IIB Review

AP Econ - Micro II B

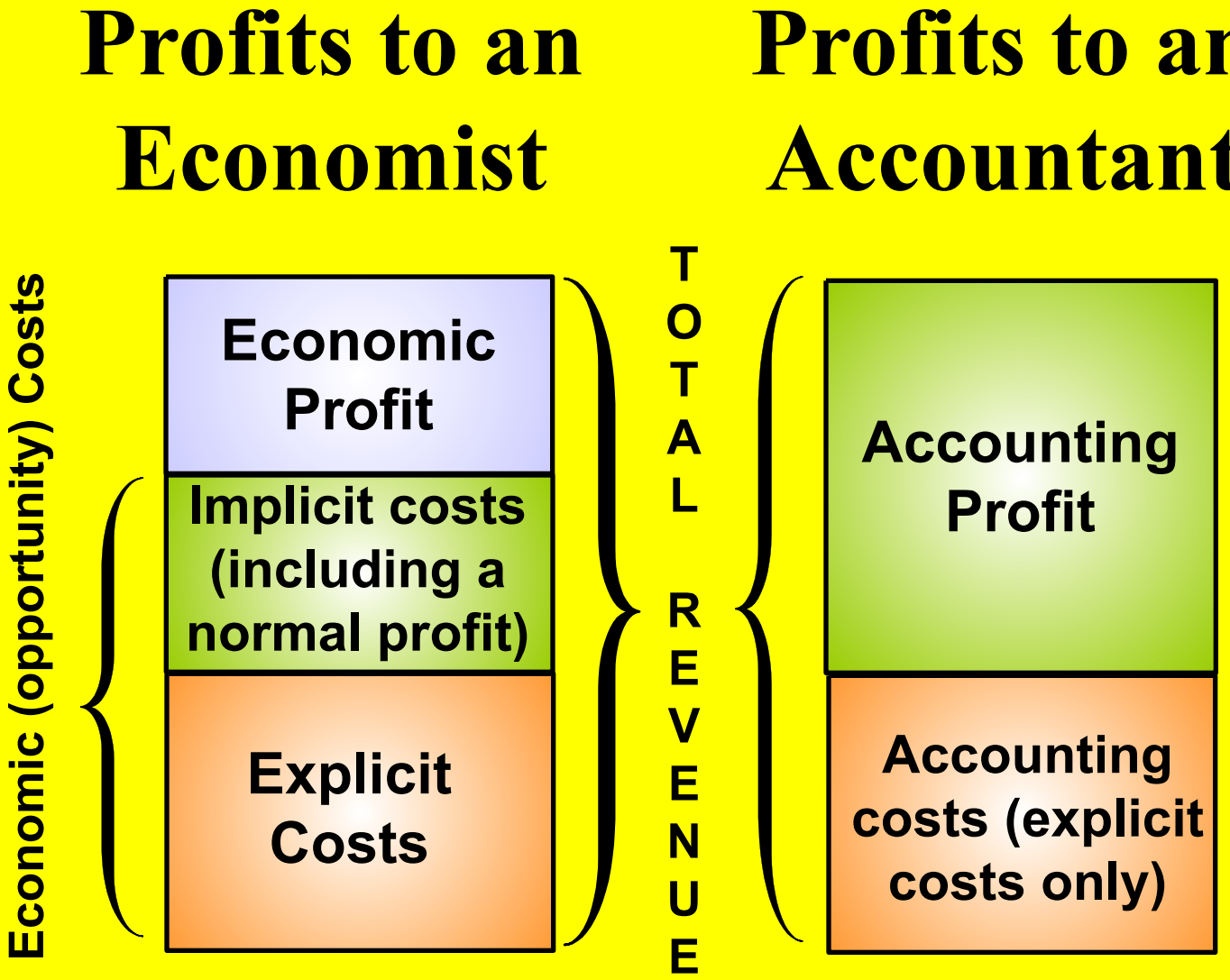
Mr. Griffin

MHS

Know These!

- Economic Profit & Accounting profit
- Short Run & Long Run
- Profit = TR – TC
- MR = MC: profit maximization
- Total, Average, Marginal product
- Total, Marginal, Average cost
- Law of Diminishing returns
- Economics / Diseconomies of scale

ECONOMIC COSTS



Short-run versus Long-run Costs

- The Economic Short Run vs the Long Run
  - Short run
    - a period of time during which some of the firm's cost commitments will not have ended.
    - In the short run, output can change but production processes are fixed.

Short-run versus Long-run Costs

- The Economic Short Run vs the Long Run
  - Long run
    - a period of time long enough for all of the firm's commitments to come to an end.
    - In the long run, all inputs can be varied and production processes can be changed.

Short-run versus Long-run Costs

- Fixed Costs and Variable Costs
  - Fixed costs = costs that cannot be changed
  - Variable costs = costs that can be changed
  - In the short run, some costs are fixed. In the long run, all costs are variable.

SHORT-RUN PRODUCTION RELATIONSHIPS

Total Product (TP)

Marginal Product (MP)

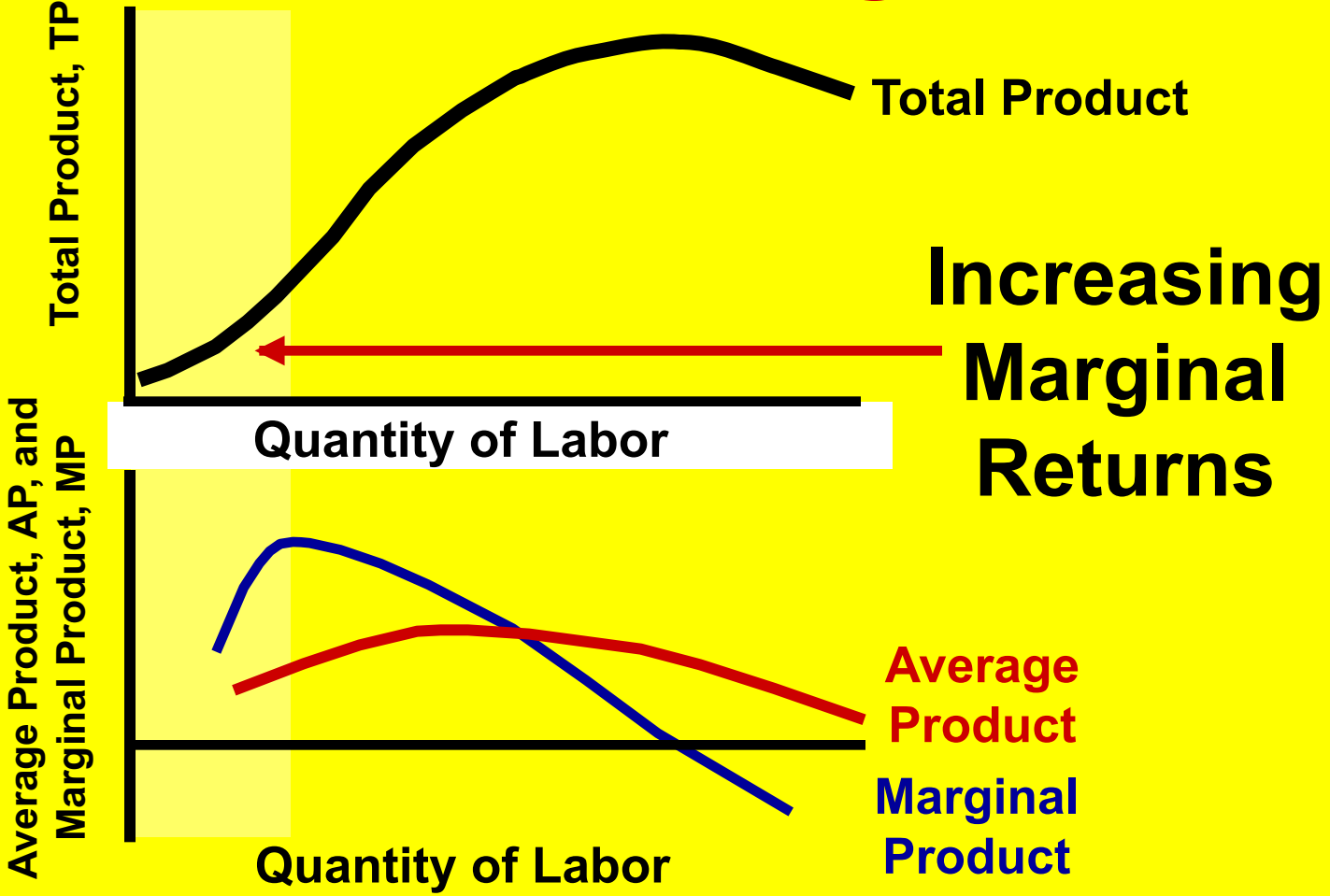
$$\text{Marginal Product} = \frac{\text{Change in Total Product}}{\text{Change in Labor Input}}$$

Average Product (AP)

$$\text{Average Product} = \frac{\text{Total Product}}{\text{Units of Labor}}$$

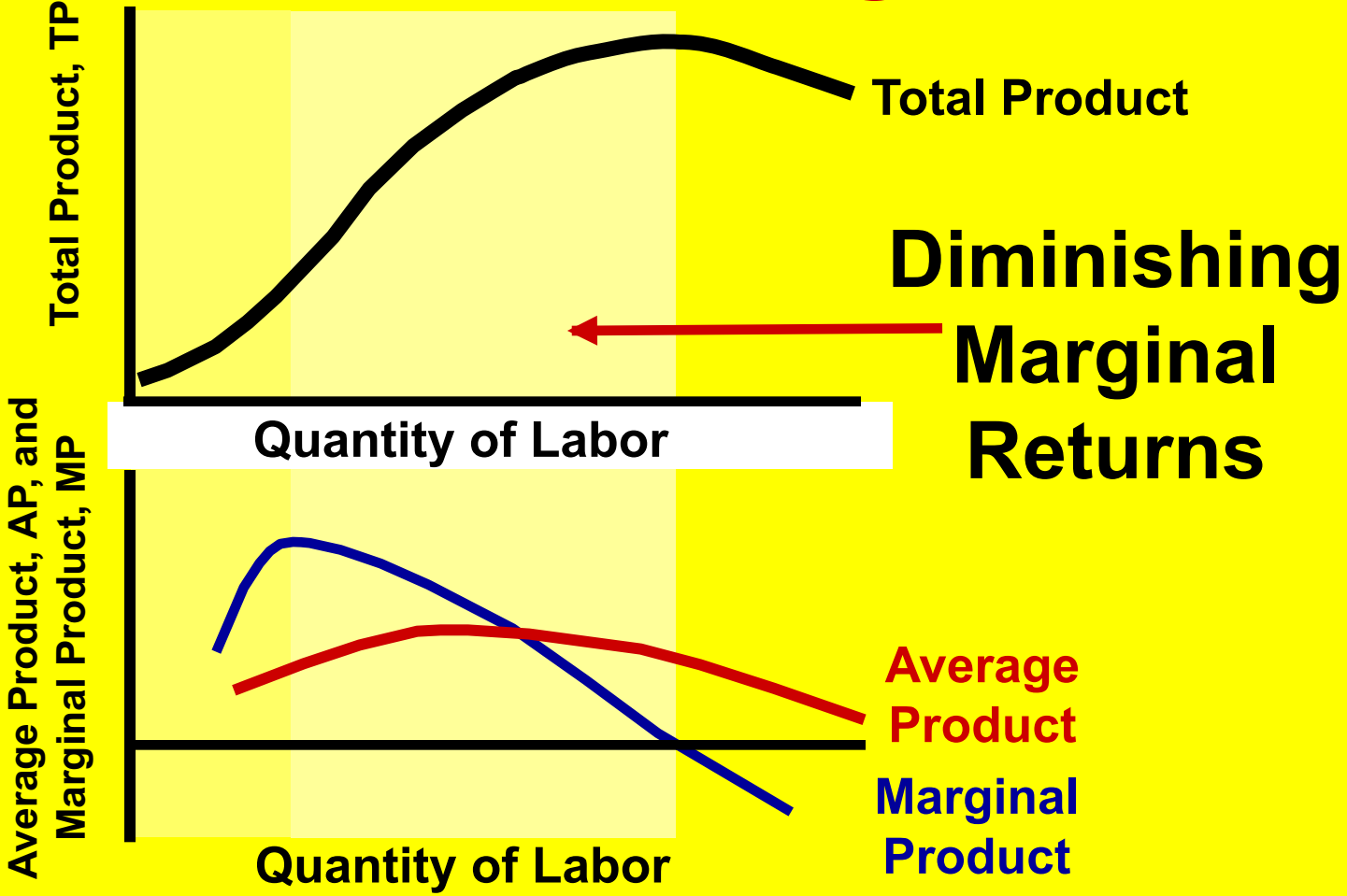
SHORT-RUN PRODUCTION RELATIONSHIPS

Law of Diminishing Returns



SHORT-RUN PRODUCTION RELATIONSHIPS

Law of Diminishing Returns



SHORT-RUN PRODUCTION RELATIONSHIPS

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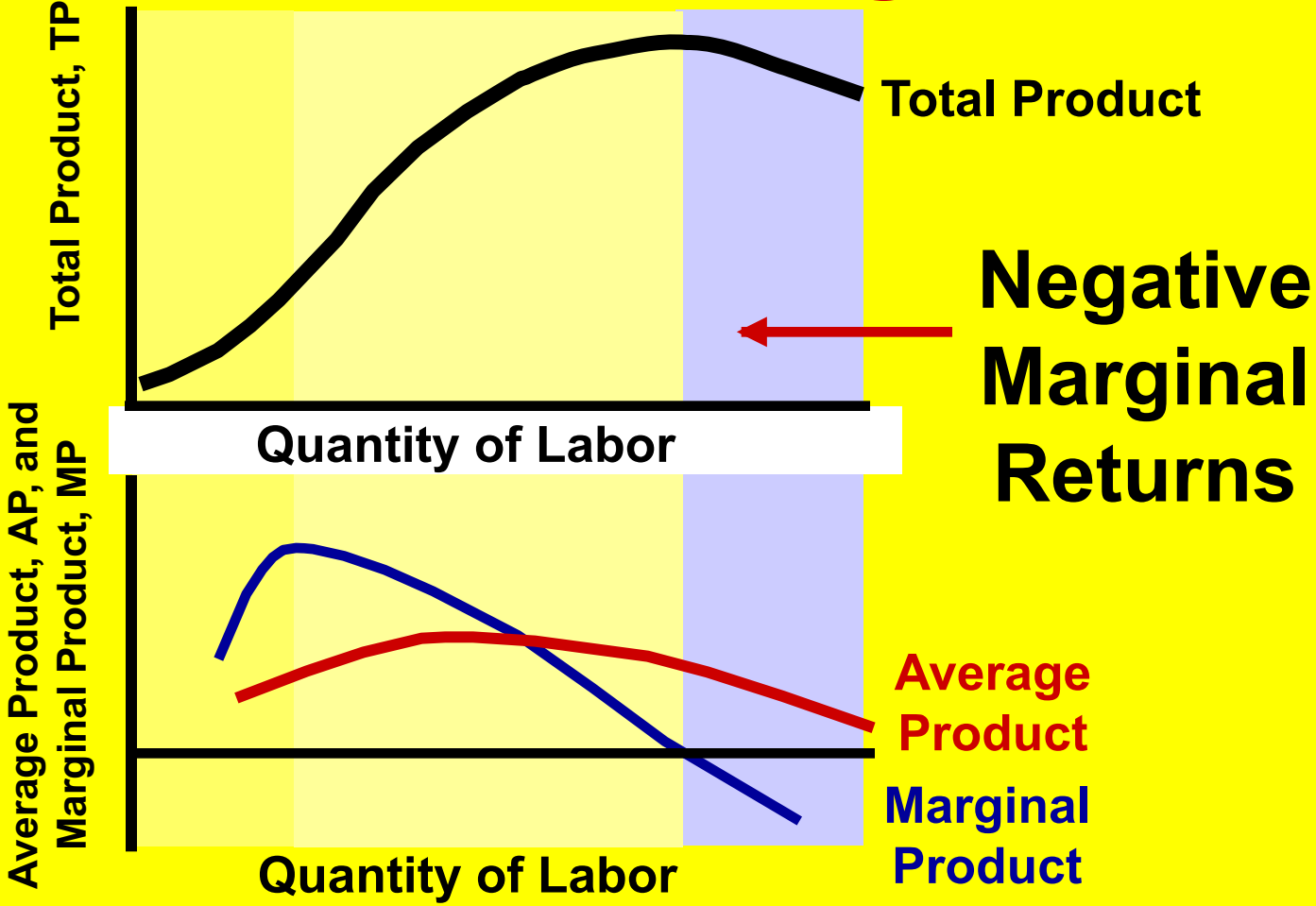


SHORT-RUN PRODUCTION COSTS

Fixed Costs

Total Fixed Costs

$$\text{Average Fixed Costs} = \frac{\text{Total Fixed Costs}}{\text{Quantity}}$$

Variable Costs

Total Variable Costs

$$\text{Average Variable Costs} = \frac{\text{Total Variable Costs}}{\text{Quantity}}$$

SHORT-RUN PRODUCTION COSTS

Total Cost

Total Fixed and Variable Costs

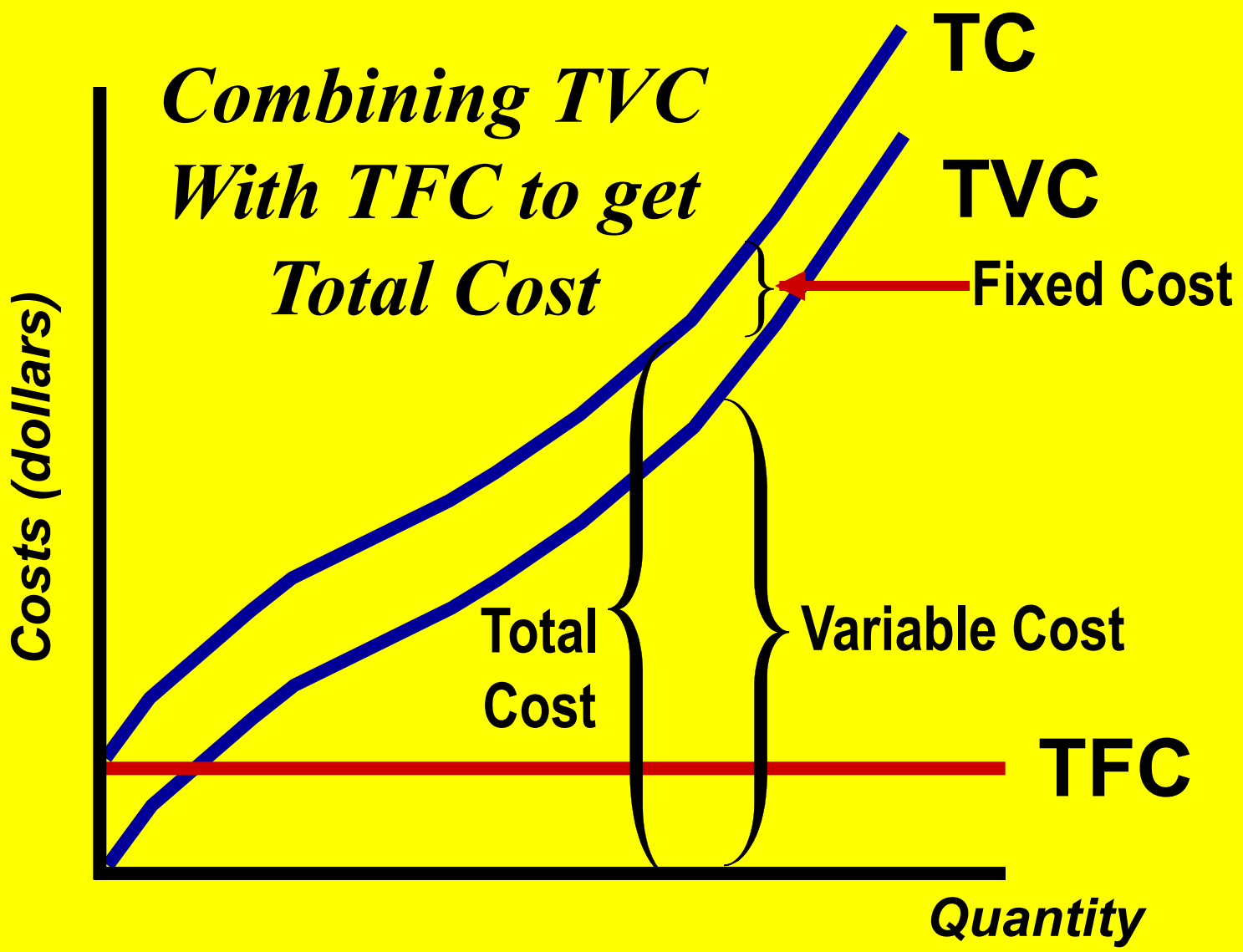
$$\text{Average Total Cost} = \frac{\text{Total Costs}}{\text{Quantity}}$$

Marginal Cost

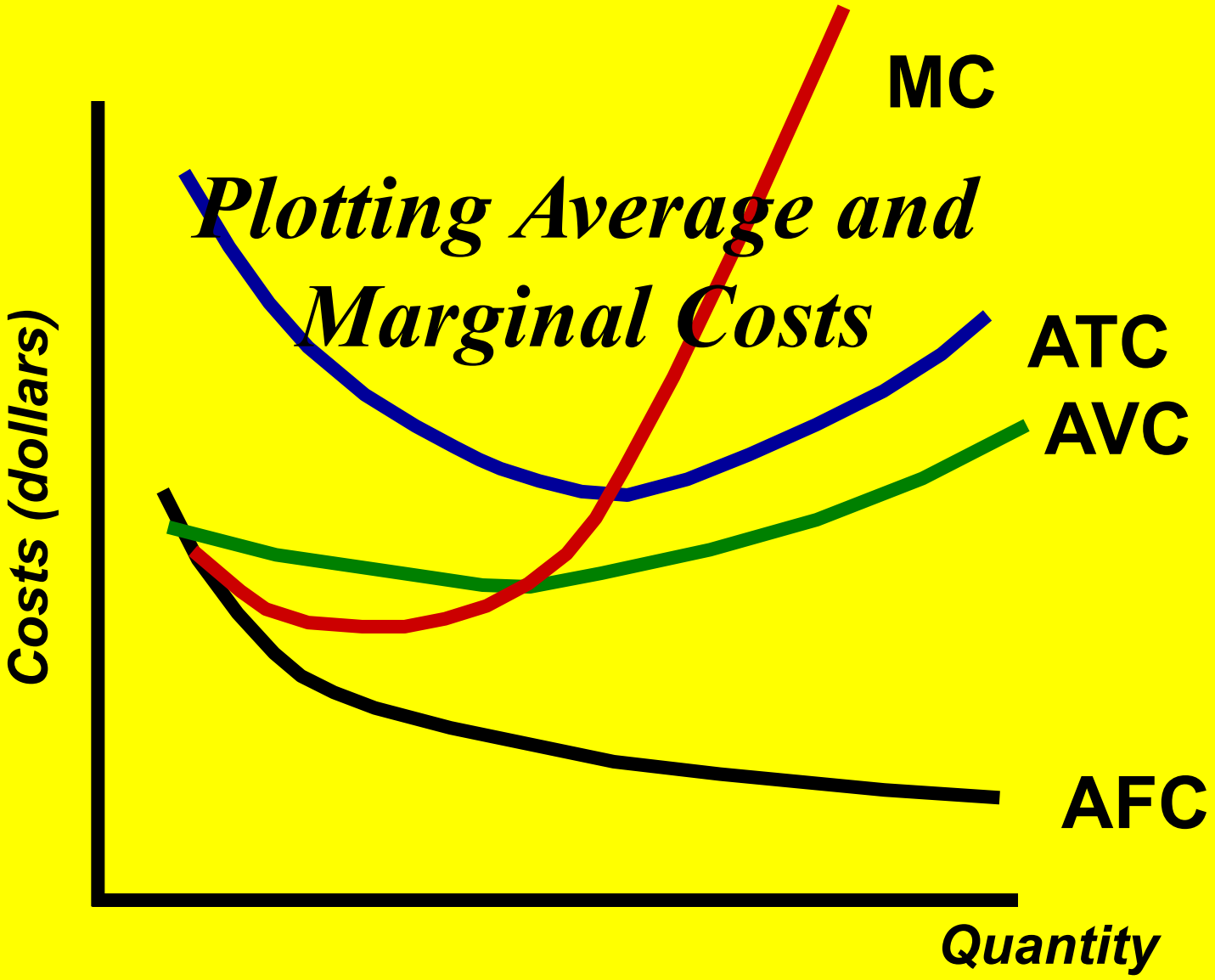
Total Variable Costs

$$\text{Marginal Cost} = \frac{\text{Change in Total Costs}}{\text{Change in Quantity}}$$

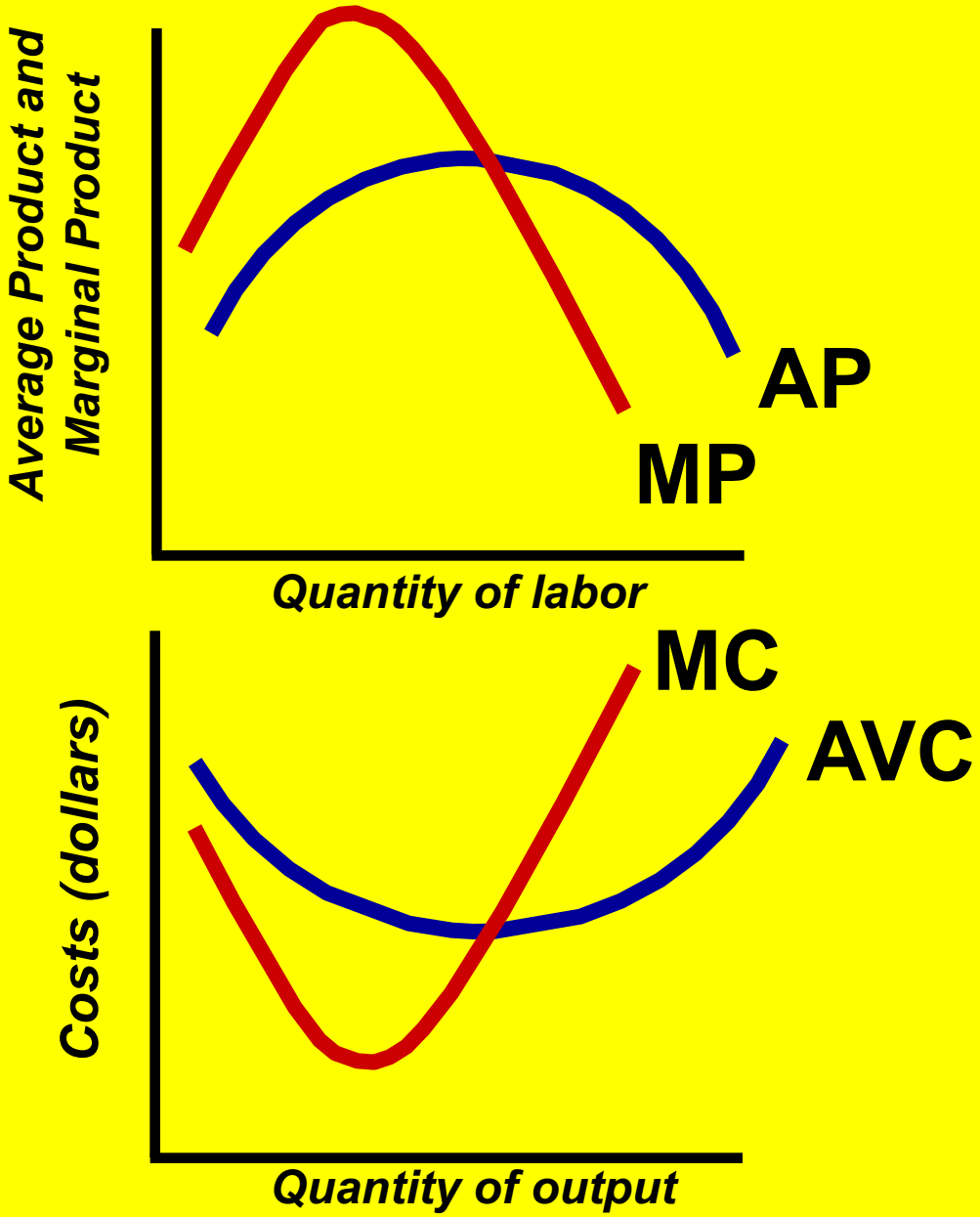
SHORT-RUN COSTS GRAPHICALLY



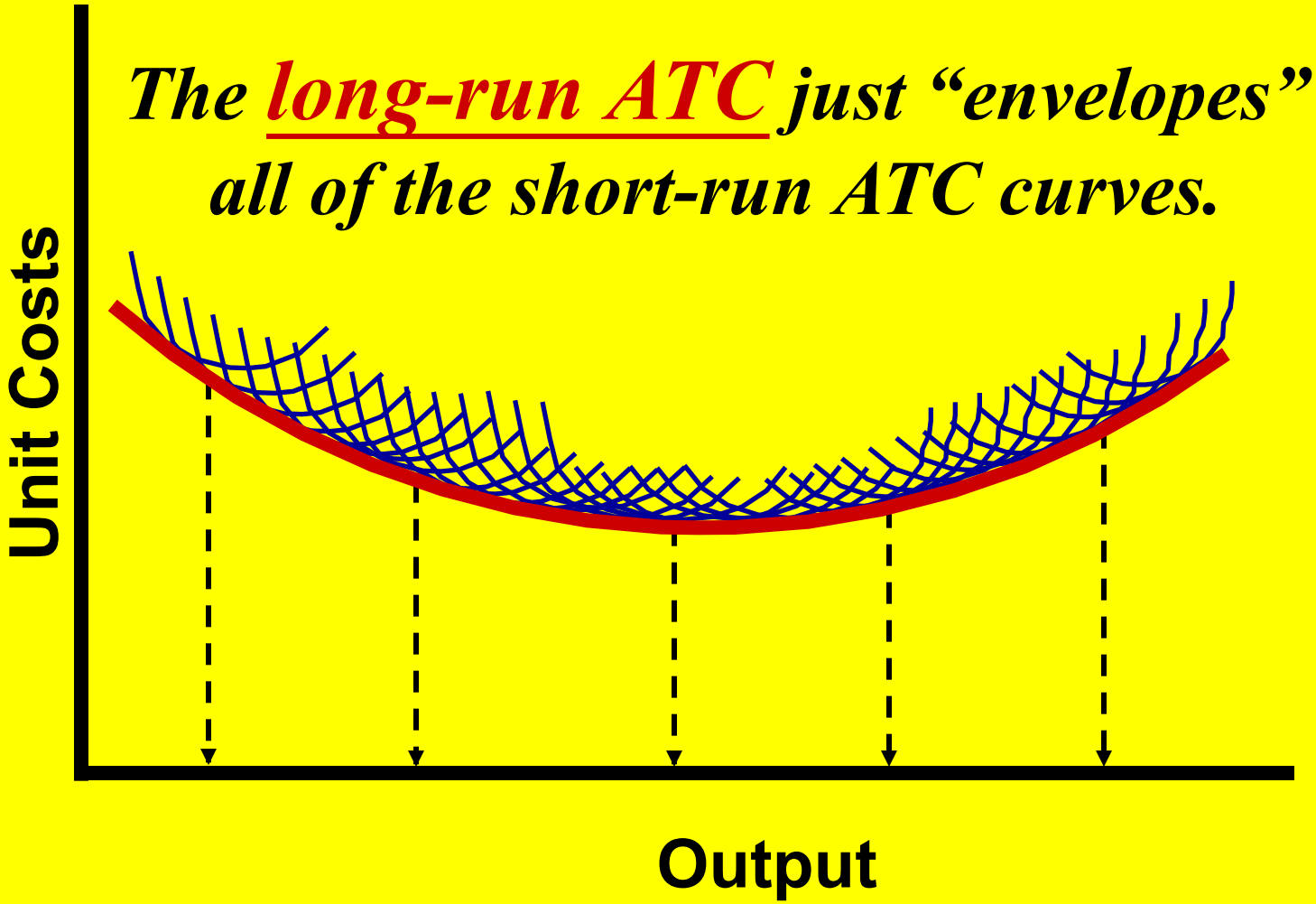
SHORT-RUN COSTS GRAPHICALLY



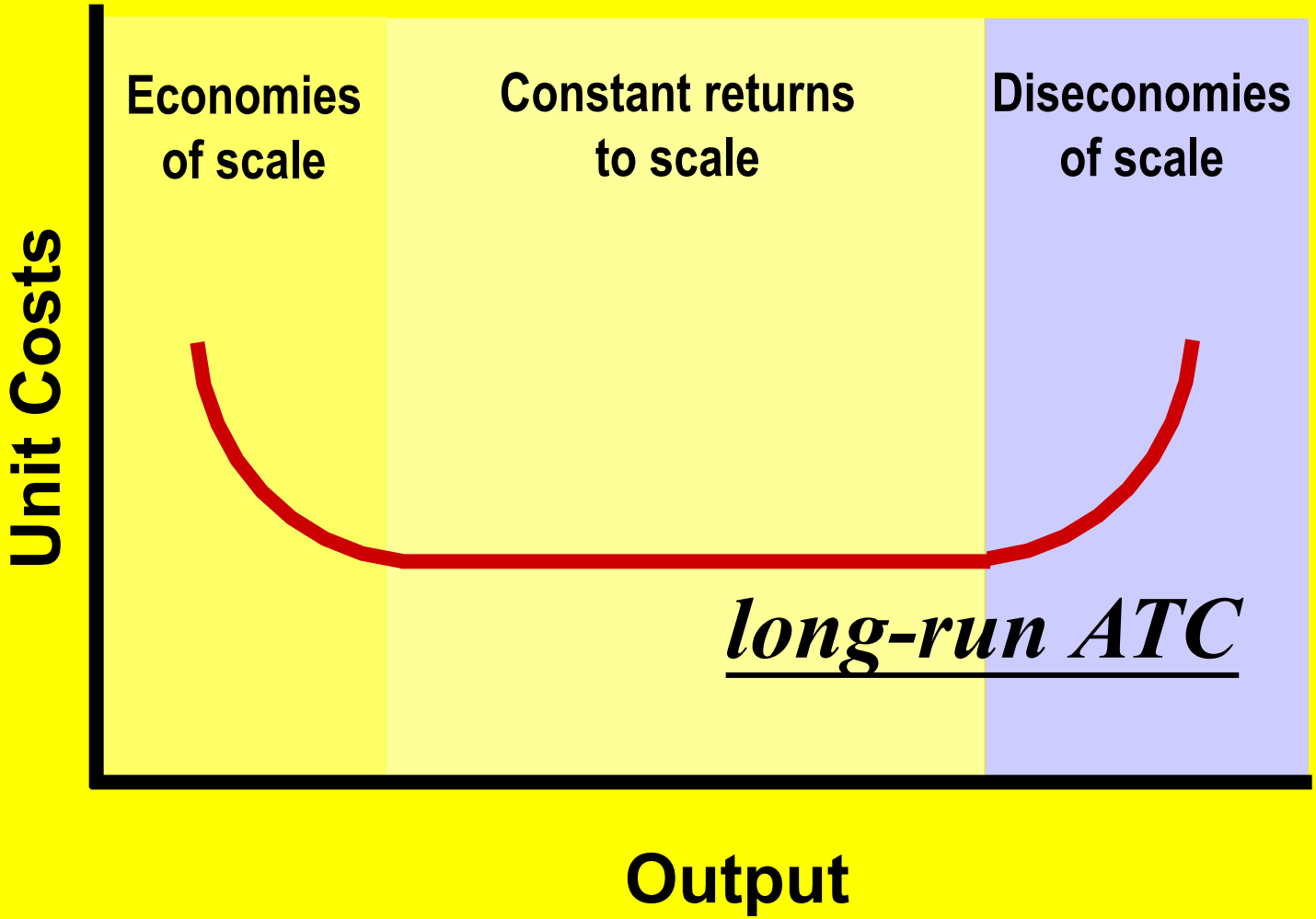
PRODUCTIVITY AND COST CURVES



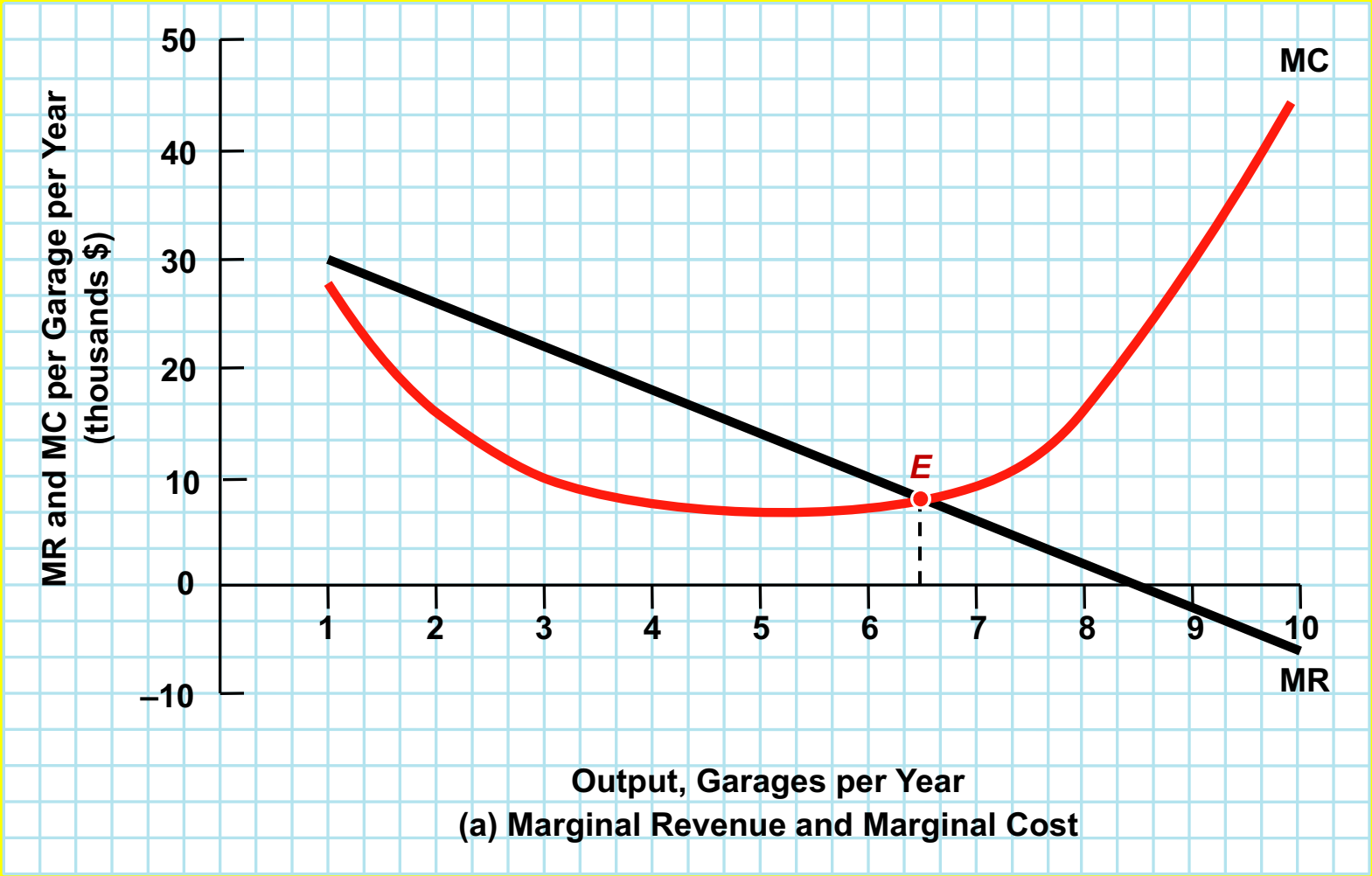
LONG-RUN PRODUCTION COSTS



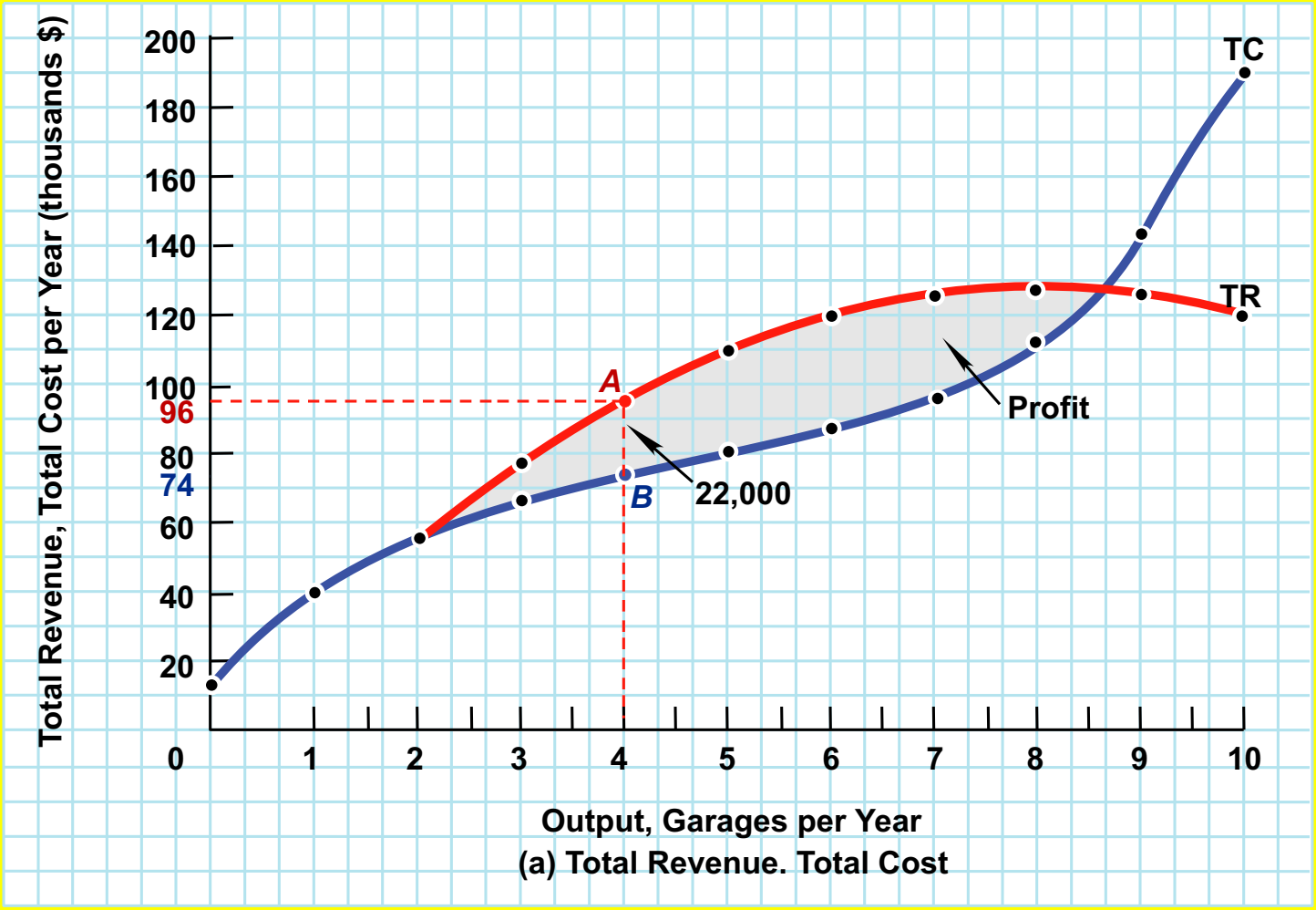
ECONOMIES AND DISECONOMIES OF SCALE



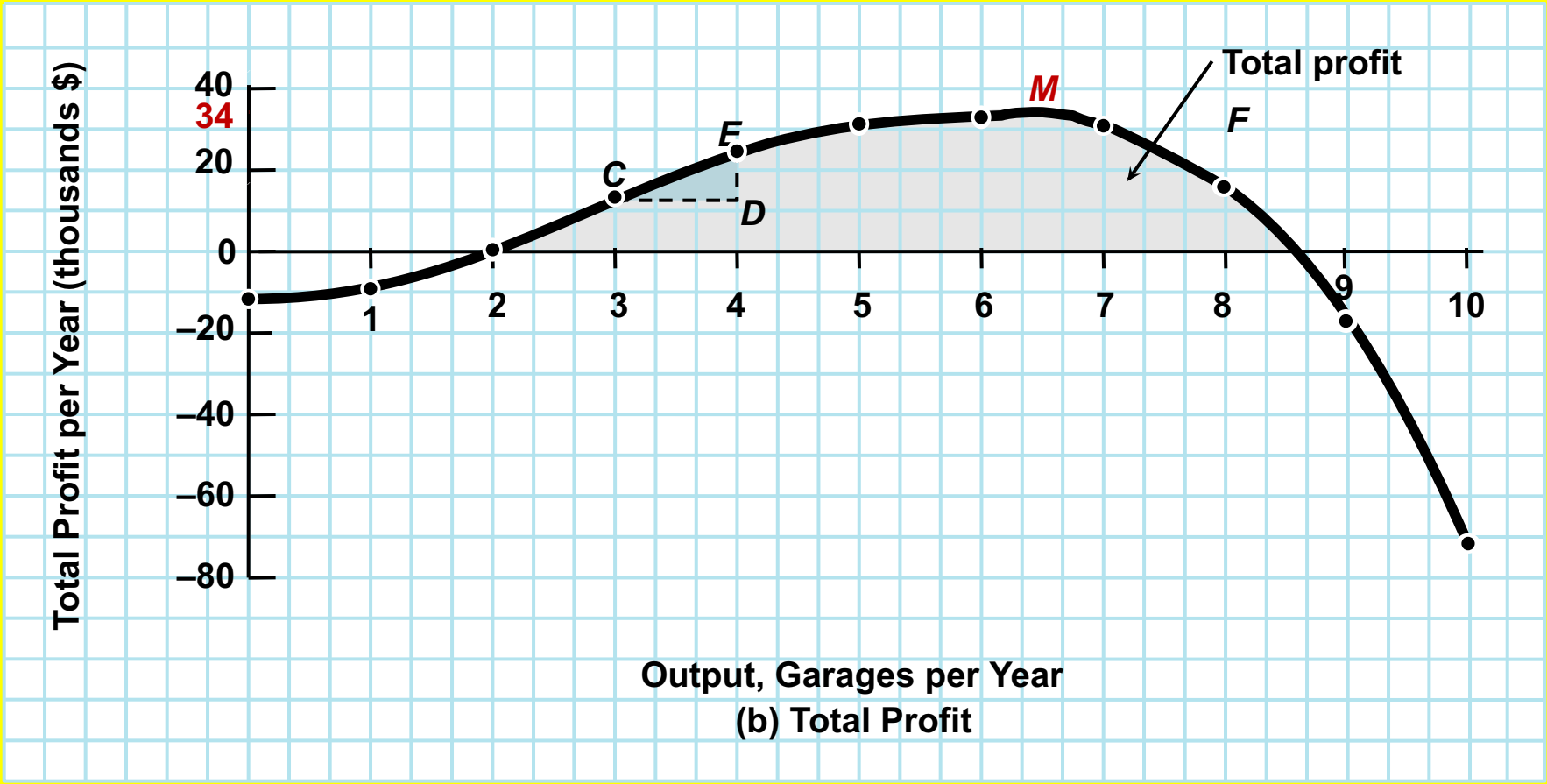
Profit Maxim: Another Graphical Interpretation



Profit Maximization



Profit Maximization



Marginal Analysis and Maximization of Total Profit

- Finding the Optimal Price from Optimal Output
  - ***MR = MC: rule for determining the level of output***
  - Demand curve $\Rightarrow$ price buyers will pay to purchase that level of output
  - Both output and price are now determined for the profit maximizing firm.

Final Thoughts on The Producer Firm

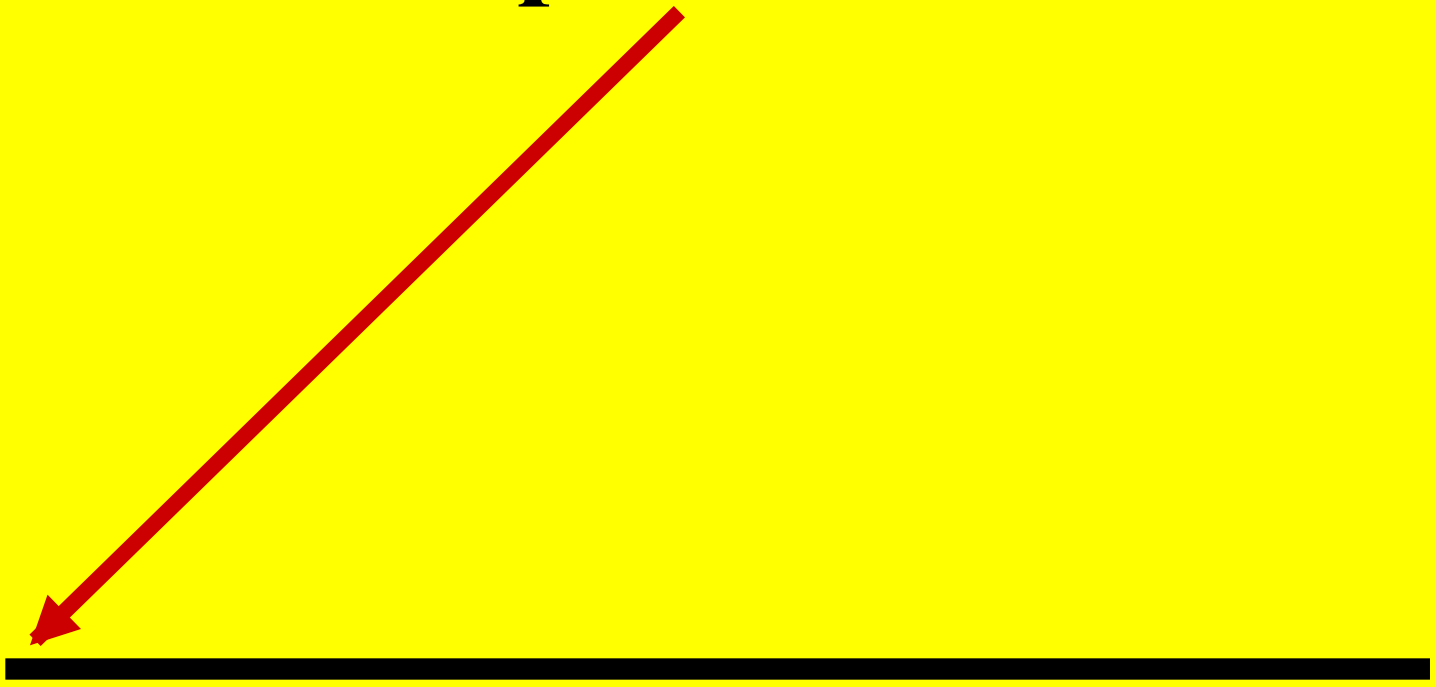
- Inputs $\Rightarrow$ Costs
  - How much does one more unit of input change output?
- Input Costs $\Rightarrow$ Output
  - Will one more unit of output increase MR?
- Output $\Rightarrow$ Profit
  - Will one more unit of output increase or decrease profit?
  - If MR > MC, $\uparrow$ production $\Rightarrow$ $\uparrow$ profits
  - If MR < MC, $\downarrow$ production $\Rightarrow$ $\uparrow$ profits
- Profit maximizing level output: MR = MC
  - TR – TC = TP

Attributes of the Four Market Forms

Market Form	Number of Firms in the Market	Frequency in Reality	Entry Barriers	Public Interest Results	Long-Run Profit	Equilibrium Conditions
Perfect competition	Very many	Rare (if any)	None	Good	Zero	$MC = MR = AC = AR = P$
Pure monopoly	One	Rare	Likely to be high	Outputs not optimal	May be high	$MR = MC$
Monopolistic competition	Many	Widespread	Minor	Inefficient	Zero	$MR = MC$ $AR = AC$
Oligopoly	Few	Produces large share of GDP	Varies	Varies	Varies	Varies

FOUR MARKET MODELS

Pure Competition



Market Structure Continuum

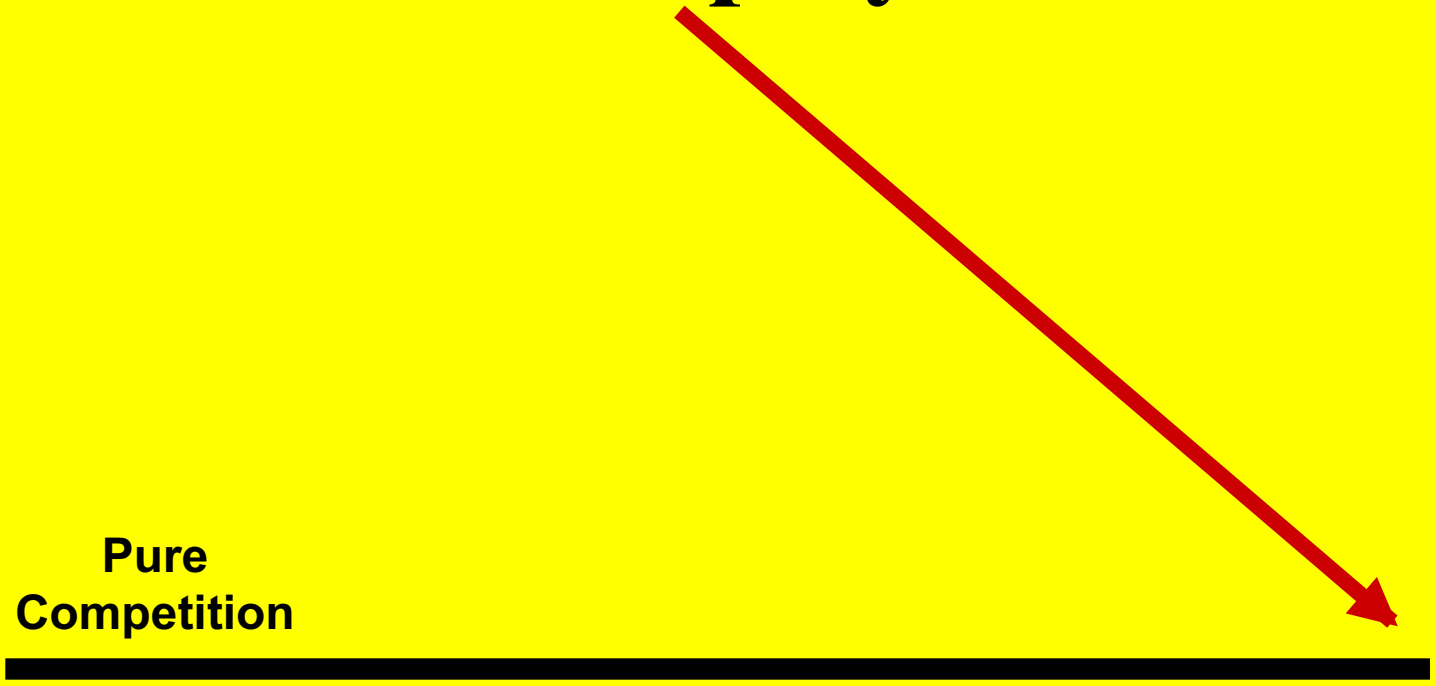
FOUR MARKET MODELS

Imperfect Competition

Pure Competition

Market Structure Continuum

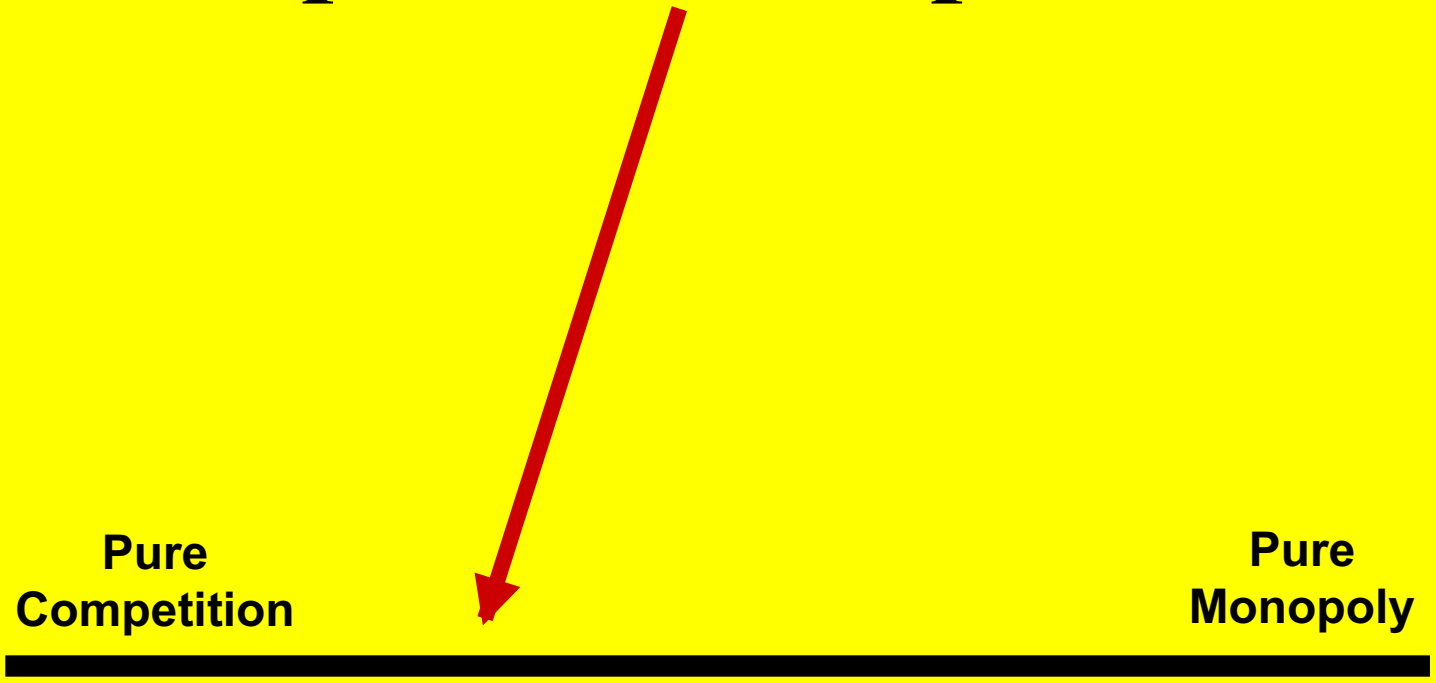
FOUR MARKET MODELS



Market Structure Continuum

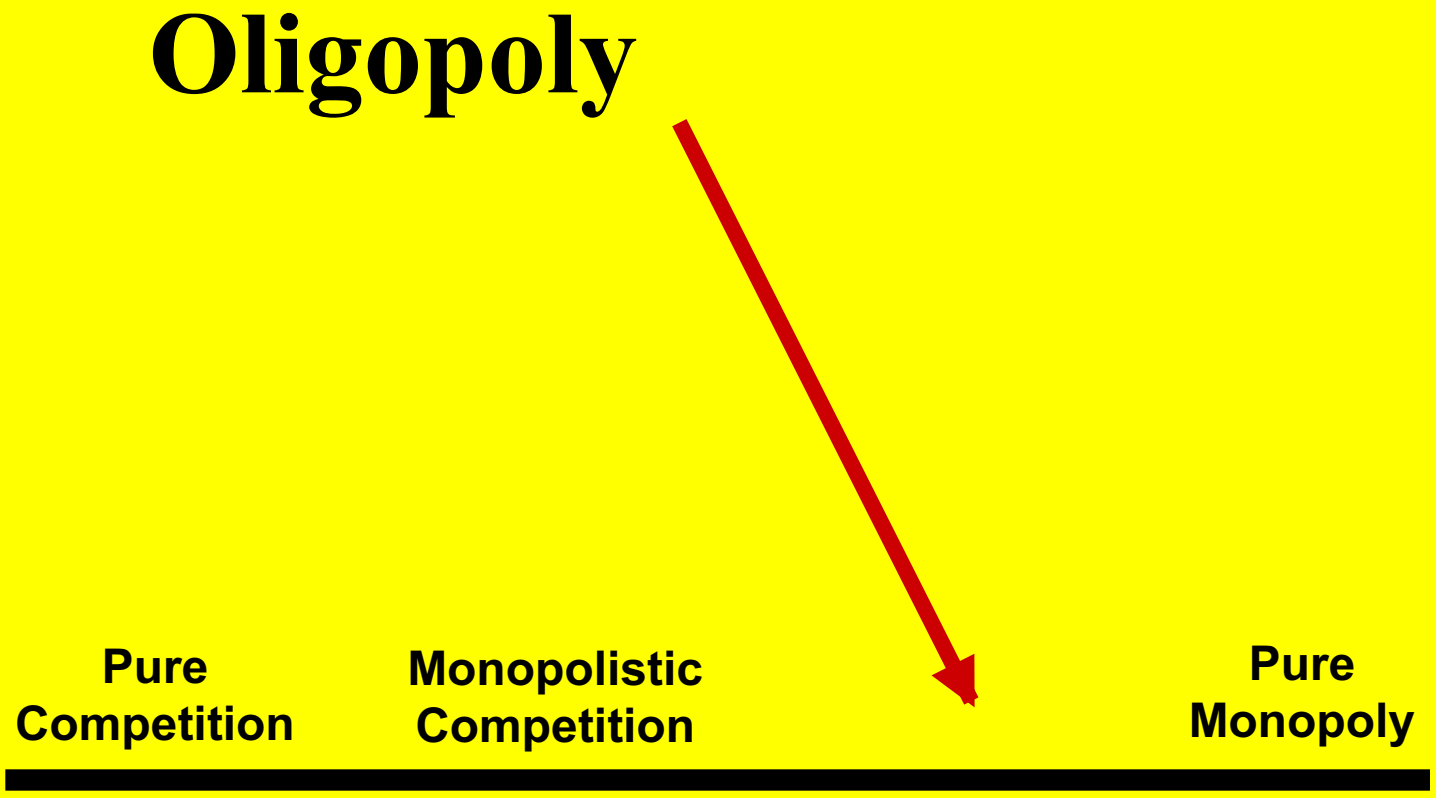
FOUR MARKET MODELS

Monopolistic Competition



Market Structure Continuum

FOUR MARKET MODELS



Market Structure Continuum

FOUR MARKET MODELS

Pure Competition:

- Very Large Numbers
- Standardized Product
- "Price Takers"
- Free Entry and Exit

Market Structure Continuum

FOUR MARKET MODELS

Pure Monopoly:

- Single Seller
- No Close Substitutes
- Price Maker
- Blocked Entry
- Nonprice Competition

Market Structure Continuum

FOUR MARKET MODELS

Monopolistic Competition:

- Relatively Large Number of Sellers
- Differentiated Products
- Easy Entry and Exit

Market Structure Continuum

FOUR MARKET MODELS

Oligopoly:

- A Few Large Producers
- Homogeneous or Differentiated Products
- Control Over Price, But Mutual Interdependence
- Strategic Behavior
- Entry Barriers

Market Structure Continuum

Comparing the Four Market Forms

- Perfect competition and pure monopoly are uncommon in reality.
- Many monopolistically competitive firms exist.
- Oligopoly firms account for the largest share of the economy's output.

Comparing the Four Market Forms

- Profits are zero in long-run equilibrium under perfect competition and monopolistic competition because of free entry and exit.
- Consequently, AC = AR in long-run equilibrium under these two market forms.

Comparing the Four Market Forms

- In equilibrium, MC = MR for the profit-maximizing firm under any market form.
- In the equilibrium of the oligopoly firm, MC may be unequal to MR.

Comparing the Four Market Forms

- Perfectly competitive firm and industry theoretically $\Rightarrow$ efficient allocation of resources.
- Monopoly and monopolistic competition are likely $\Rightarrow$ inefficient allocation of resources.
- Under oligopoly, almost anything can happen, $\Rightarrow$ impossible to generalize about its vices or virtues.

Attributes of the Four Market Forms

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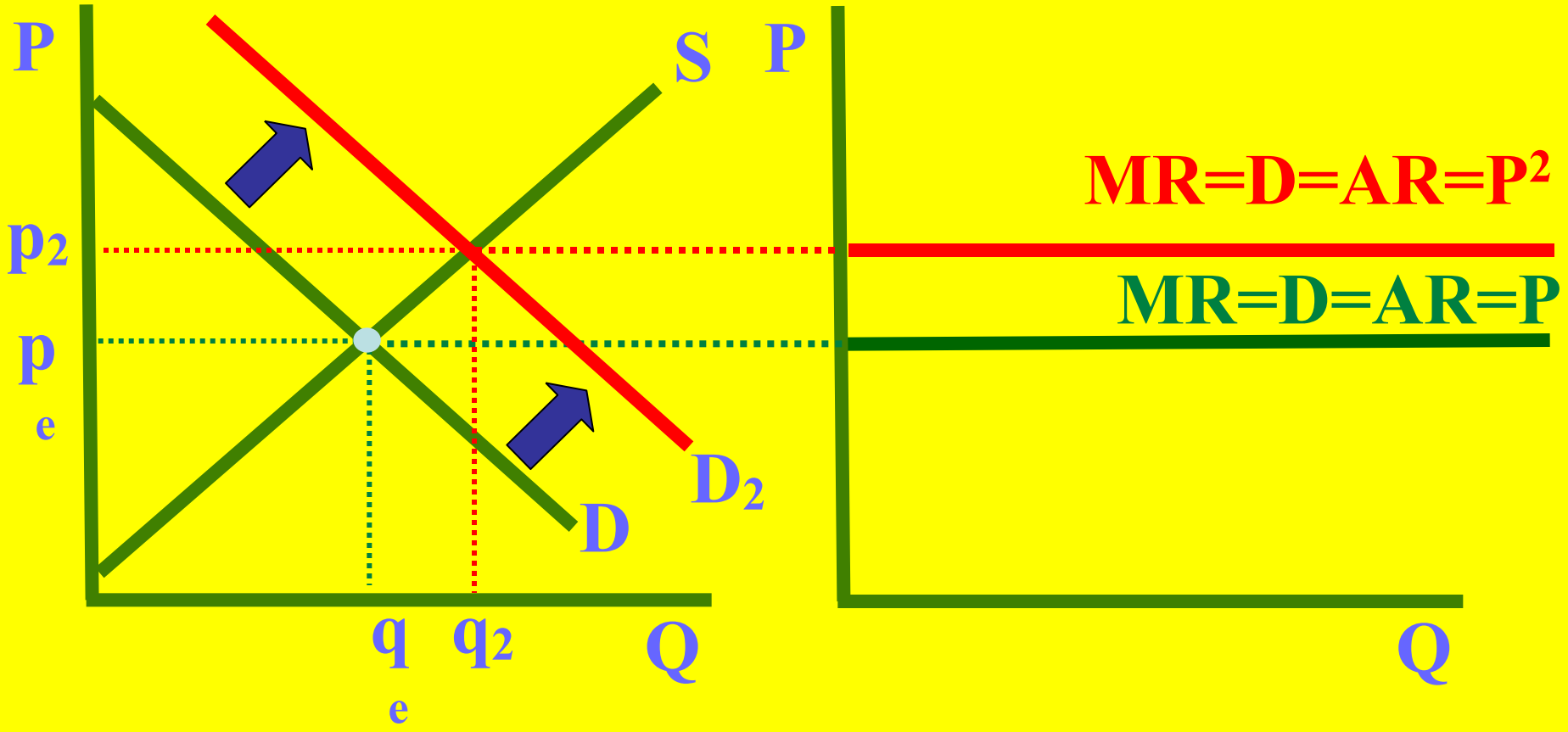
RELATIONSHIP	ECONOMIC INTERPRETATION
MR = MC	The firm has chosen the output that maximizes profits.
P > ATC	Firm is earning Economic Profits
P = ATC	Firm is earning NORMAL PROFIT (Break-Even Point) (EP = 0)
P < ATC; P > AVC	Loss Minimization
P = AVC	SHUTDOWN POINT (firm cannot cover its AVC)
P < AVC	Firm does not produce

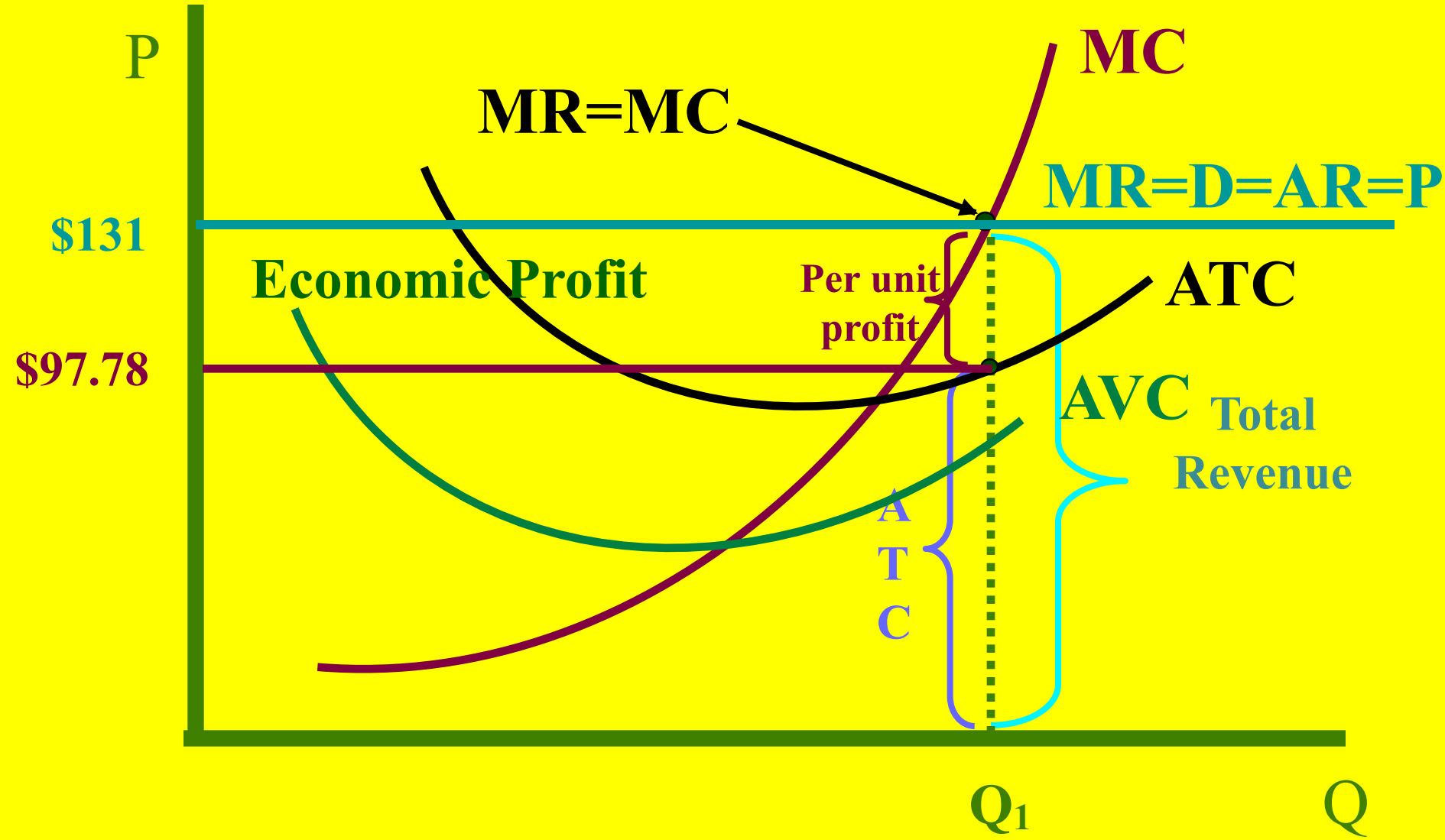
PURE COMPETITION	MONOPOLY
P = MR The firm's DEMAND CURVE is infinitely ELASTIC	P > MR The firm's DEMAND CURVE is relatively INELASTIC.
MR = MC The firms maximizes profit.	MR = MC The firms maximizes profit.
P= ATC Long Run (NORMAL PROFITS)	P ≥ ATC Long Run ECONOMIC PROFITS.
PRODUCTIVE EFFICIENCY P = min ATC Firm is forced to operate with maximum productive efficiency. (Least-Cost Method Production)	PRODUCTIVE INEFFICIENCY P > min ATC Firm is not forced to operate with maximum productive efficiency. (Least-Cost Method Production not necessary)
ALLOCATIVE EFFICIENCY P = MC There is an optimal allocation of resources.	ALLOCATIVE INEFFICIENCY P > MC There is an UNDERALLOCATION of resources.

Pure Competition

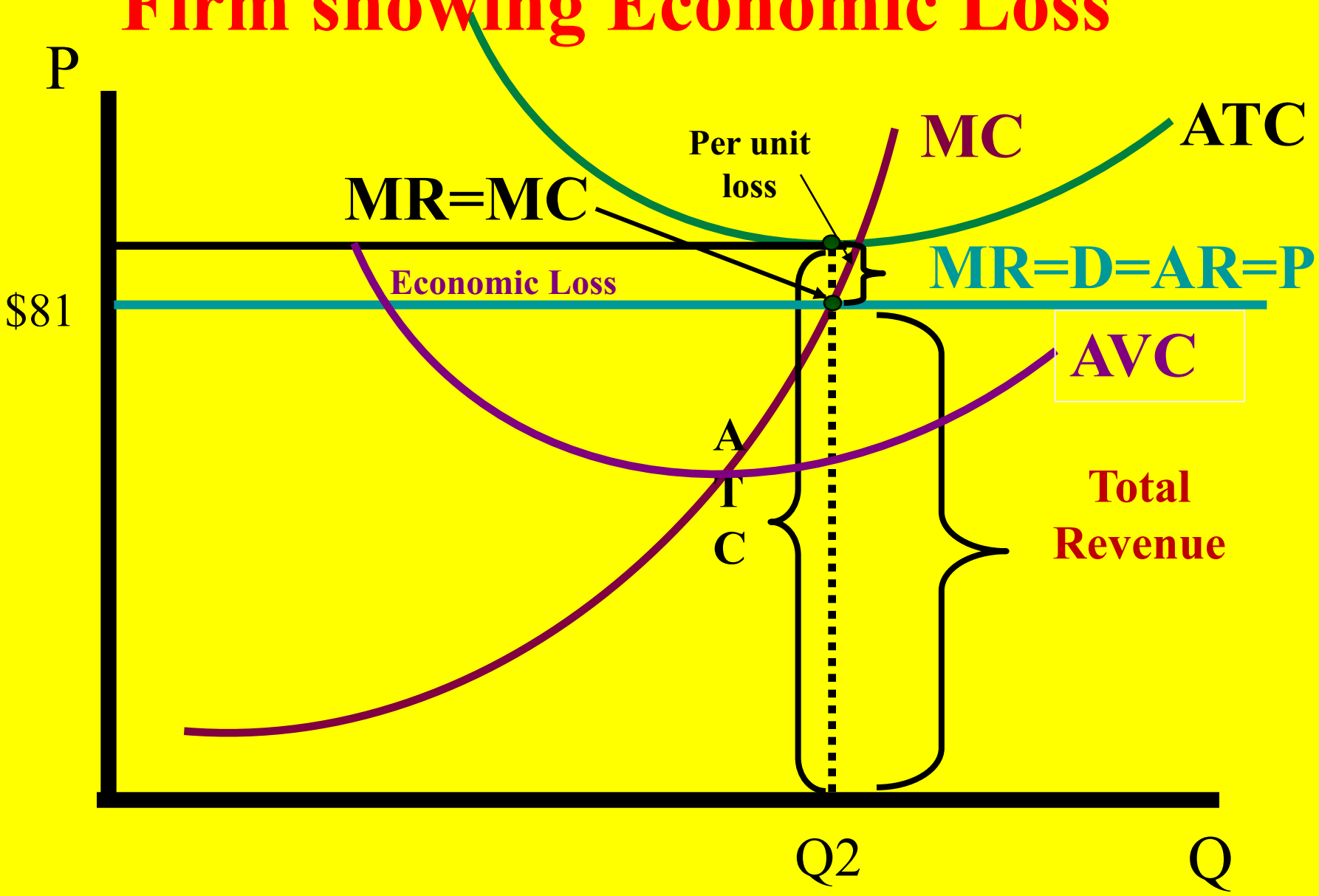


The Market **Individual firm**

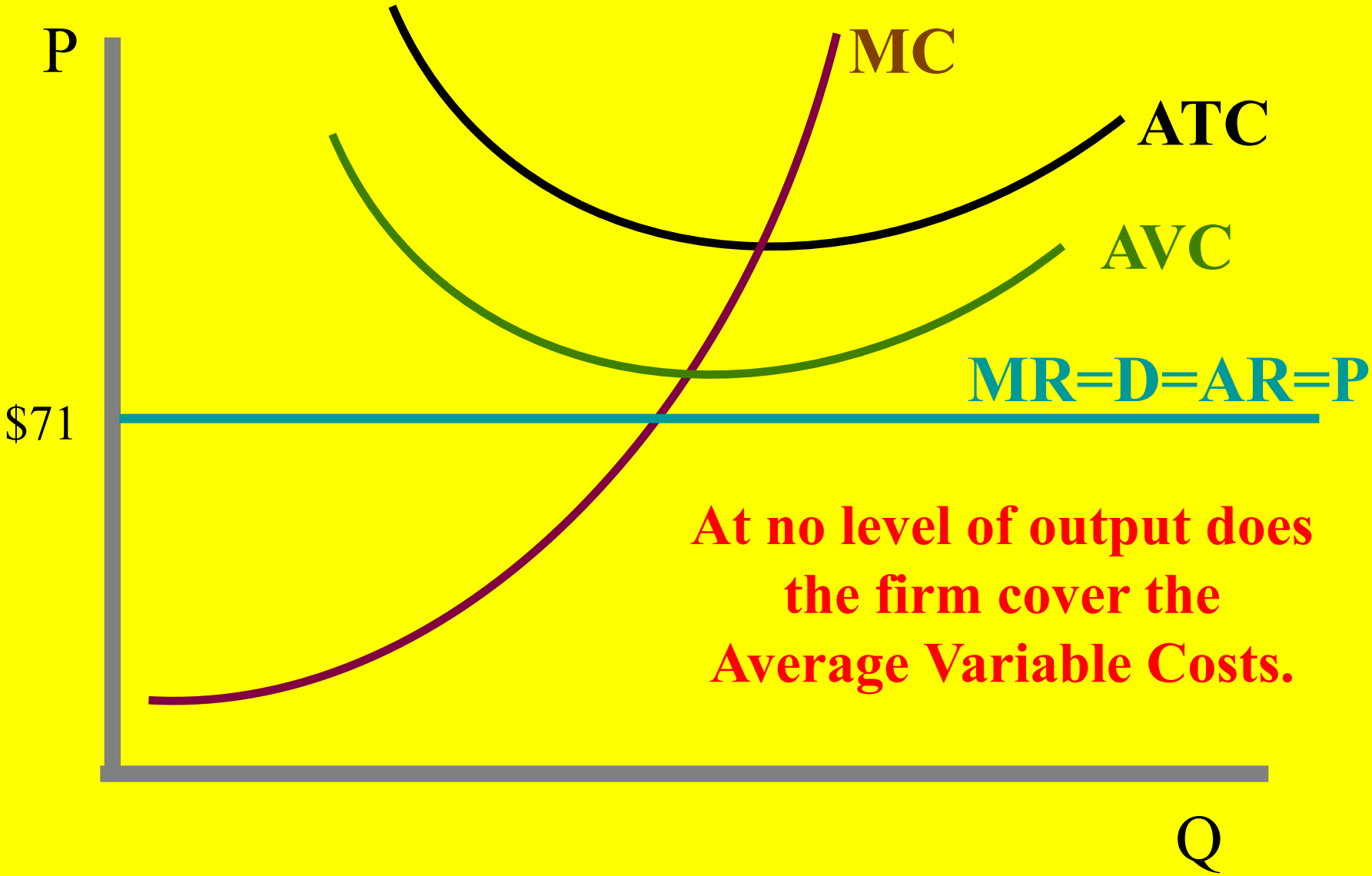
Firm showing Economic Profit



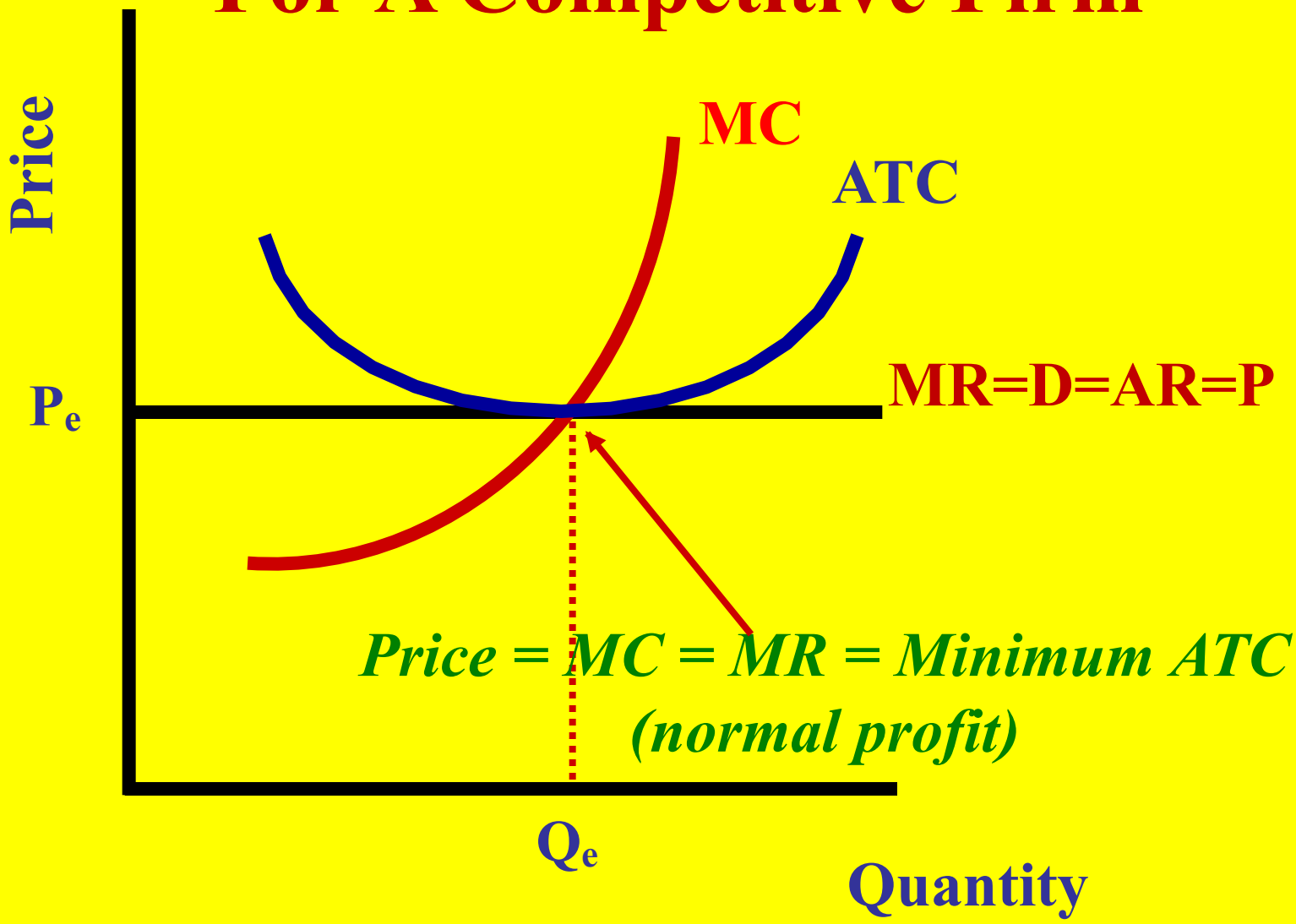
Firm showing Economic Loss



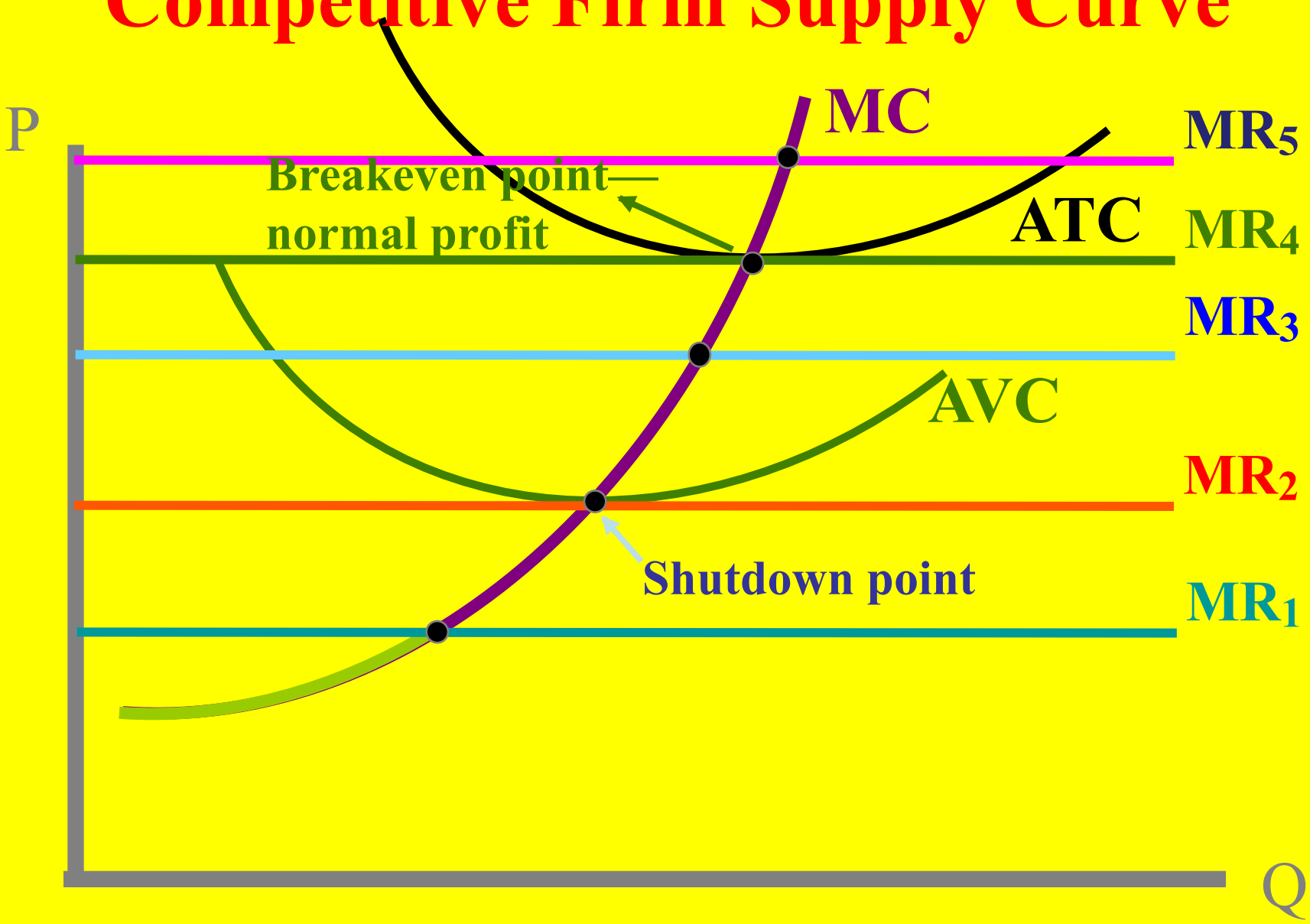
Firm showing Shutdown position



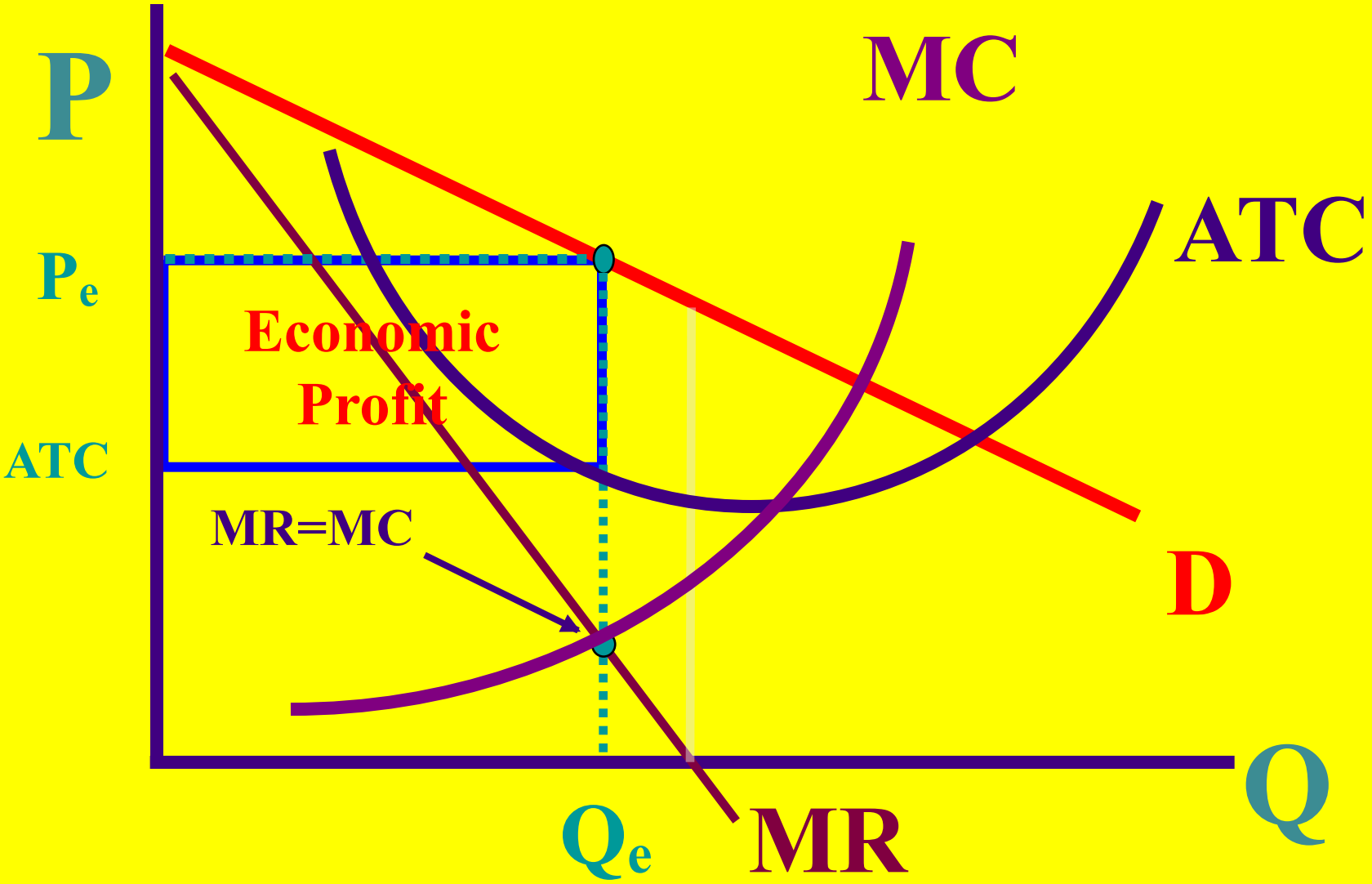
Long-run Equilibrium For A Competitive Firm



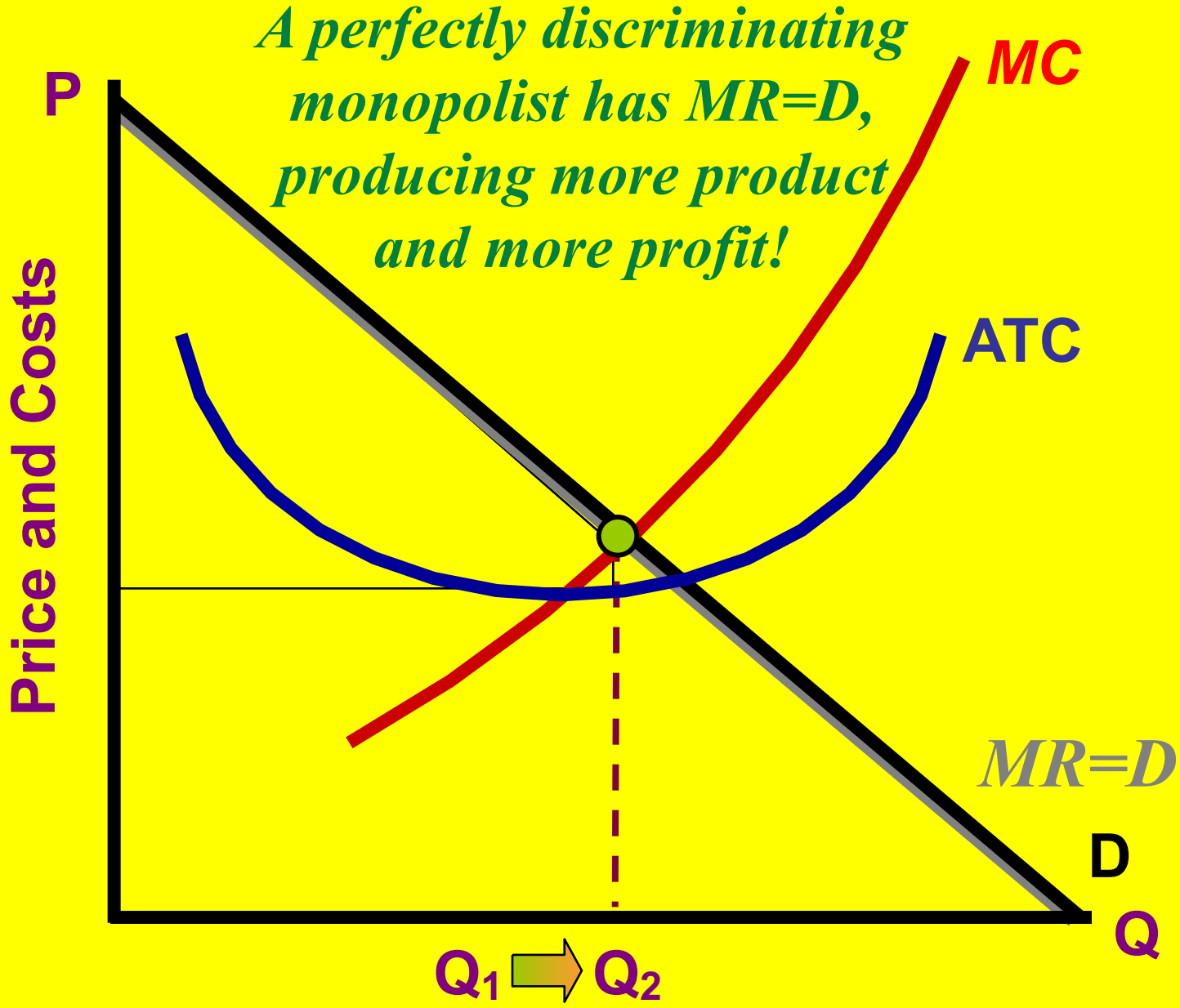
Competitive Firm Supply Curve



Single Price Profit-Maximizing Monopoly

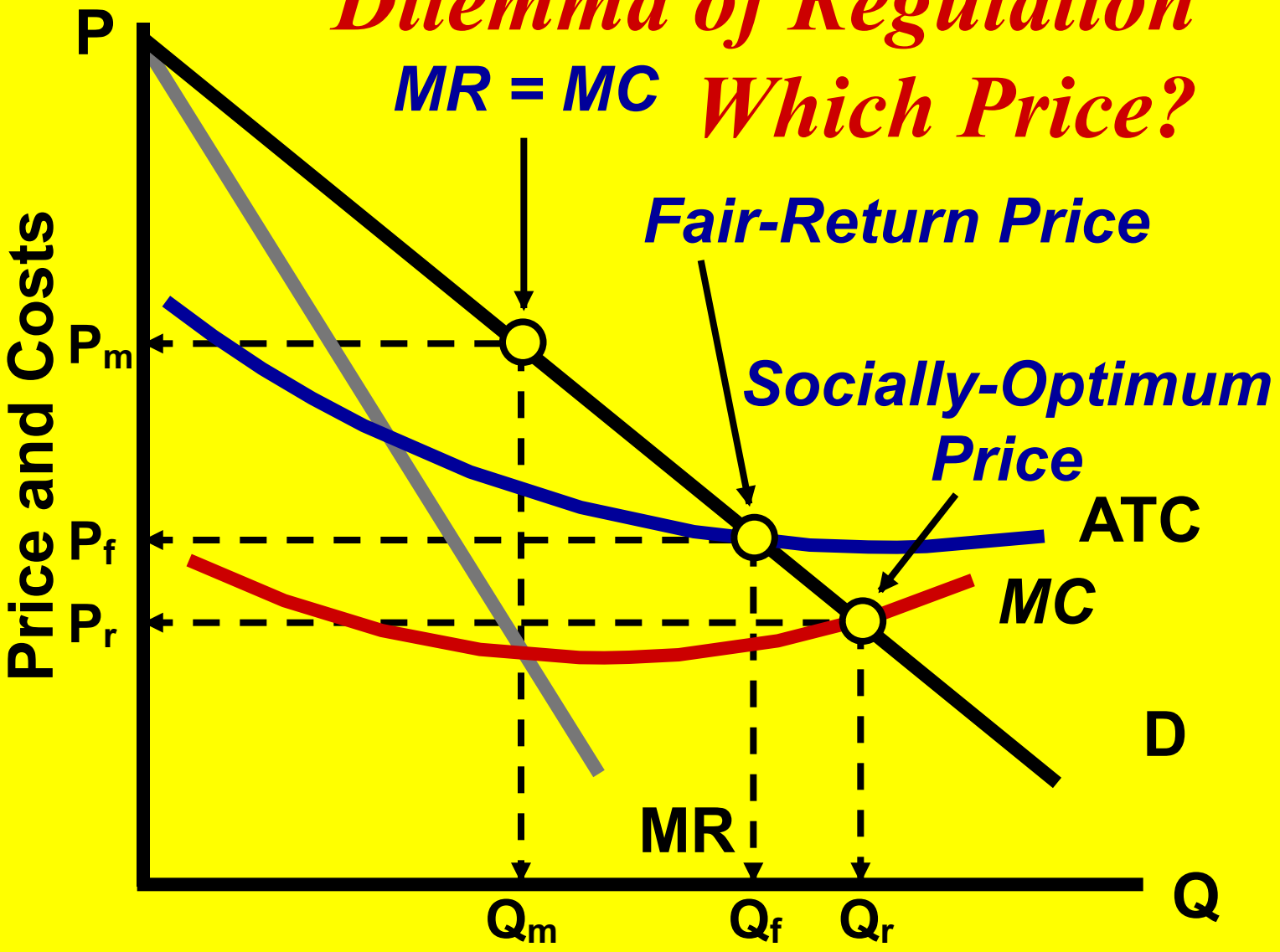


PRICE DISCRIMINATION

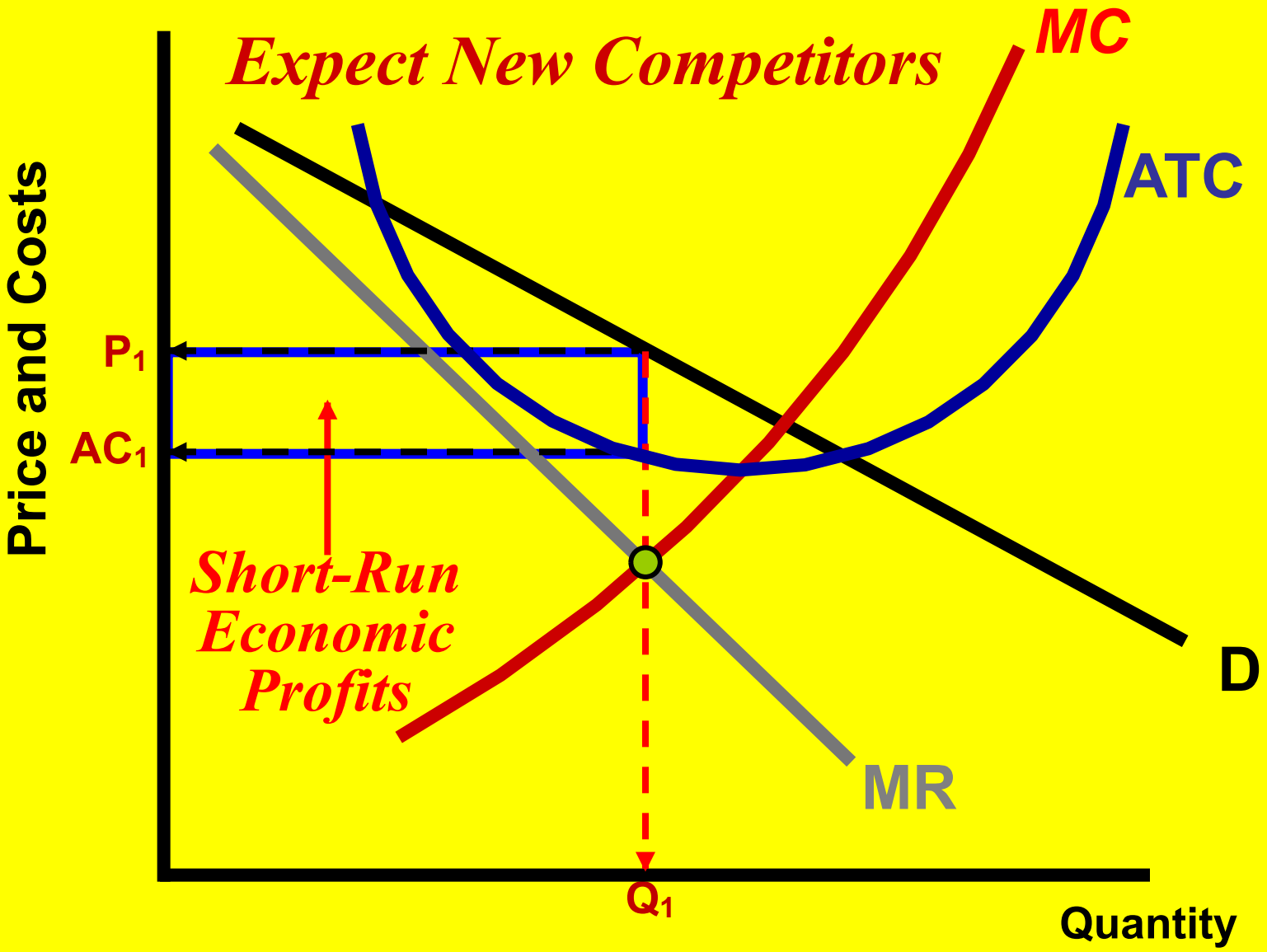


REGULATED MONOPOLY

Dilemma of Regulation



PRICE AND OUTPUT IN MONOPOLISTIC COMPETITION



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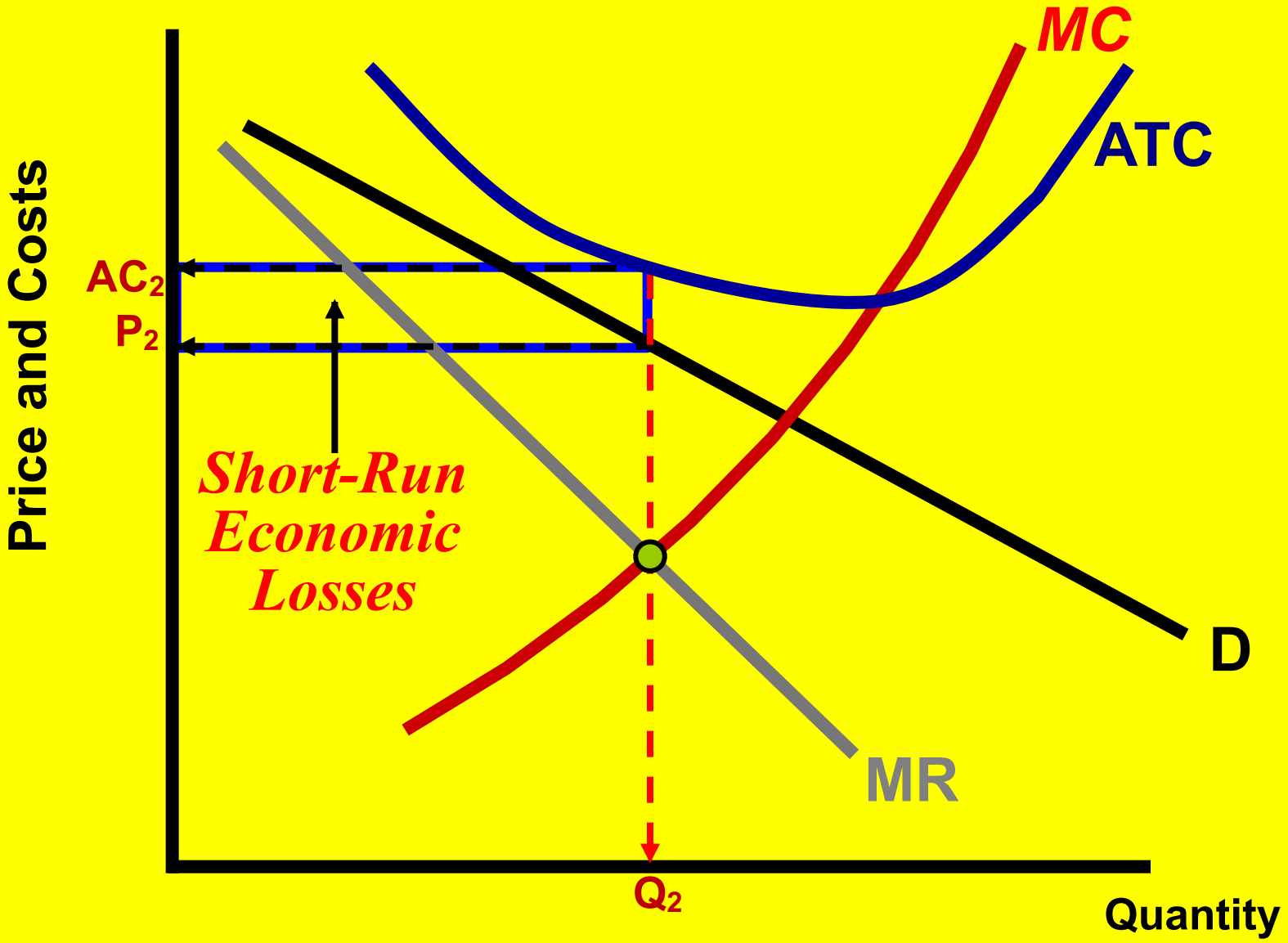

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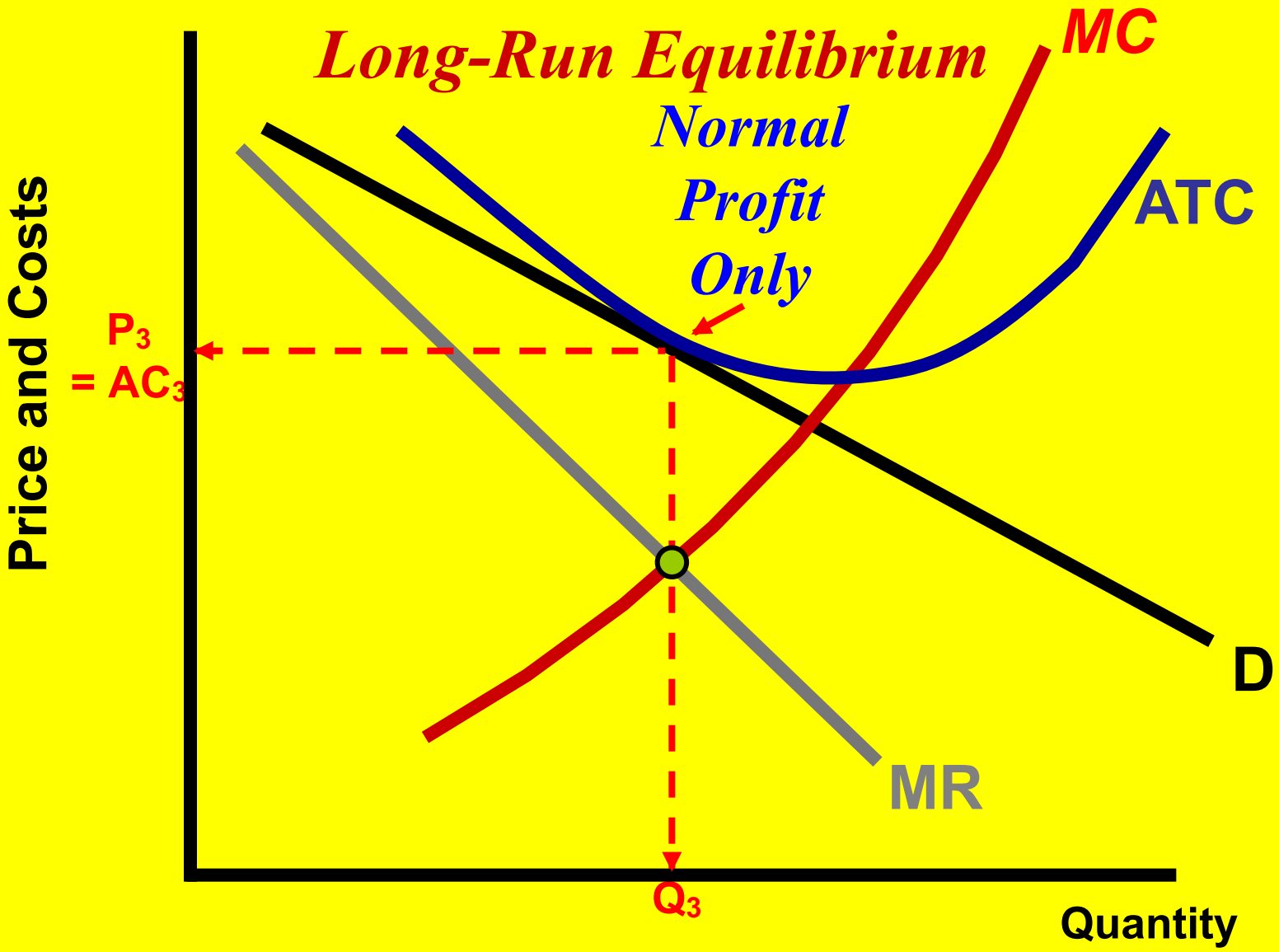
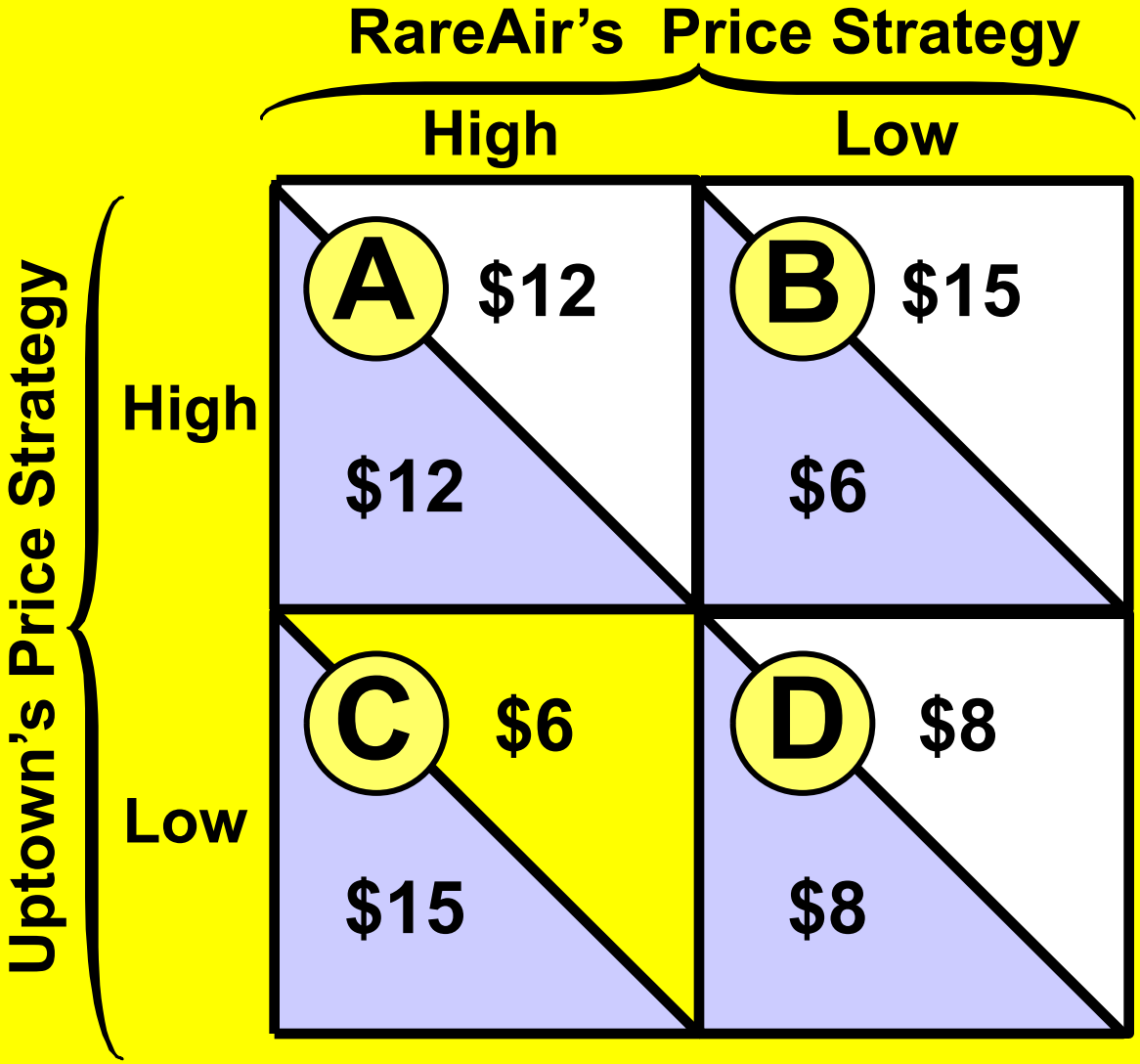


Oligopoly

- The Game-Theory Approach
  - Each oligopolist is seen as a competing player in a game of strategy.
  - Managers act as though their opponents will adopt the most profitable countermove to any move they make.

OLIGOPOLY BEHAVIOR

A Game-Theory Overview



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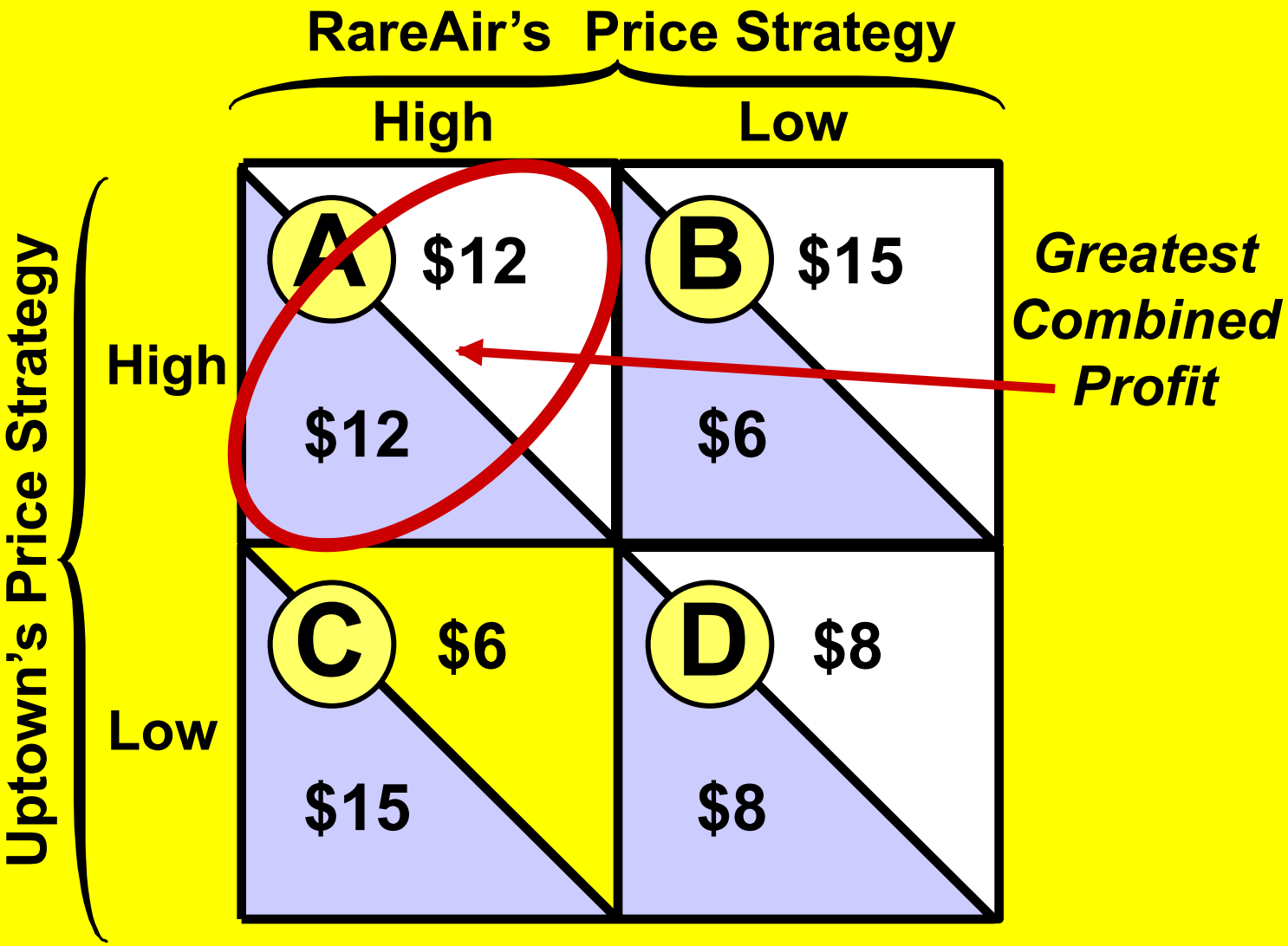

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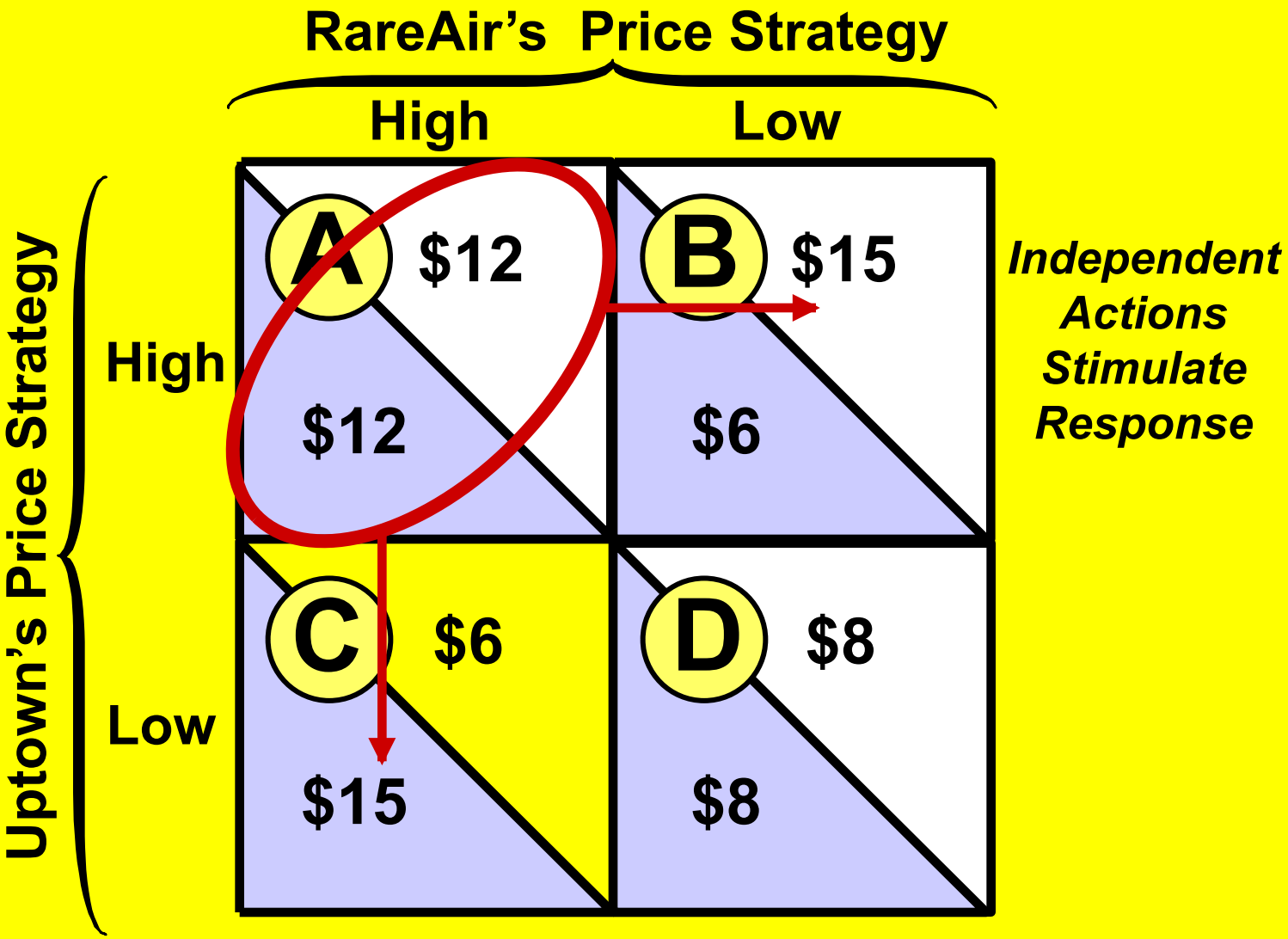

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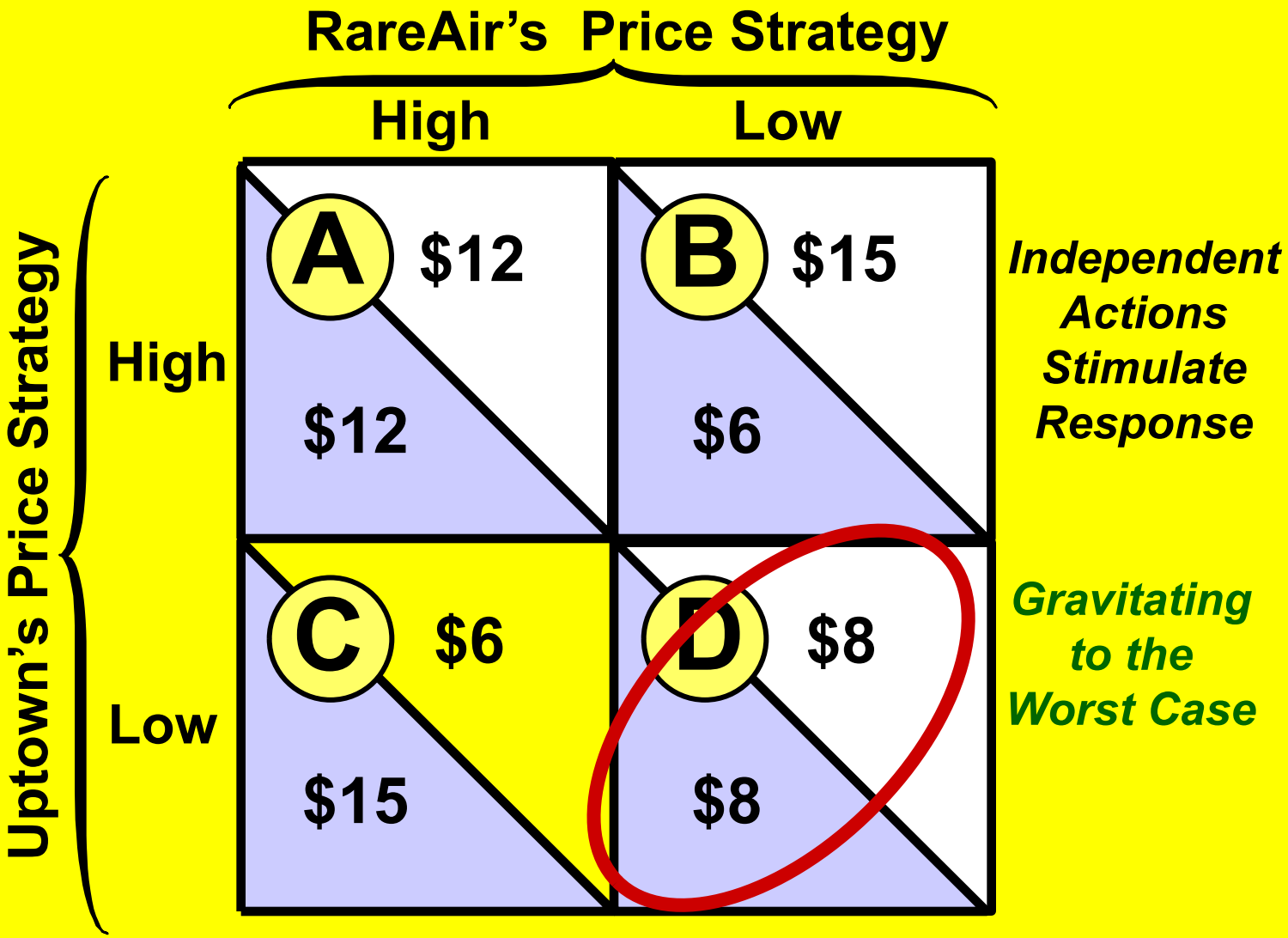

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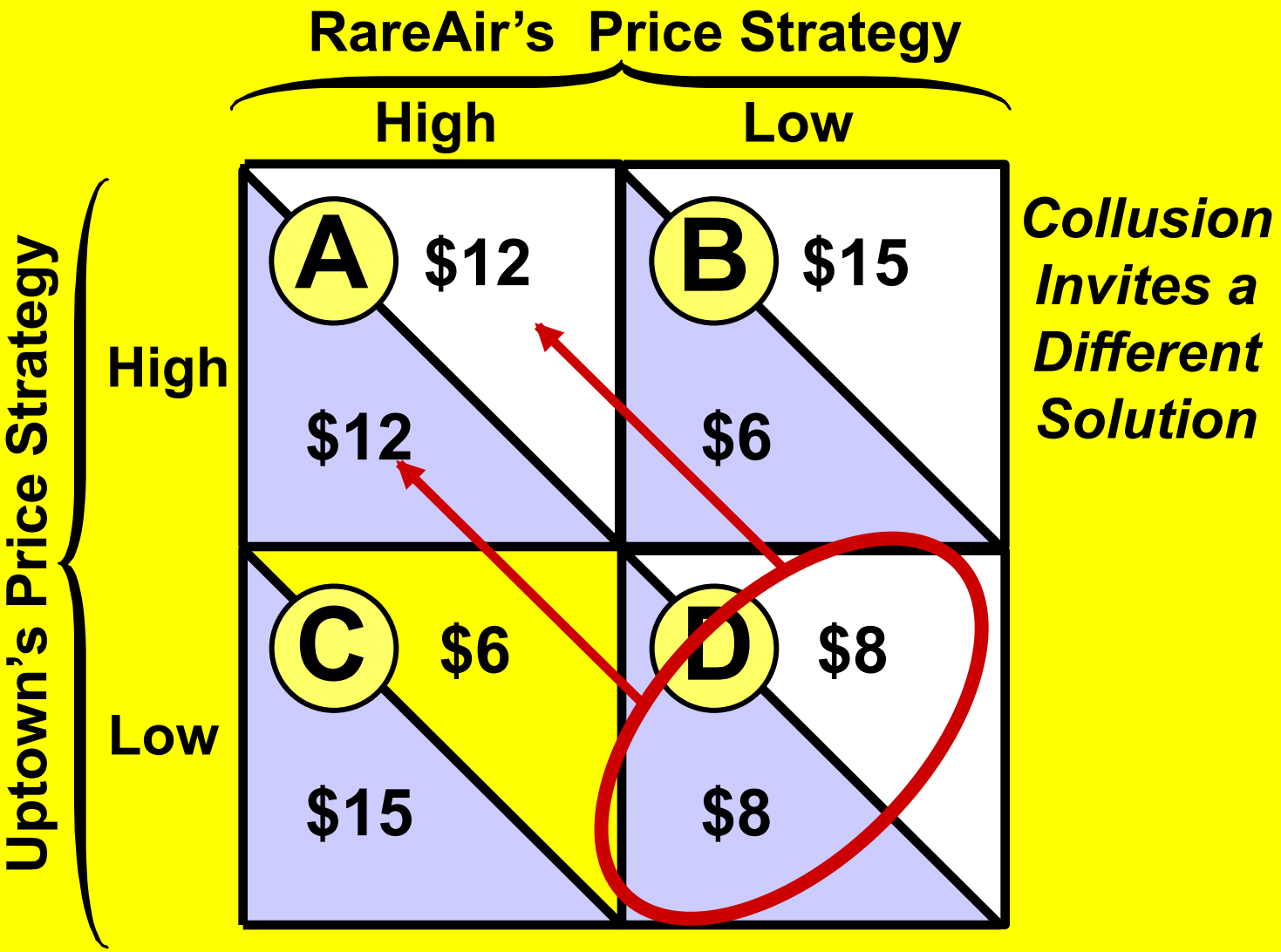

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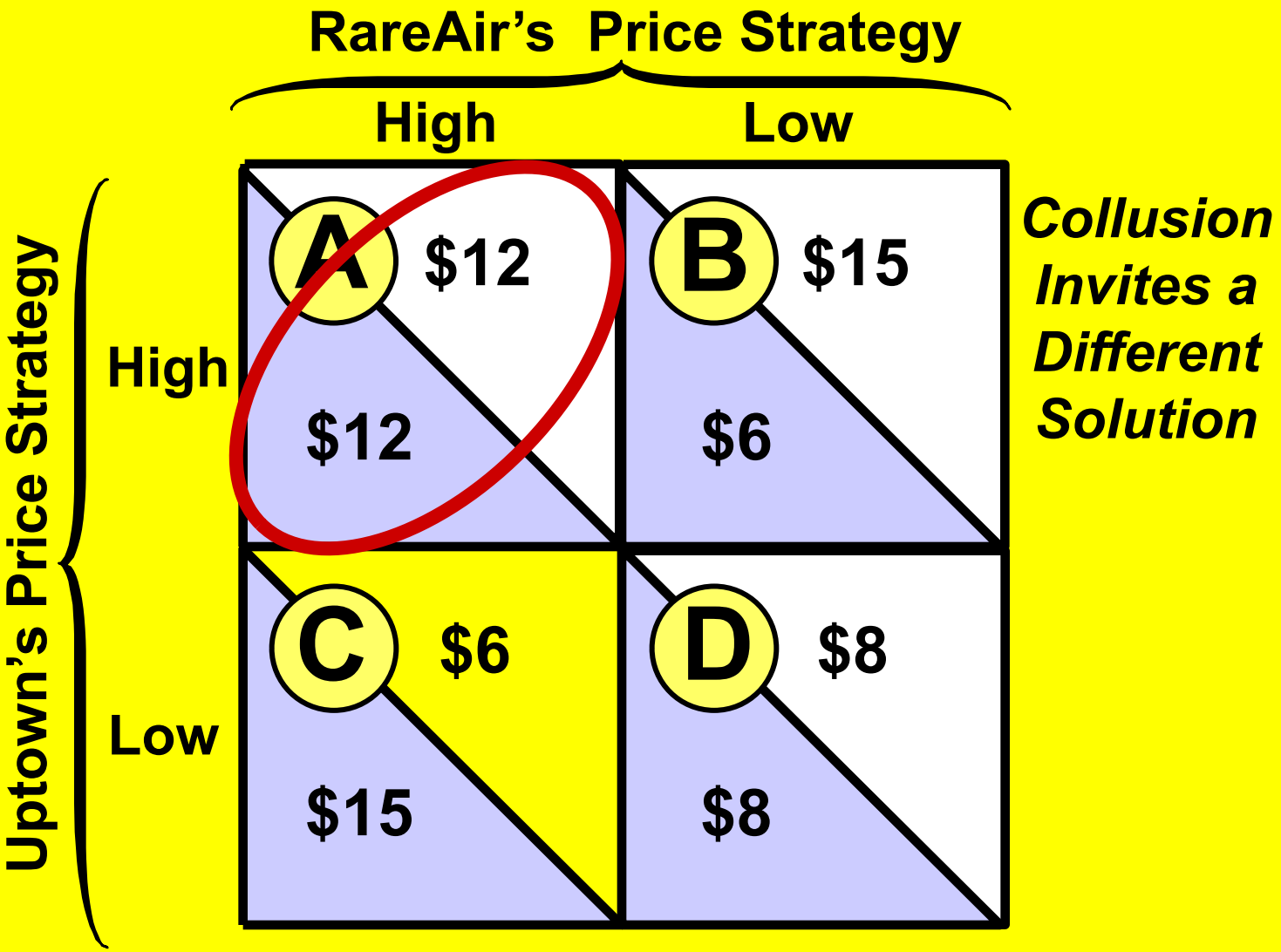

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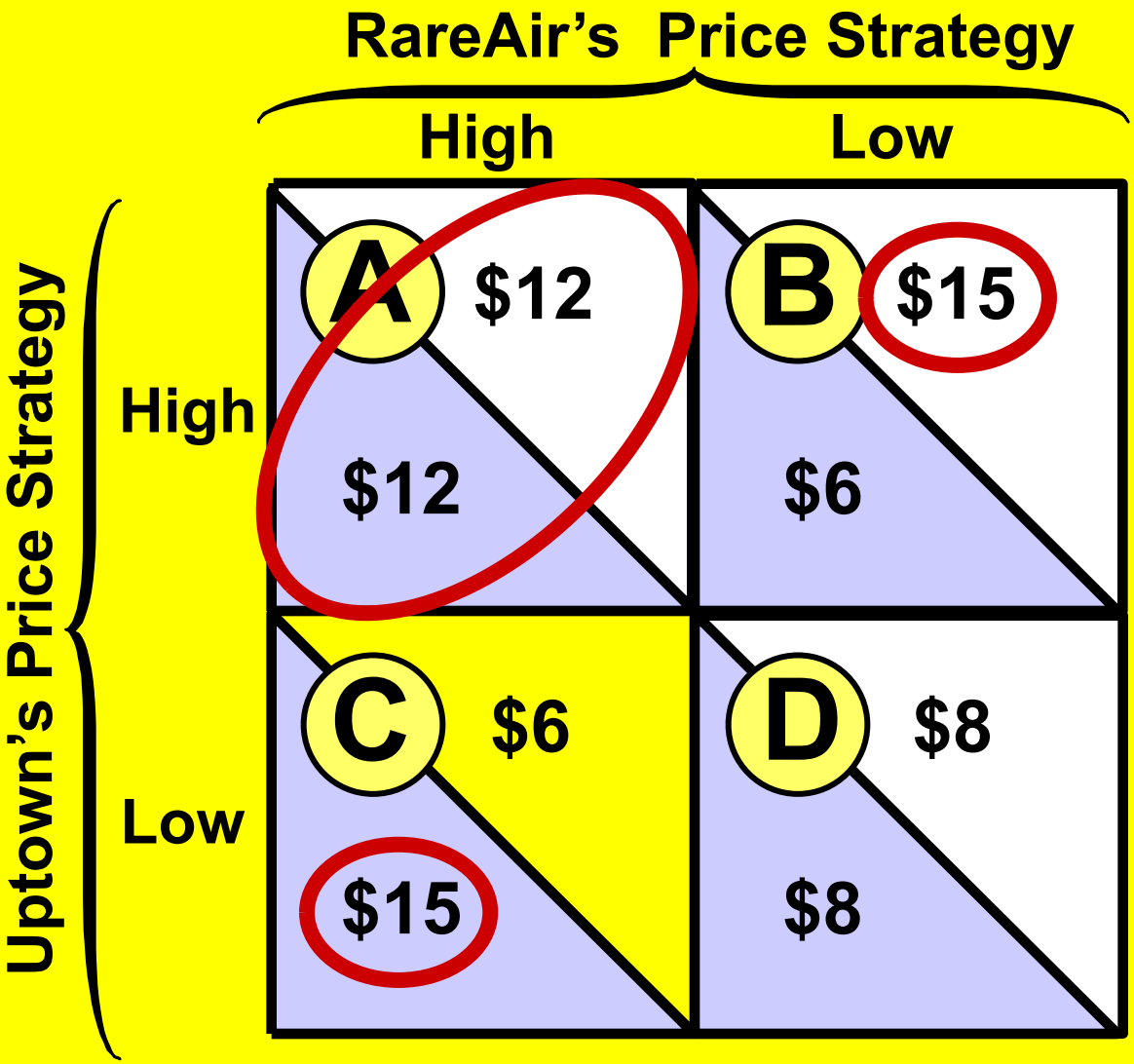

Collusion Invites a Different Solution

But, the incentive to cheat is very real

Oligopoly

- The Game-Theory Approach
  - Games with dominant strategies
    - Dominant strategy = an option that is better than any alternative option regardless of what the other firm does
    - “Prisoners’ Dilemma”

Oligopoly

- The Game-Theory Approach
  - Games with dominant strategies
    - A market with a duopoly serves the public interest better than a monopoly because of the competition created between the duopolists.
    - It is damaging to the public to allow rival firms to collude on what prices to charge for their products and what quantity of product to supply.

Oligopoly

- The Game-Theory Approach
  - Games without dominant strategies
    - Maximin = a strategy in which one seeks the maximum of the minimum payoffs to the available strategies.

Oligopoly

- The Game-Theory Approach
  - Other strategies: Nash Equilibrium
    - Nash equilibrium = an outcome from which neither firm wants to deviate (once achieved, it is stable and lasting.)
    - Often, no such mutually accommodating solution is possible.

Oligopoly

- The Game-Theory Approach
  - Zero-sum games
    - Zero-sum game = one party's gain equals the other party's loss

Oligopoly

- The Game-Theory Approach
  - Repeated games
    - Most markets feature repeat buyers.
    - Repeated games give players the opportunity to learn something about each other's behavior patterns and, perhaps, to arrive at mutually beneficial arrangements.
    - Threats and credibility
      - Induce rivals to change their behavior
      - Threat must be credible

Using Game Theory

- **Game theory can be used to describe a game when:**
  - **There are rules which govern *actions*;**
  - **There are two or more *players*;**
  - **There are choices of action where *strategy* matters;**
  - **The game has one or more *outcomes;***
  - **The outcome depends on the strategies chosen by all players, i.e., there is *strategic interaction.***

Advertising Game

		COMPANY Y	
		Don't Adv.	Advertise
COMPANY X	Don't Adv.	10,10	2,15
	Advertise	15,2	7,7

Dominant strategies?

Nash equilibrium?

Advertising Game

		COMPANY Y	
		Don't Adv.	Advertise
COMPANY X	Don't Adv.	10,10	2,15
	Advertise	15,2	7,7

- ***Dominant strategies*: Strategy 1 dominates Strategy 2 if every payoff from 2 is dominated by the respective payoff from 1.**

Nash equilibrium: **a set of strategies, one for each player, such that no player has an incentive (in terms of improving his own payoff) to deviate from his strategy, i.e., each player can do no better given what the opposing player(s) does.**

CARTELS AND OTHER COLLUSION

Oligopoly is conducive to collusion.

If a few firms face identical or highly similar demand and costs...

they will tend to seek joint profit maximization.

Graphically…

CARTELS AND OTHER COLLUSION

Colluding Oligopolists Will Split the Monopoly Profits