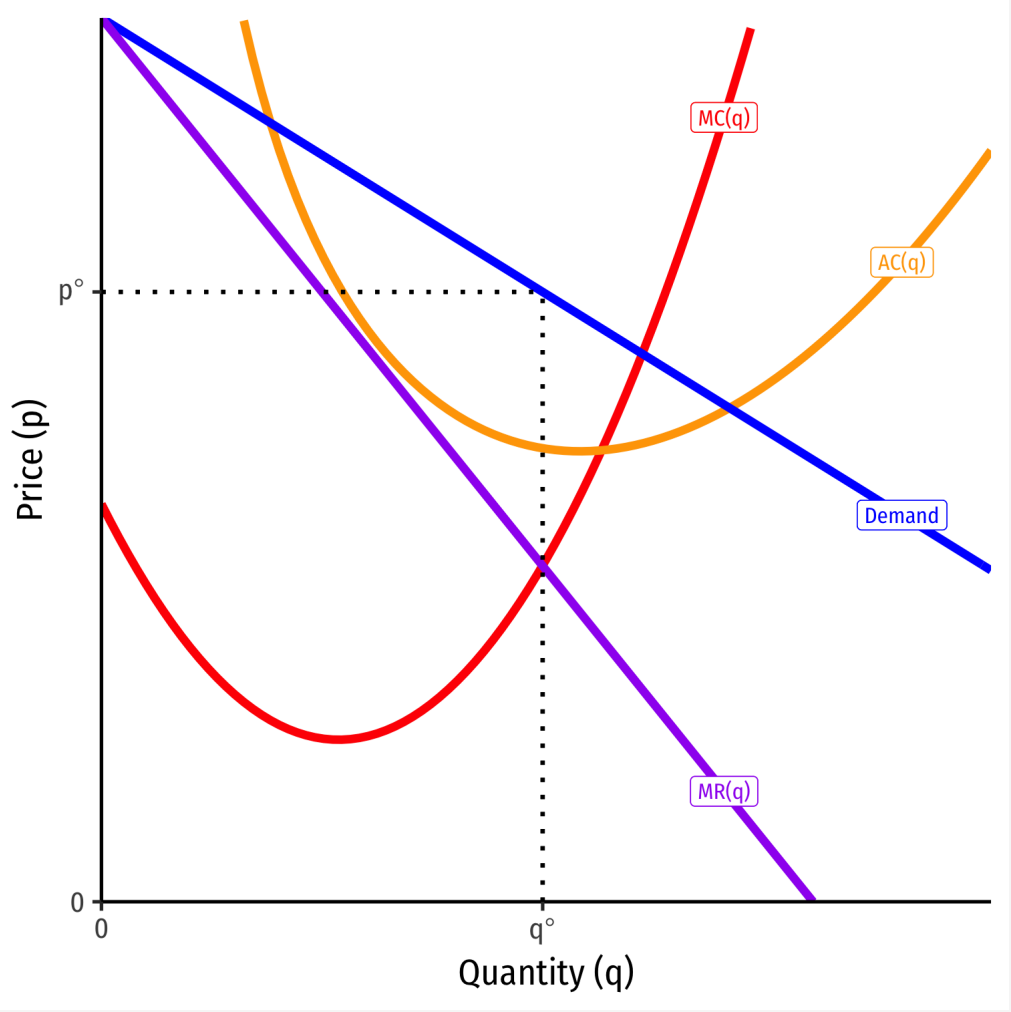


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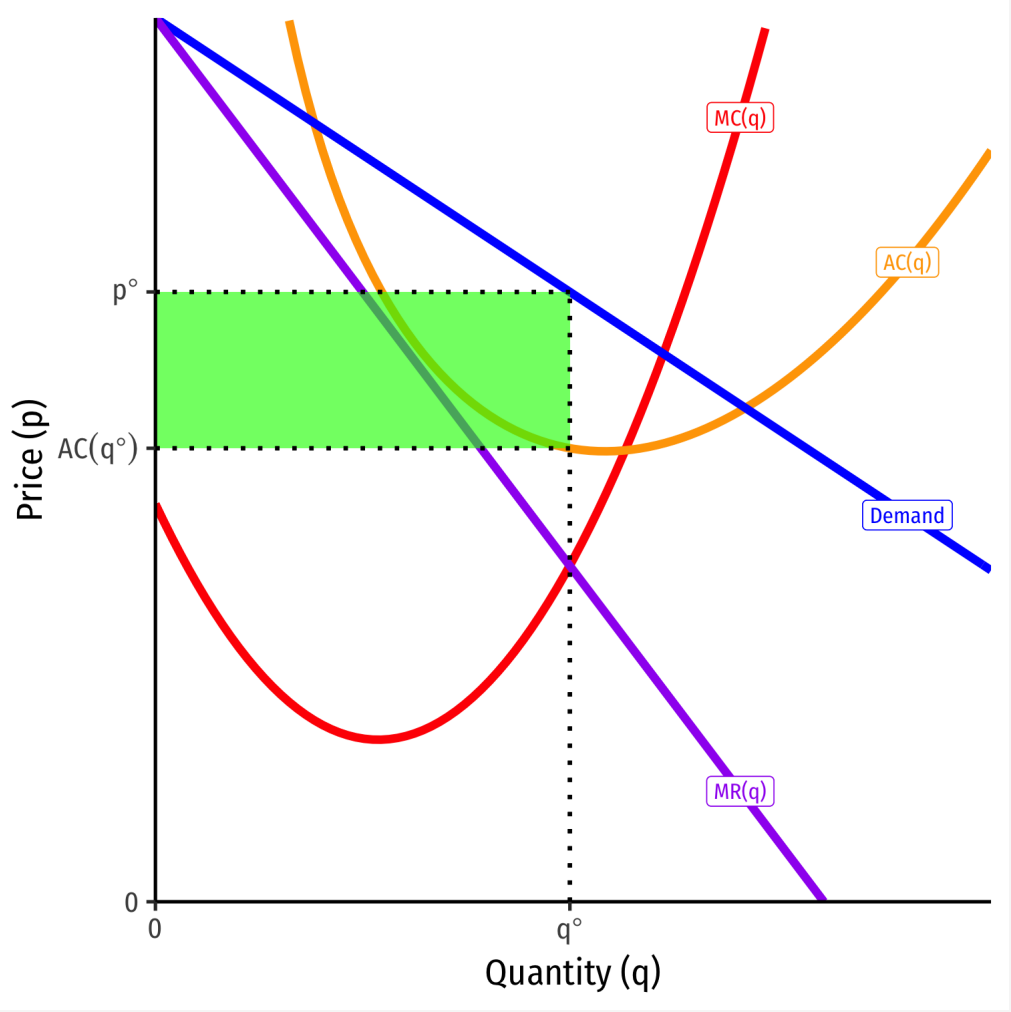


- **Short Run**: Firm acts as a monopolist:
- $q^*$: where $MR(q) = MC(q)$
- $p^*$: at market demand for $q^*$
- Earns $\pi = [p^* - AC(q^*)]q^*$

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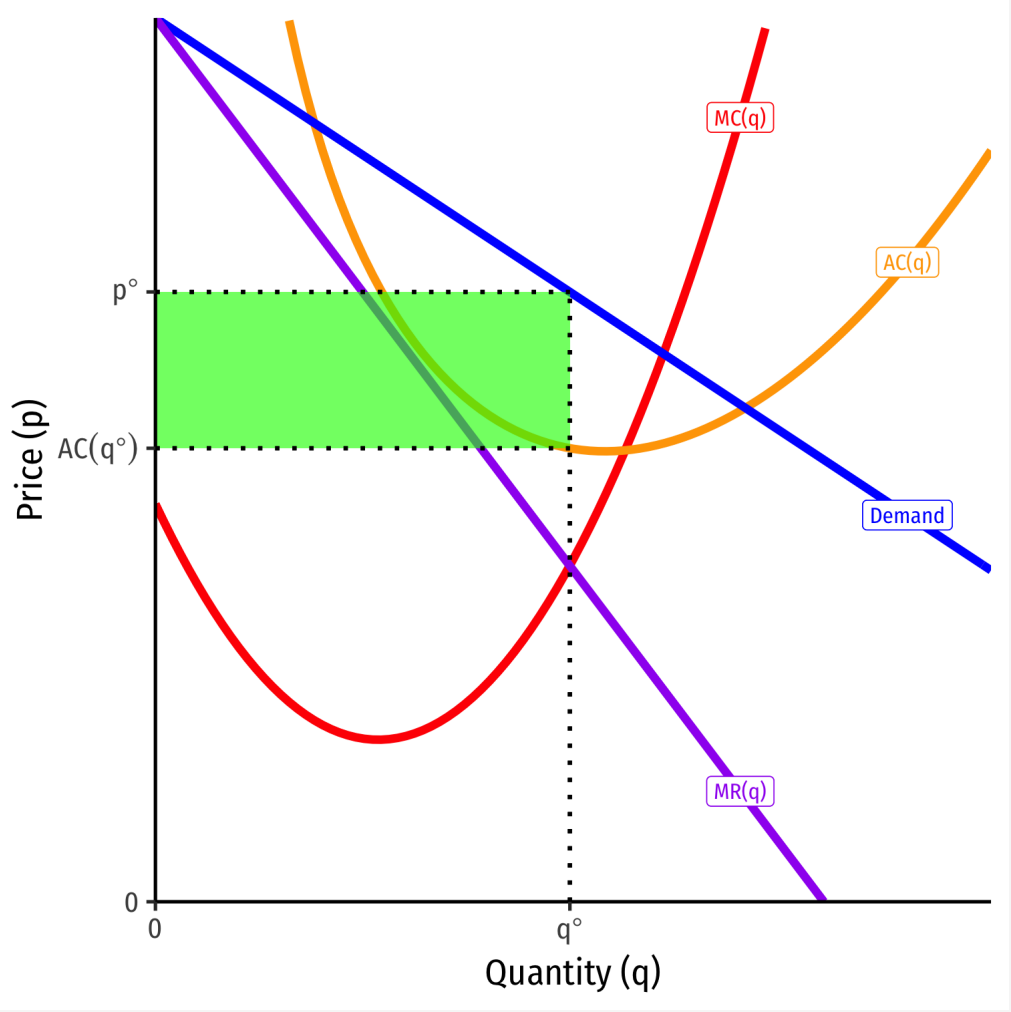


- **Long Run**: market becomes competitive (*no barriers to entry!*)
- $\pi > 0$ attracts entry into industry
- Demand for each firm's product will *decrease* (and become more *elastic*), until...

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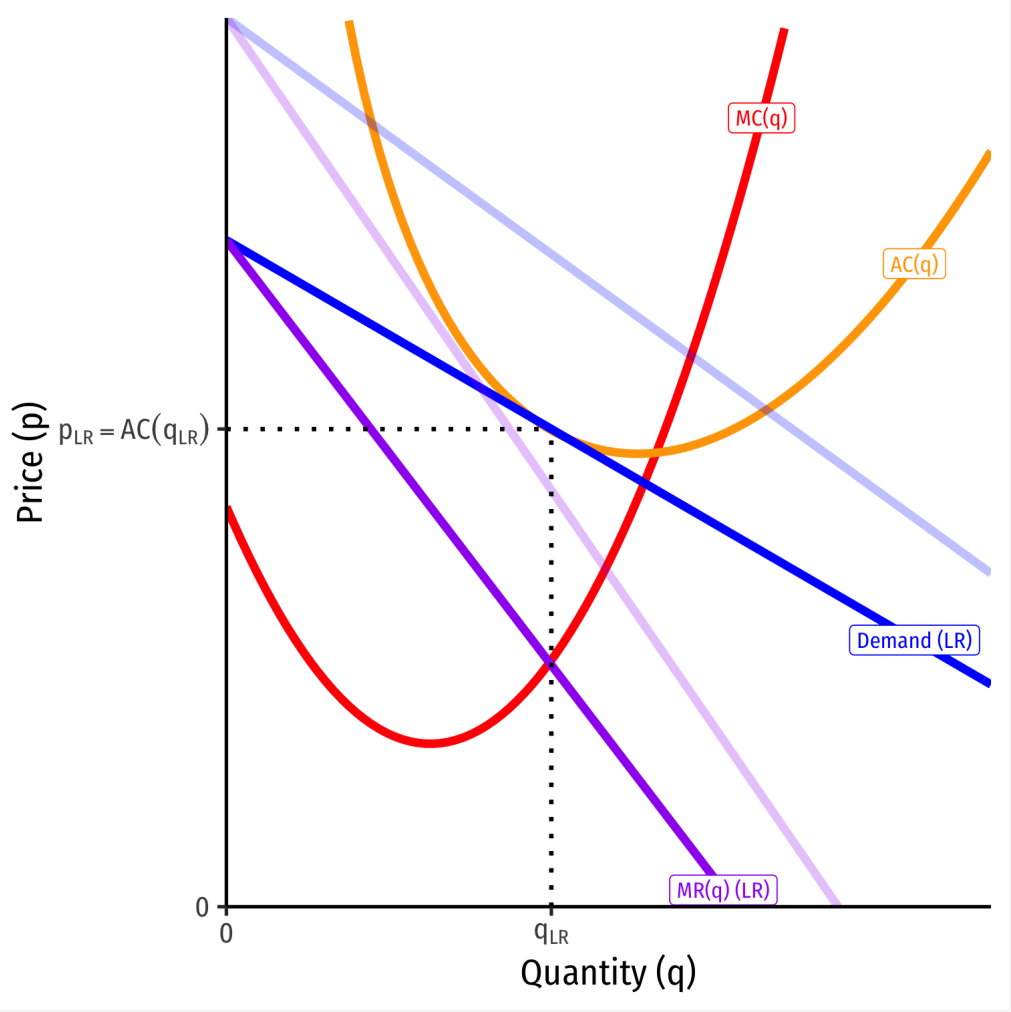


- **Long Run**: market becomes competitive (*no barriers to entry!*)
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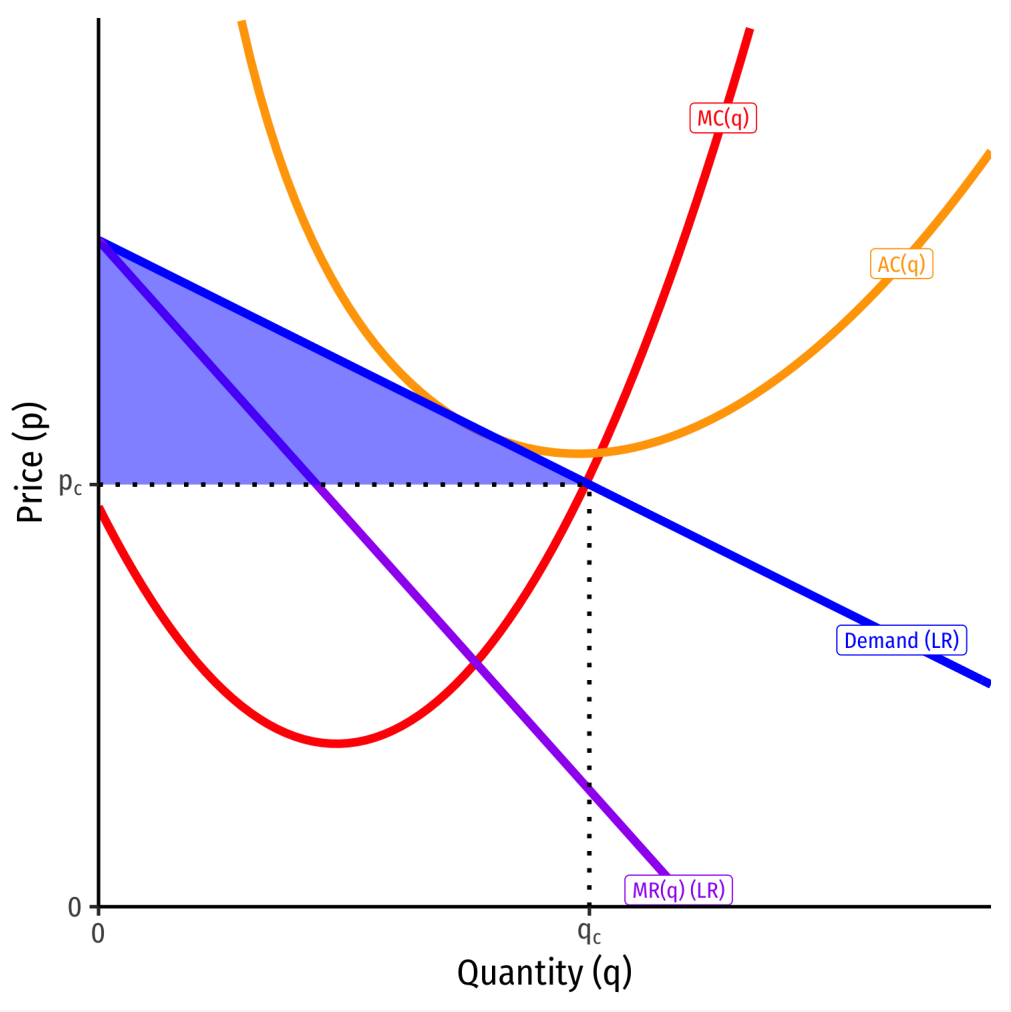
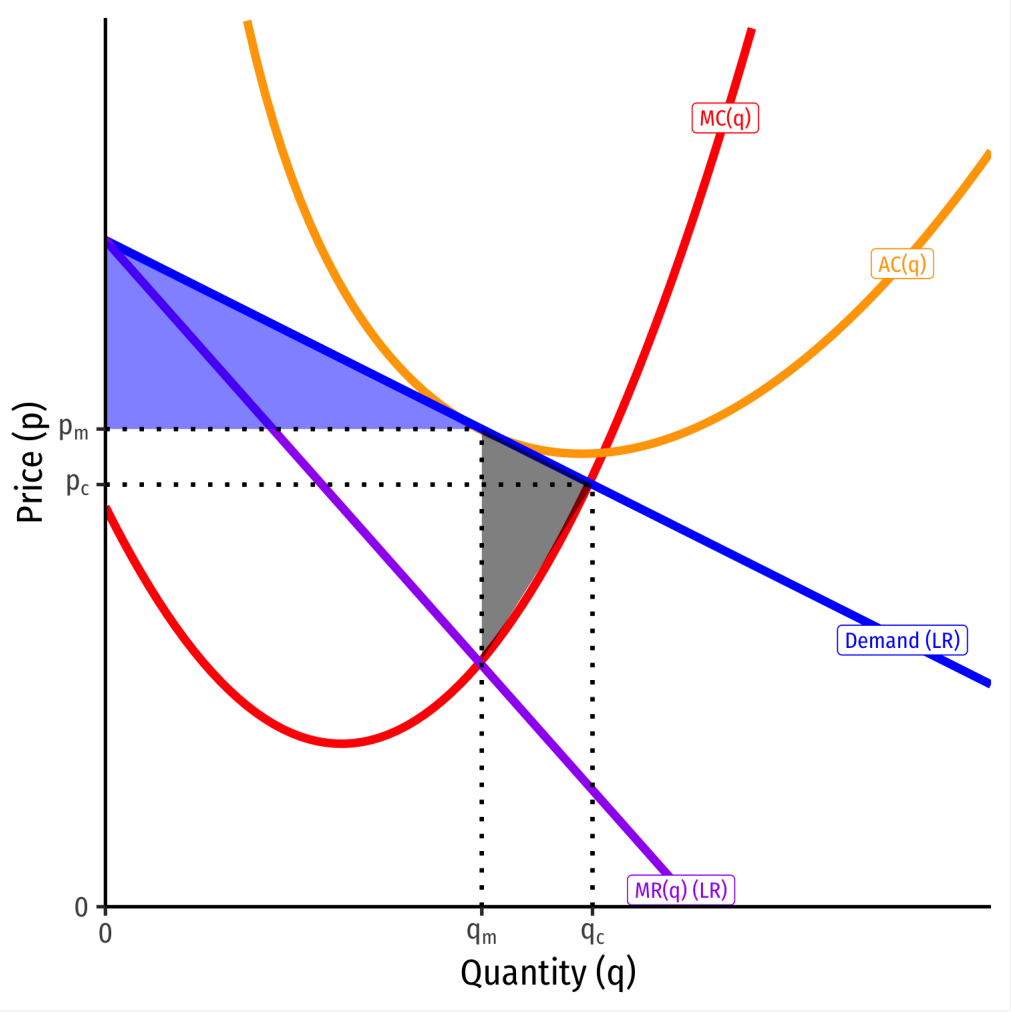
- **Long run equilibrium**: firms earn $\pi = 0$ where $p = AC(q)$[1]

# Monopolistic Competition vs. Perfect Competition



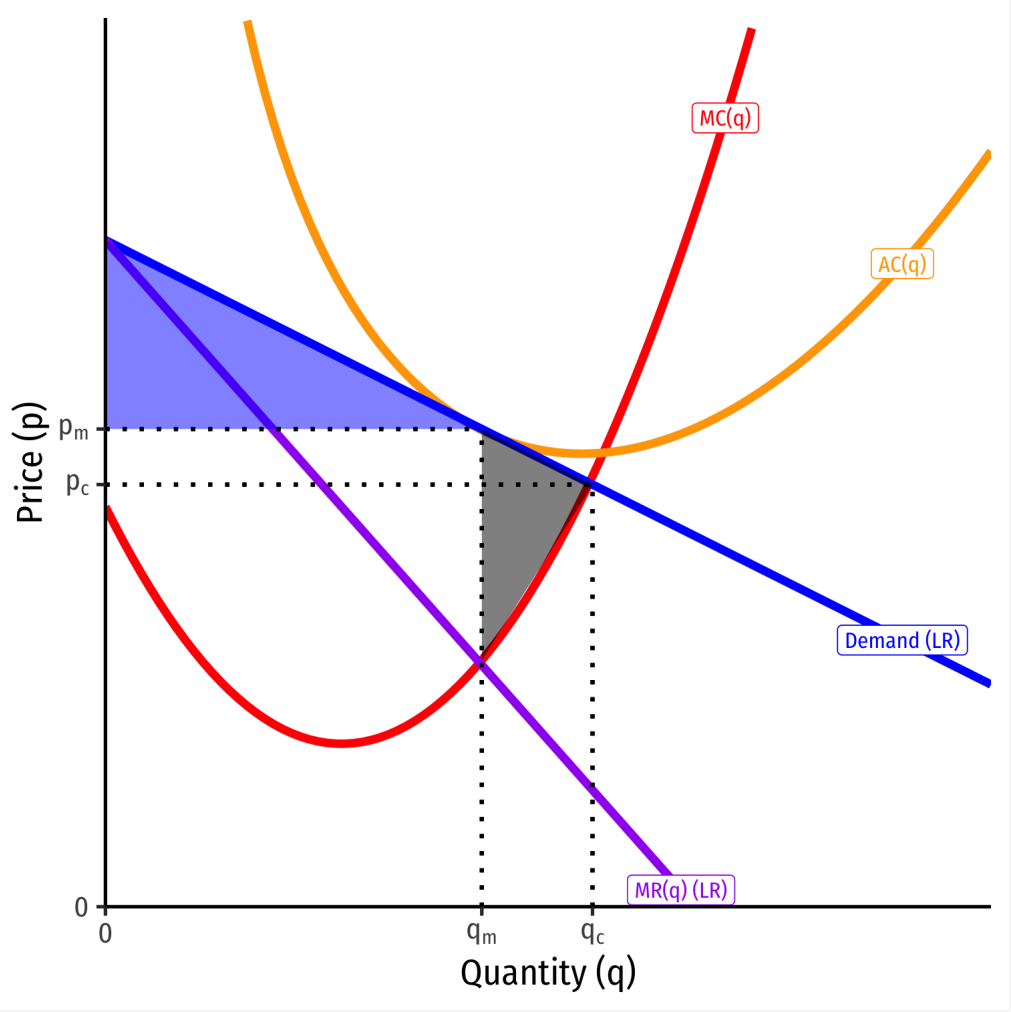

- **Perfect competition** $(q_c, p_c)$
  - $p_c = MC(q)$, allocatively efficient
  - $q_c$ where $P = MC(q)$
  - Maximum consumer surplus
  - No **DWL**

# Monopolistic Competition vs. Perfect Competition




- **Monopolistic competition** $(q_m, p_m)$
- $p_m = AC(q)$
  - but not $AC_{min}$, **productive inefficiency**
- $q_m < q_c$, where $MR(q) = MC(q)$
- $p_m > MC(q)$, **allocative inefficiency**
  - Less Consumer Surplus
  - **Deadweight loss**

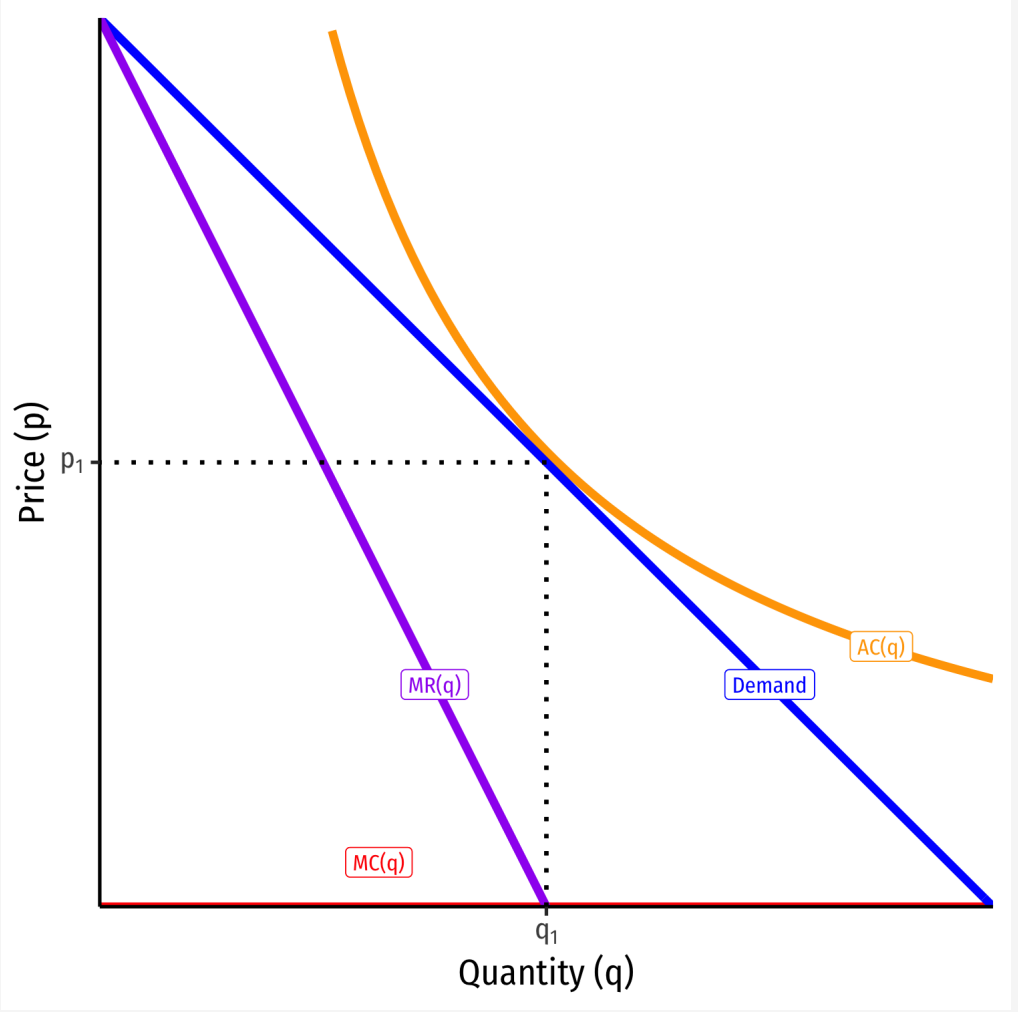
# Monopolistic Competition vs. Perfect Competition




- Like a monopolist, produces less $q$ at a higher $p$ than competition
- But like perfect competition, still no $\pi$ in the long run!

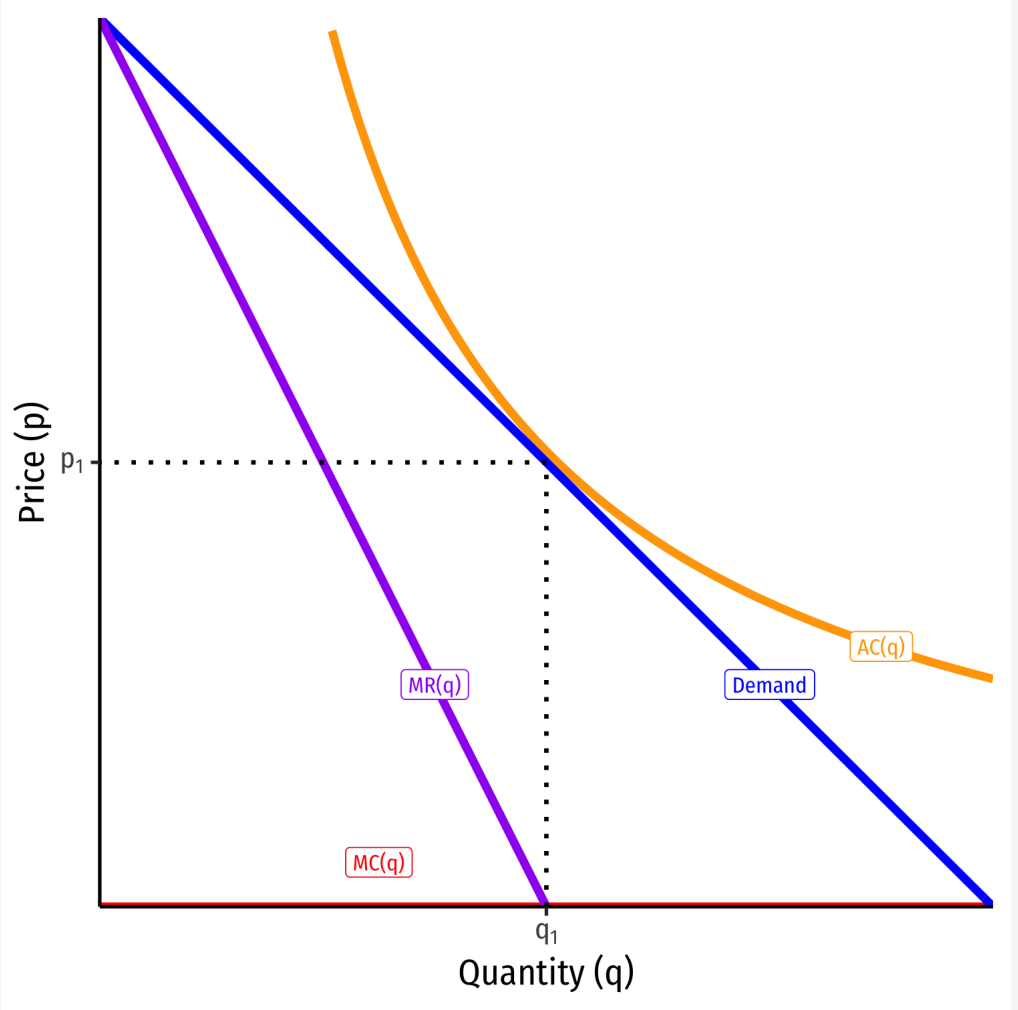
# Monopolistic Competition in Autarky

- Keep it simply, assume $MC(q) = 0$
- In autarky, long-run equilibrium for firm is $p = AC, \pi = 0$ at $q_1, p_1$



# Monopolistic Competition with Trade: Short-Run

- Firm opens up to international trade, has two effects on demand for firm:
  - greater demand for firm's products
  - more competition from other countries' firms
  - overall, demand becomes **more elastic**



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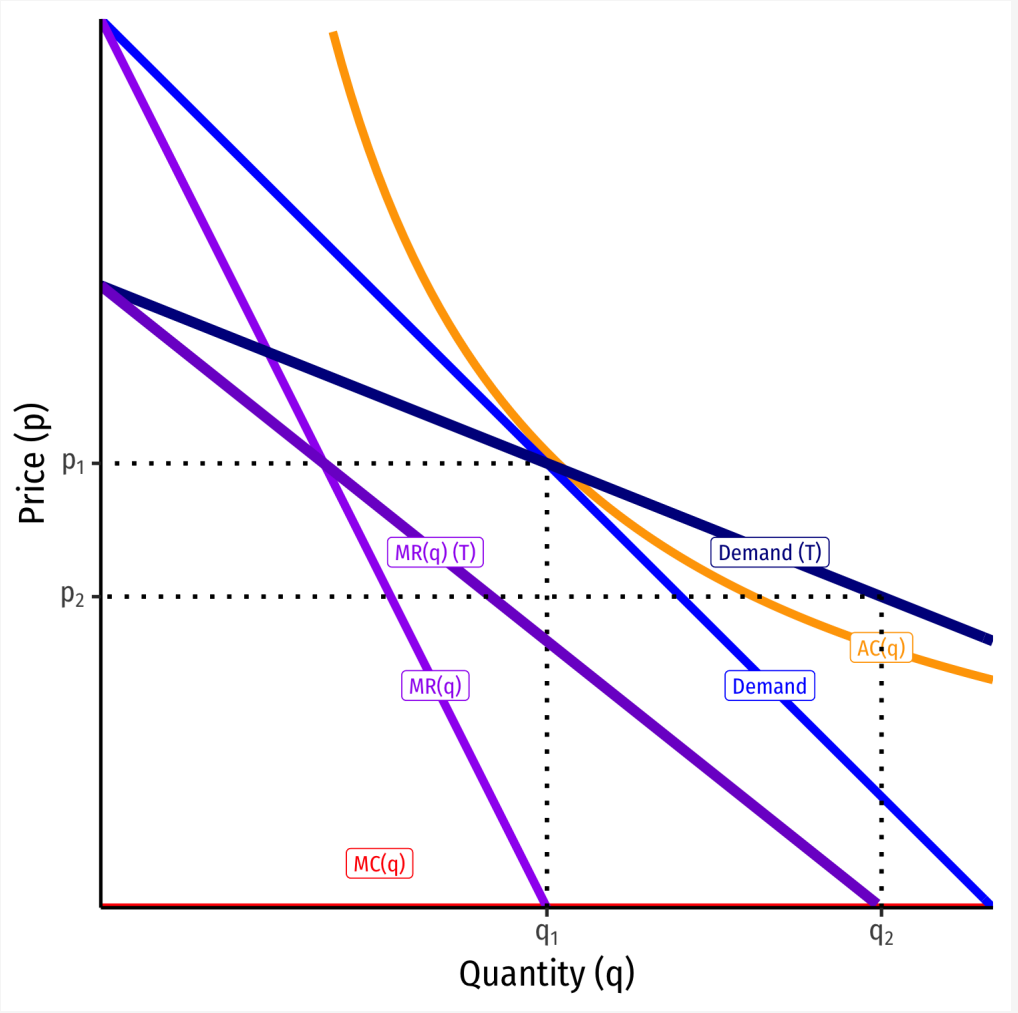

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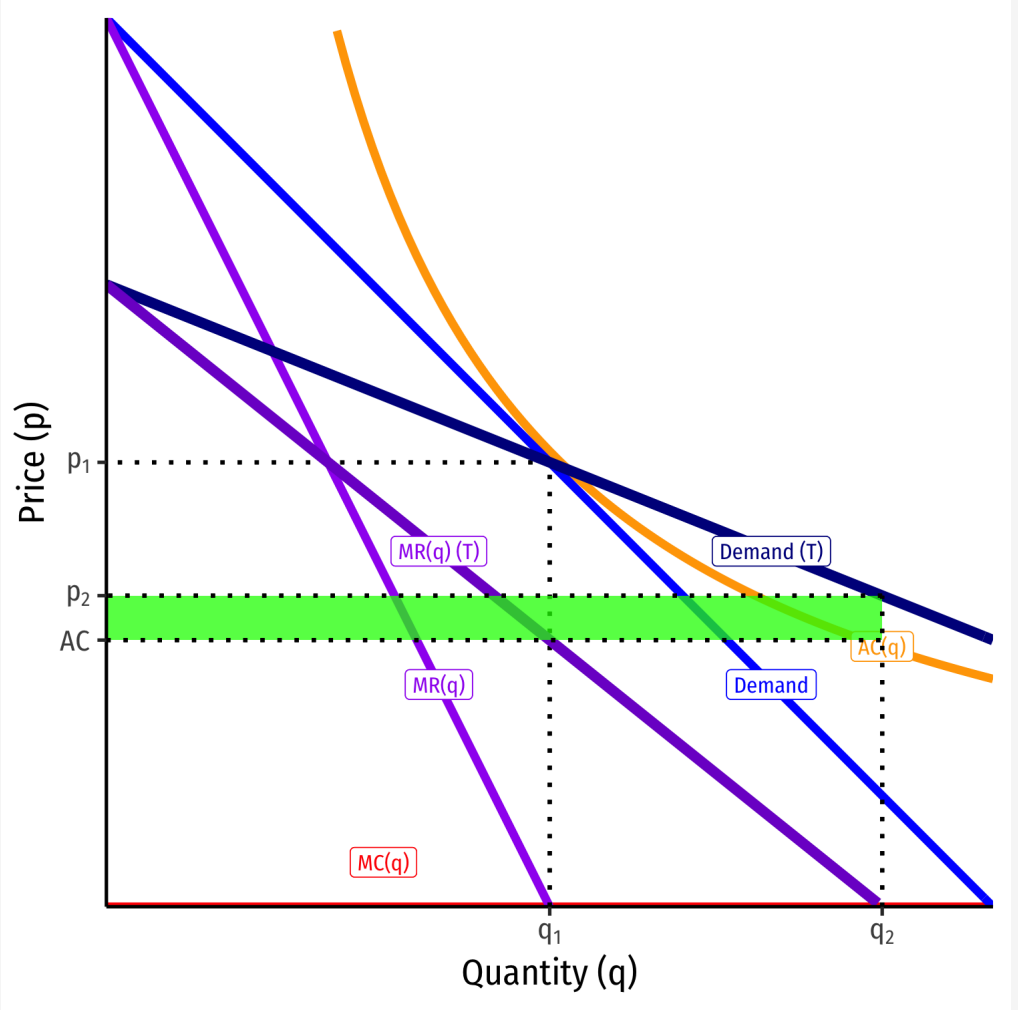

# Monopolistic Competition with Trade: Long-Run

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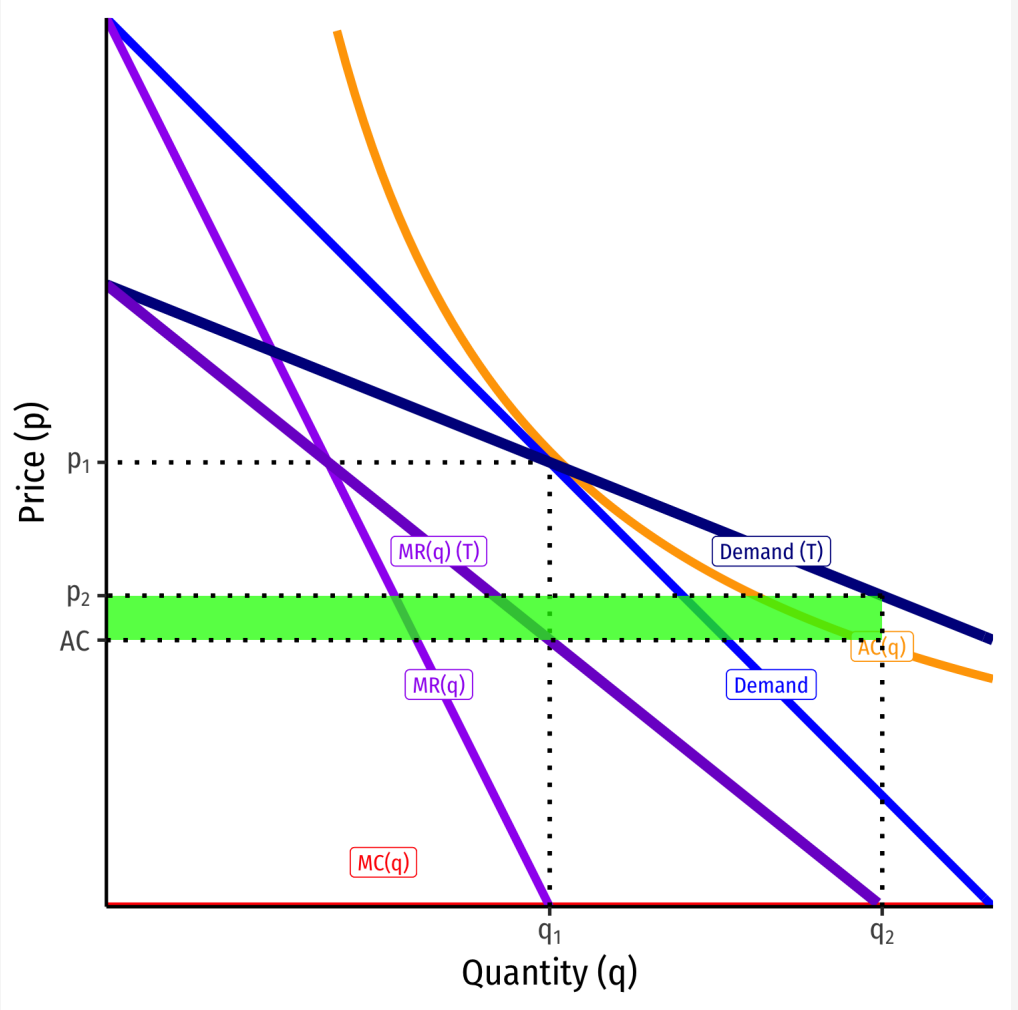
- Thus, not all firms can expand and survive in global market
- As all firms try to expand and compete, this **lowers demand** for each individual firm



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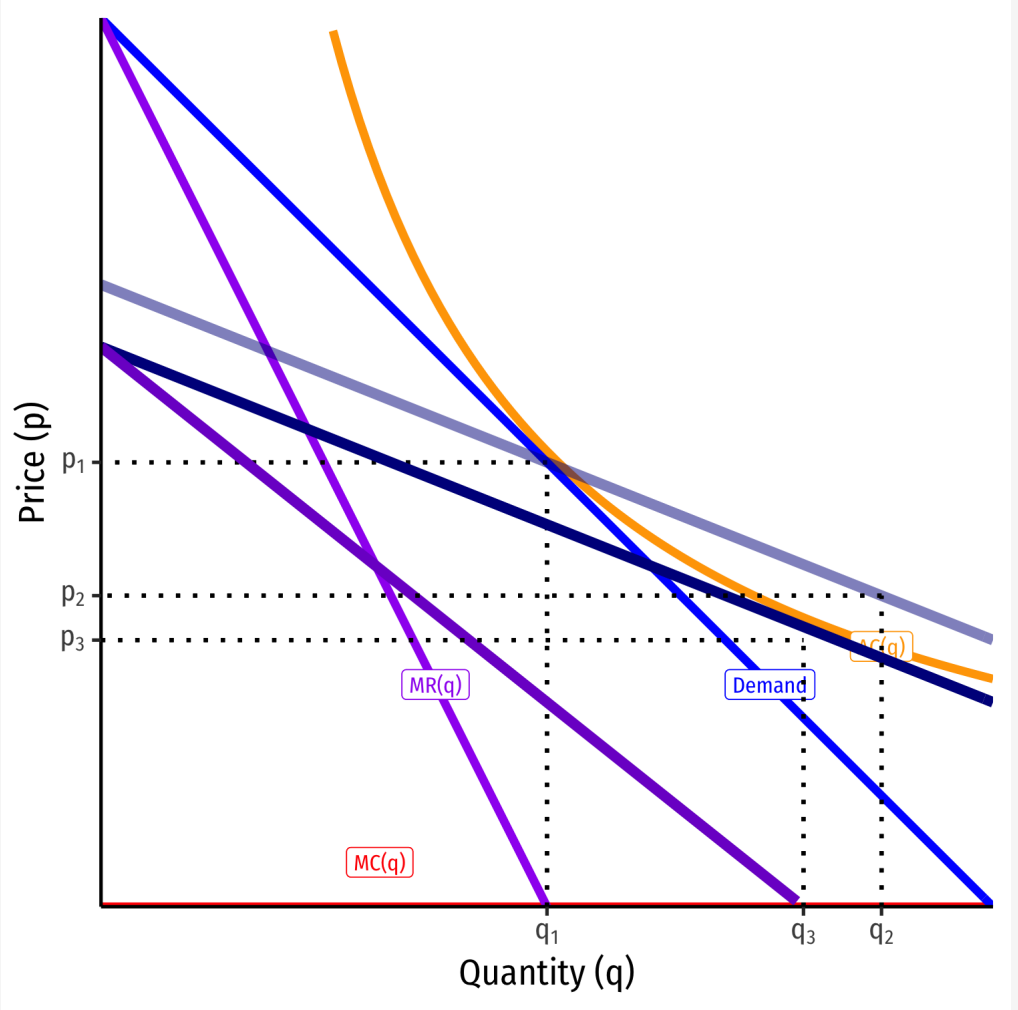

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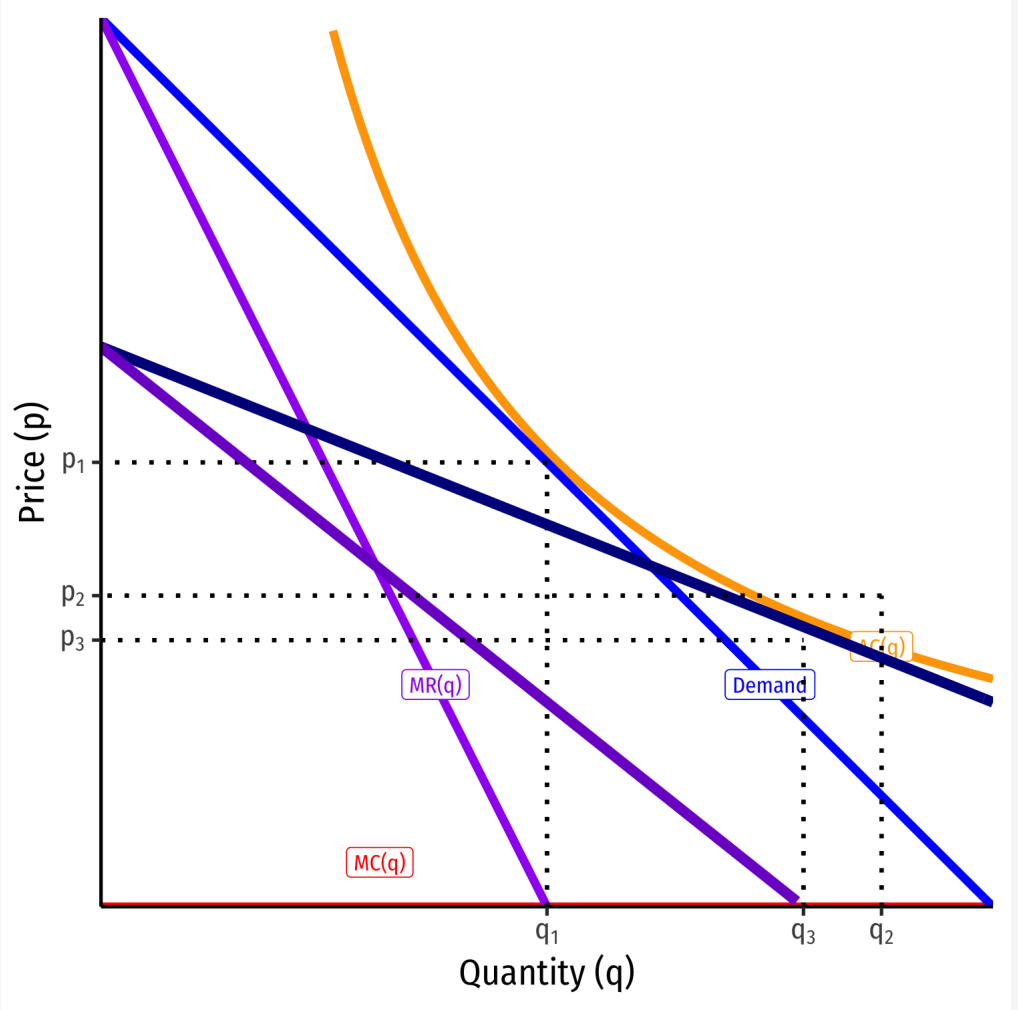
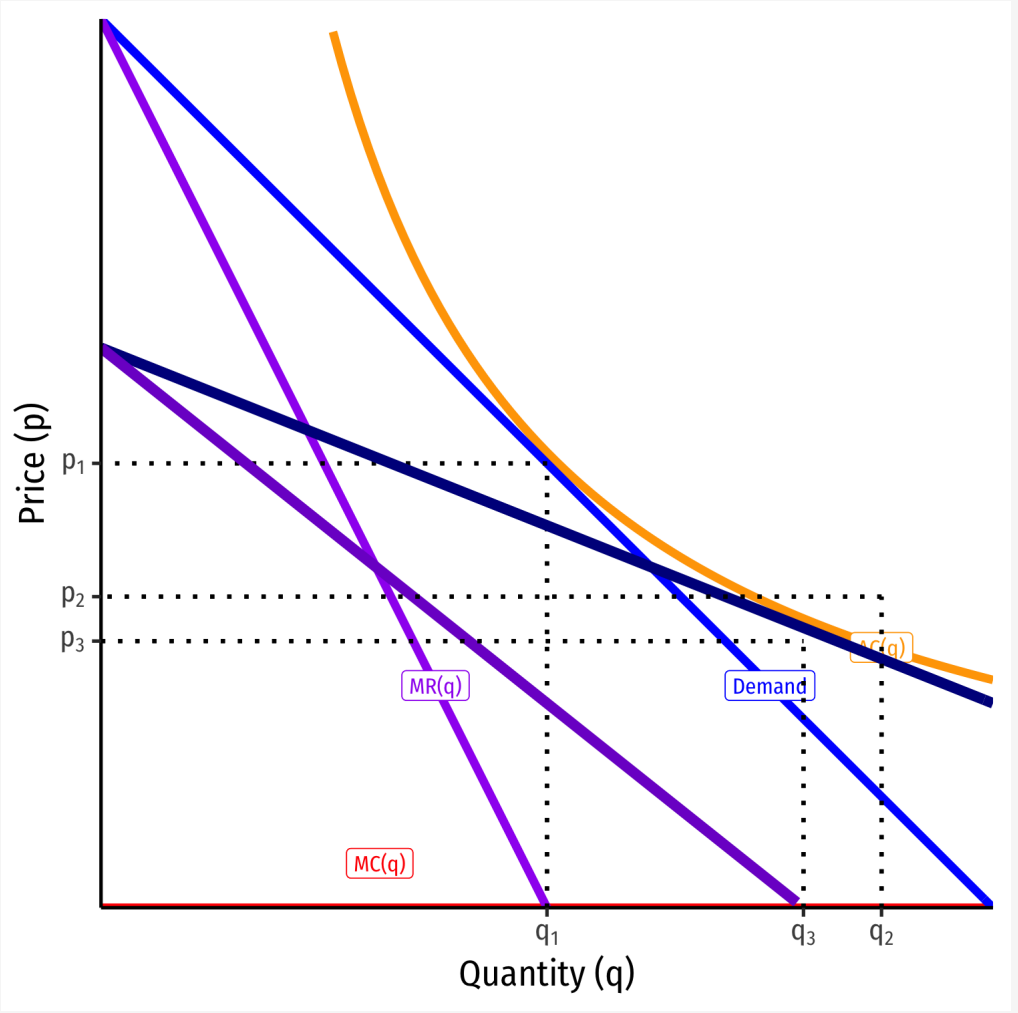


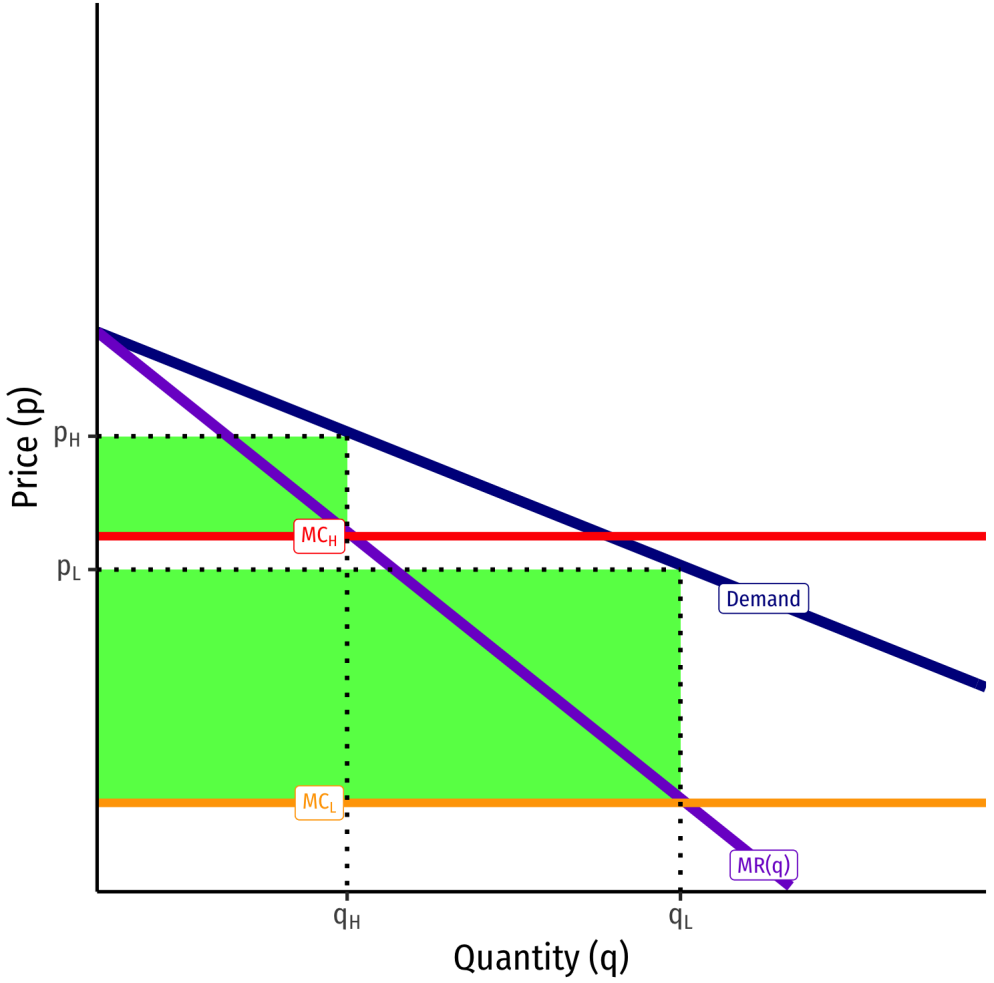
# Monopolistic Competition with Trade: Long-Run

- In autarky (before trade), suppose there were $2n$ firms ($n$ in each country)
- When trade opens, each firm tries to gain larger share (but not all can)
- Some firms exit; firms that remain will produce more than before ($q_1 \rightarrow q_3$)
- With trade, and after the shakeout, there are $n^\star$ firms, $n < n^\star < 2n$
- Price & AC fall, and product variety in each country rises from $n \rightarrow n^*$



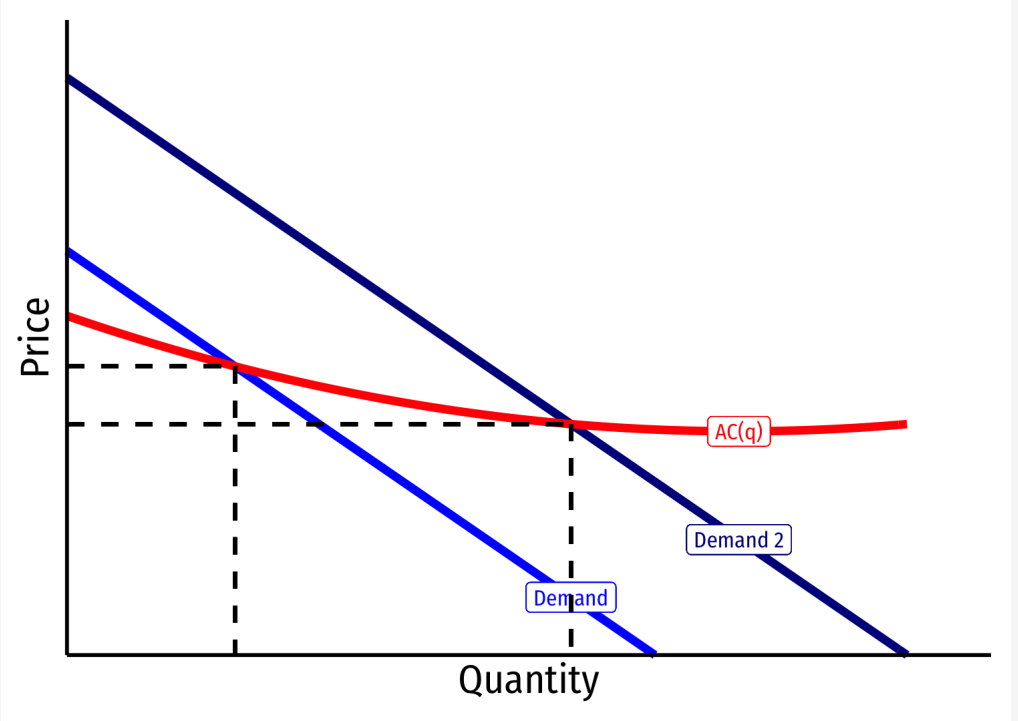
# Monopolistic Competition with Trade: Long-Run

- Which firms will survive and which will exit the market?
- Compare two firms, one with high costs, $MC_H$ and one with low costs $MC_L$
  - Low cost firm earns more profits than high cost firm
- Opening up trade increases competition, lowering profits
- Low cost firms better equipped to survive falling profits
  - High cost firms leave the market; allowing low cost firms to expand output!

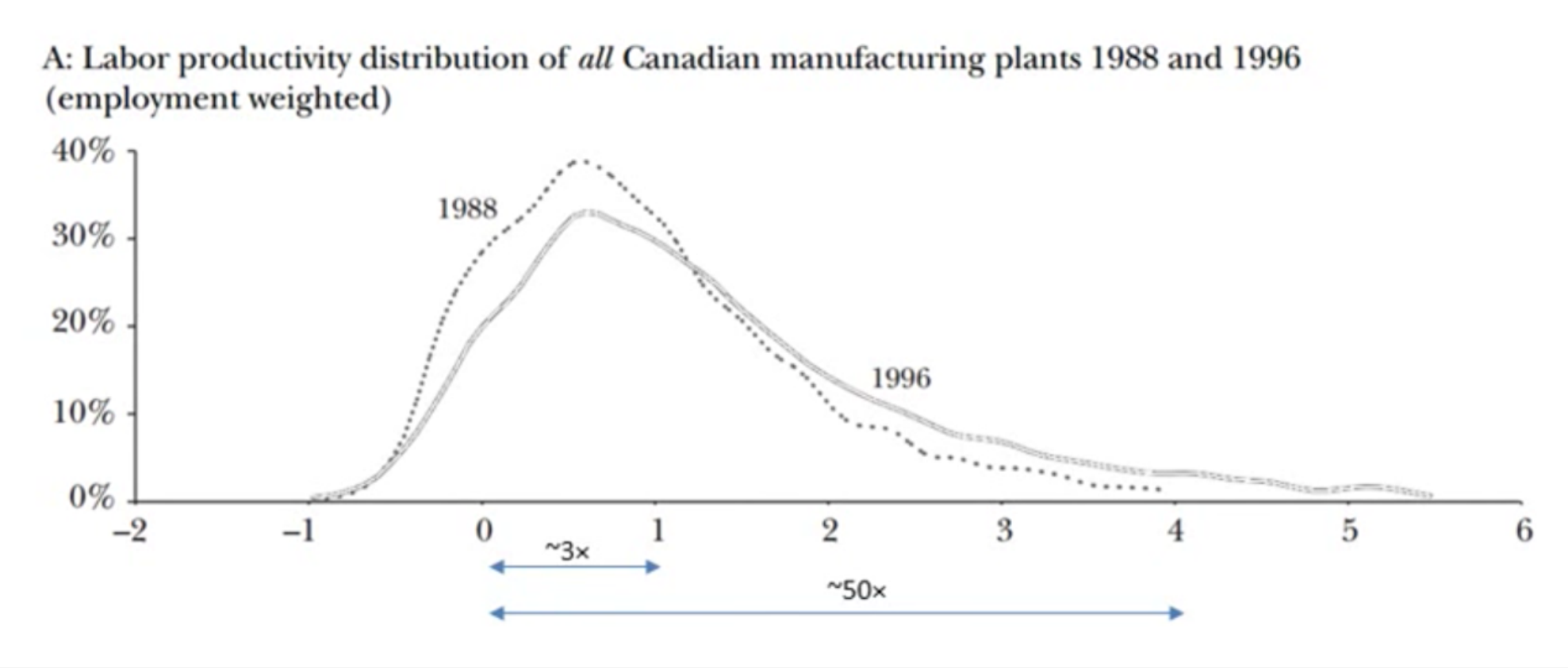


# Monopolistic Competition with Trade: Productivity

- With fewer firms, the remaining (low cost) firms can further increase their output
- Exploit economies of scale, moving down their average cost curves
- Implies lower costs, lower prices, and greater productivity for the incumbent firms remaining



# Trade Agreements and Firm Productivity




After Canadian free trade agreement with U.S., Canadian productivity increased rapidly by 8.4%, a huge increase over a short time period. Note this is a logarithmic scale!

# What is at Stake in Competing Trade Theories?

- H-O theory vs. increasing returns
- Ex ante vs. ex post comparative advantage
- Emphasize different causes of trade
- Imply very different policies
    - free trade vs. industrial policy?
- Cultural/aesthetic views of the world? Difference vs. sameness?