

Production in Perfectly Competitive Markets



How prices act as signals
for production decisions in
markets with many
suppliers

Demand and Supply Analysis



- Assumed that there were many buyers and sellers
 - no single agent had control over market outcomes
 - each agent was a price-taker: their own decisions had no influence on market price
 - In contrast, a monopolist has some power over price -- given by the elasticity of the demand curve they
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Prices as Signals



- In perfectly competitive markets, prices act as signals for decision-making
 - When prices are relatively high, this sends producers a signal that they can earn more by expanding output or entering a market
 - When prices are relatively low, producers must contract output or
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Conditions for Perfect Competition



- Large number of buyers and sellers
 - Goods offered are functionally identical
 - Demand curves facing individual firms are perfectly elastic
 - Freedom of entry and exit
 - Profits act as a signal regarding whether to enter or exit an industry
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Efficiency Properties



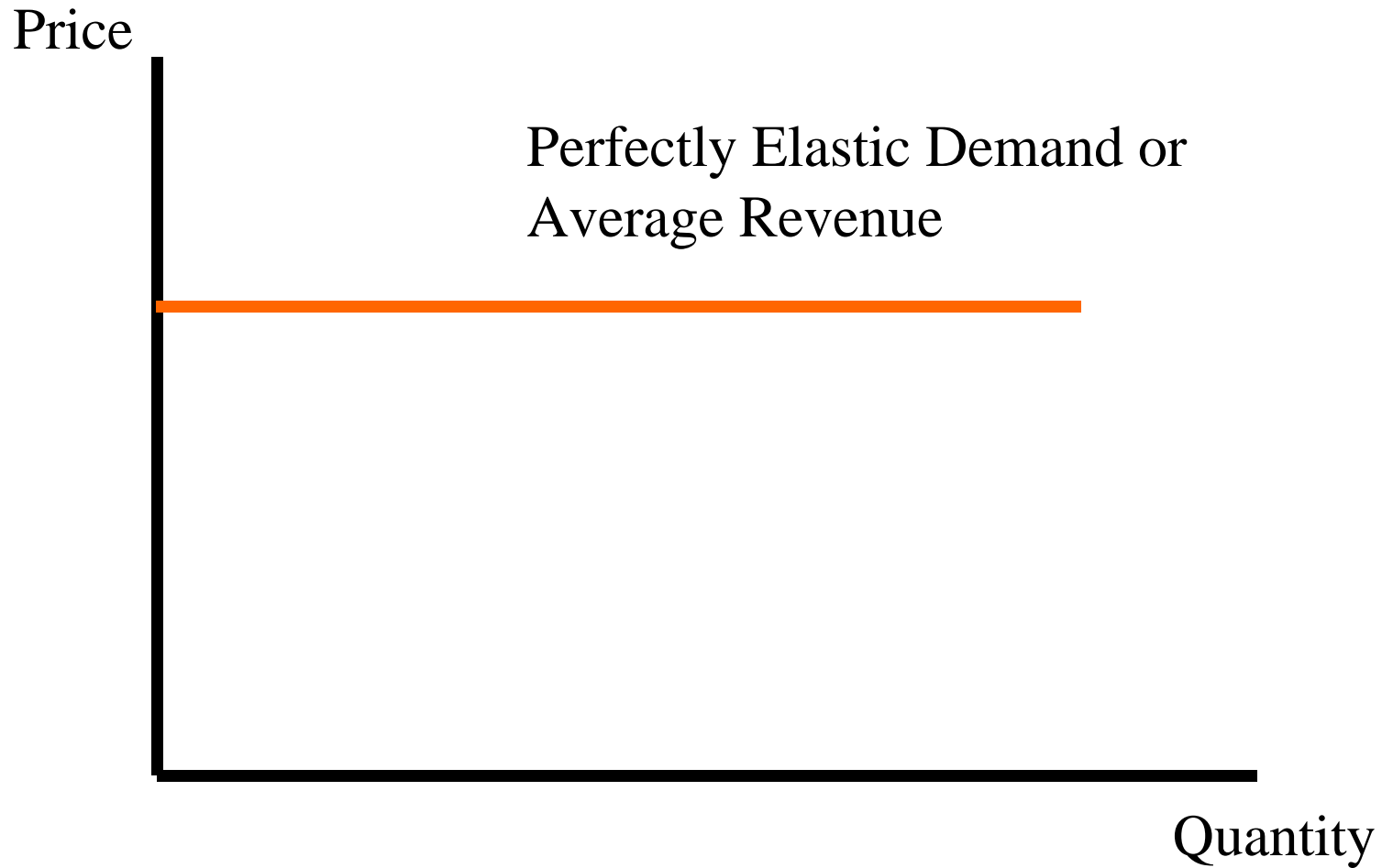
- Perfect competition ensures that prices in the long-run equal marginal cost
 - maximise value created
 - Allocative efficiency
 - Perfect competition ensures that production is carried out at the minimum cost
 - Productive efficiency
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Perfectly Elastic Firm Demand



- The market demand curve for pens is downward sloping (that is, not perfectly elastic).
 - Why? Because individual consumers have different willingnesses-to-pay for different quantities of pens
 - Individual firm demand is flat.
 - Why? Because the pens sold by the newsagent and supermarket are close substitutes
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Demand and Revenue



What is Marginal Revenue?



Flat Marginal Revenue



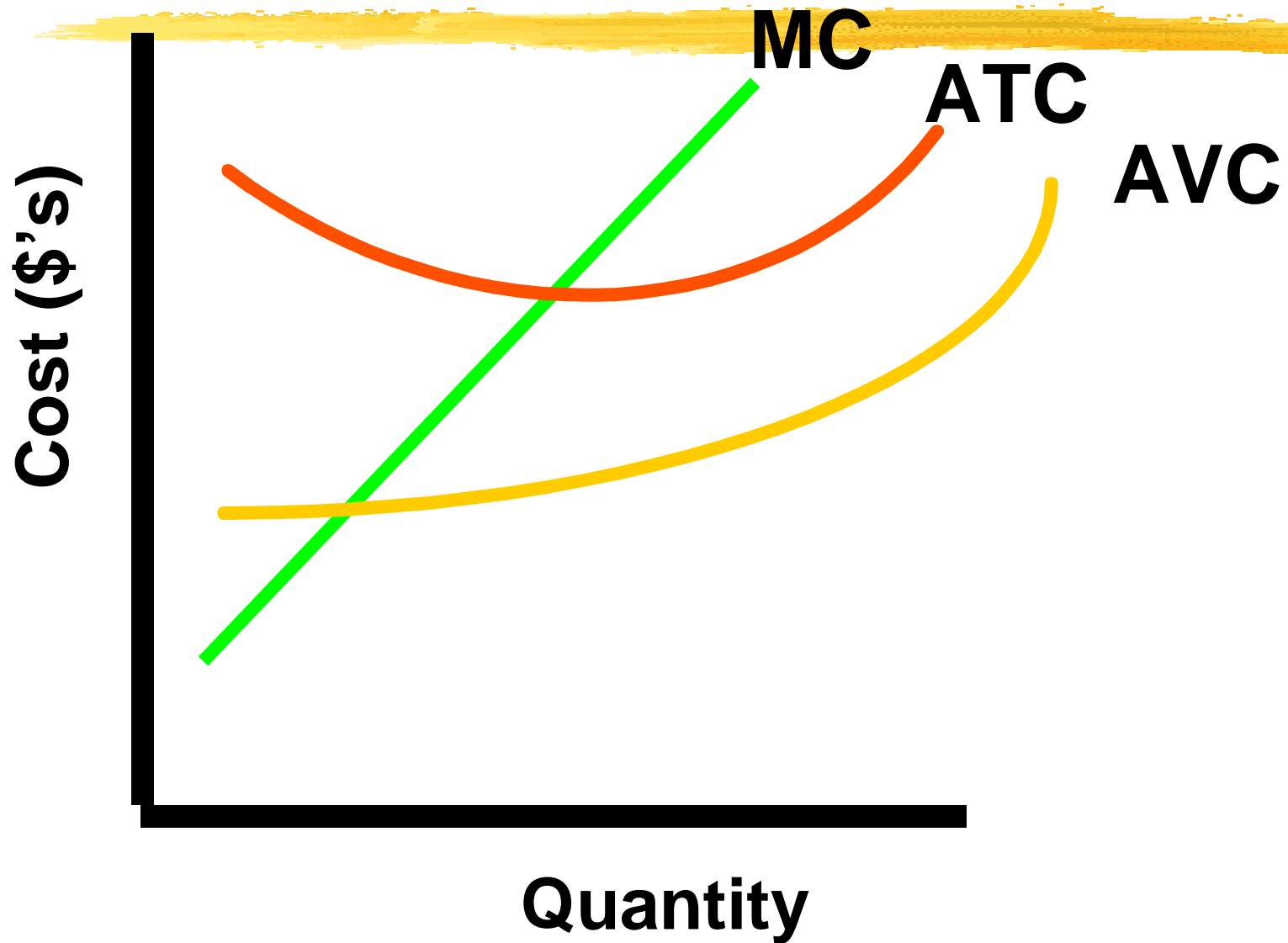
- As a firm produces more, the price per unit of output sold does not fall
 - Why? The firm is a price taker.
 - In a perfectly competitive market, a firm cannot influence price. Therefore, the firm is unconstrained and can sell as much as it wants at the prevailing price
 - Unless they get really big and start to hit market demand. But their costs prevent this.
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Optimal Output: A Review



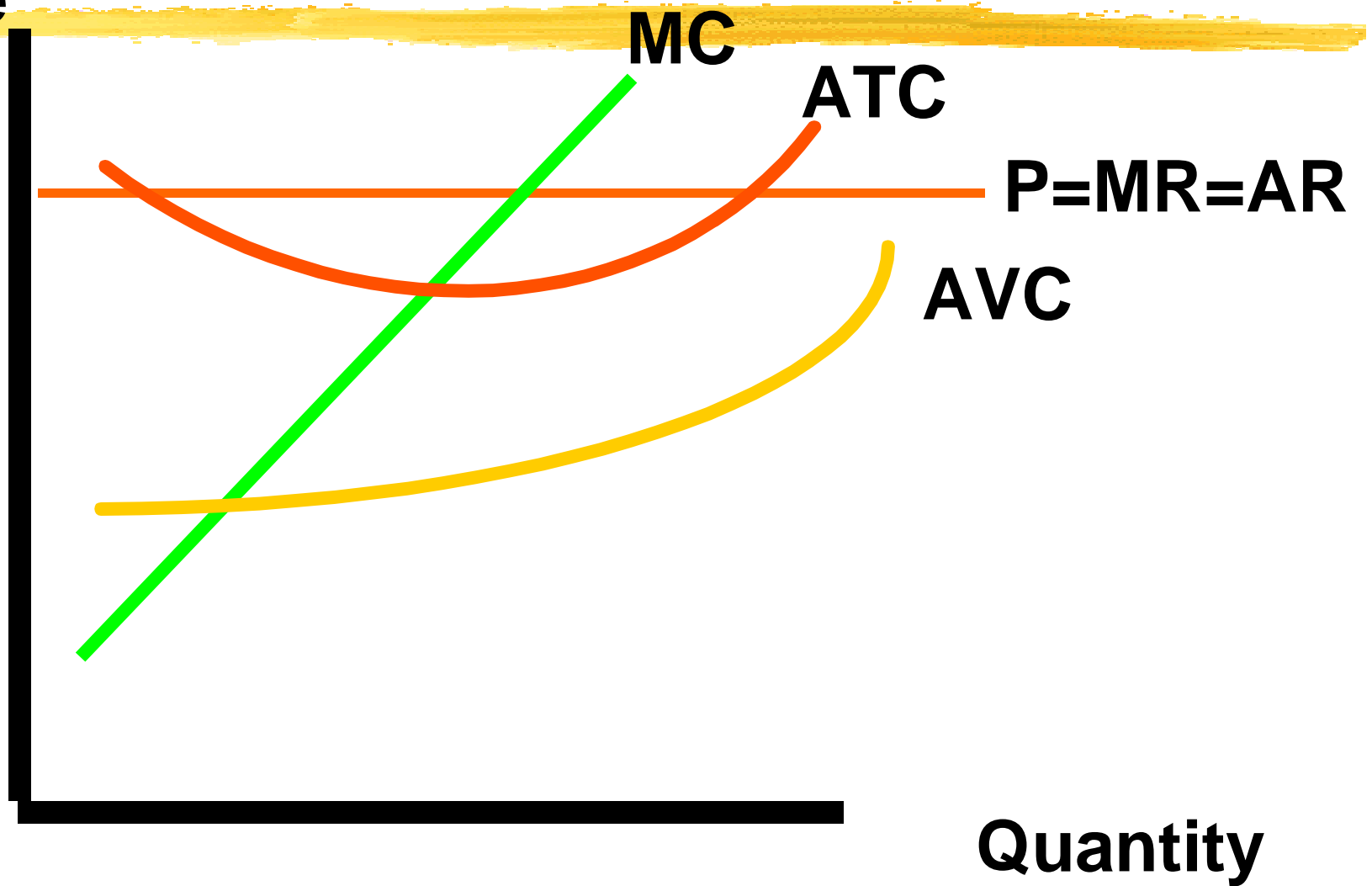
- Firms attempt to maximise profit
- The profit maximising output level occurs where marginal revenue (MR) equals marginal cost (MC)

Small Efficient Scale



Profit Maximising Output

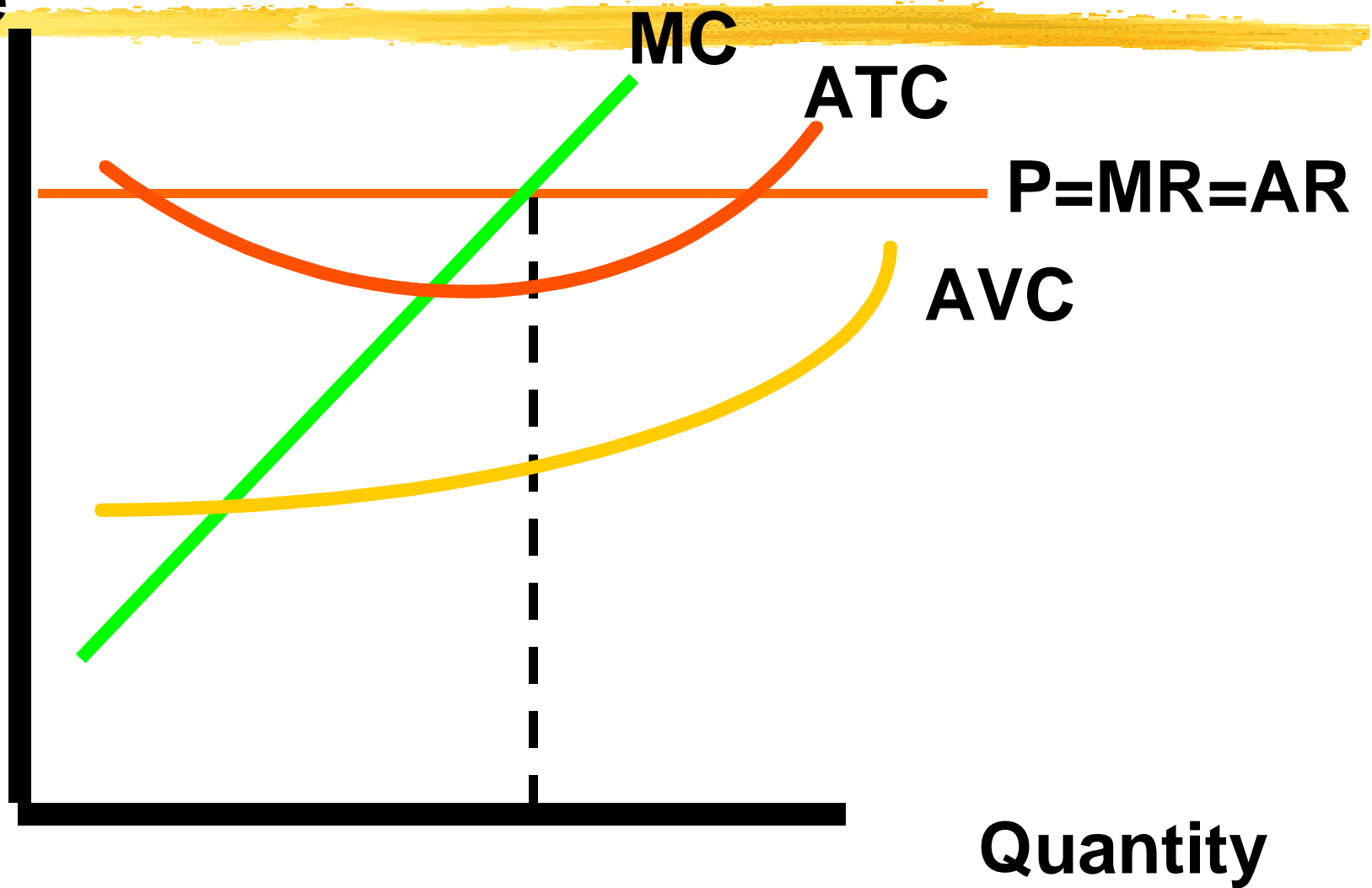
Price



Quantity

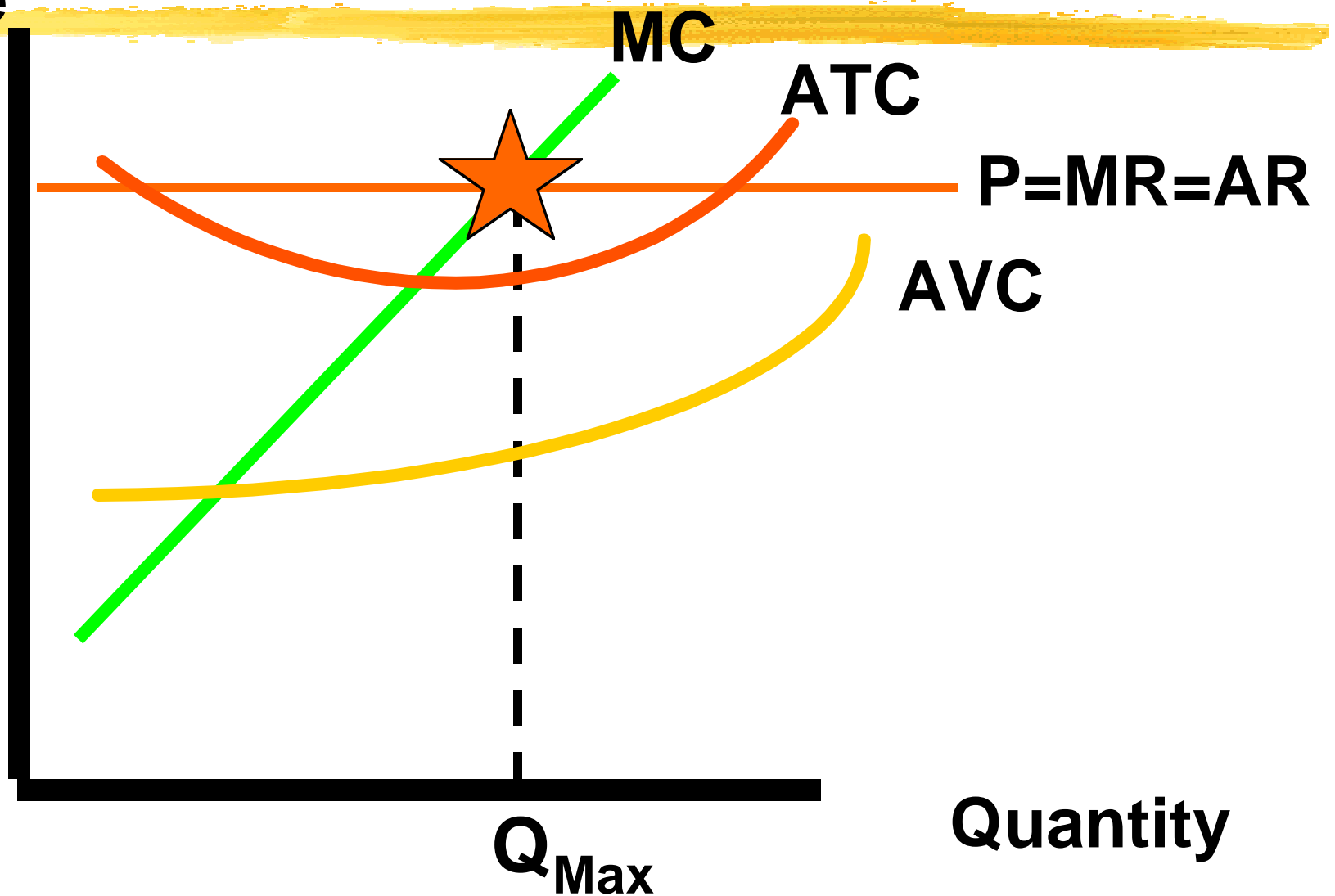
Profit Maximising Output

Price



Profit Maximising Output

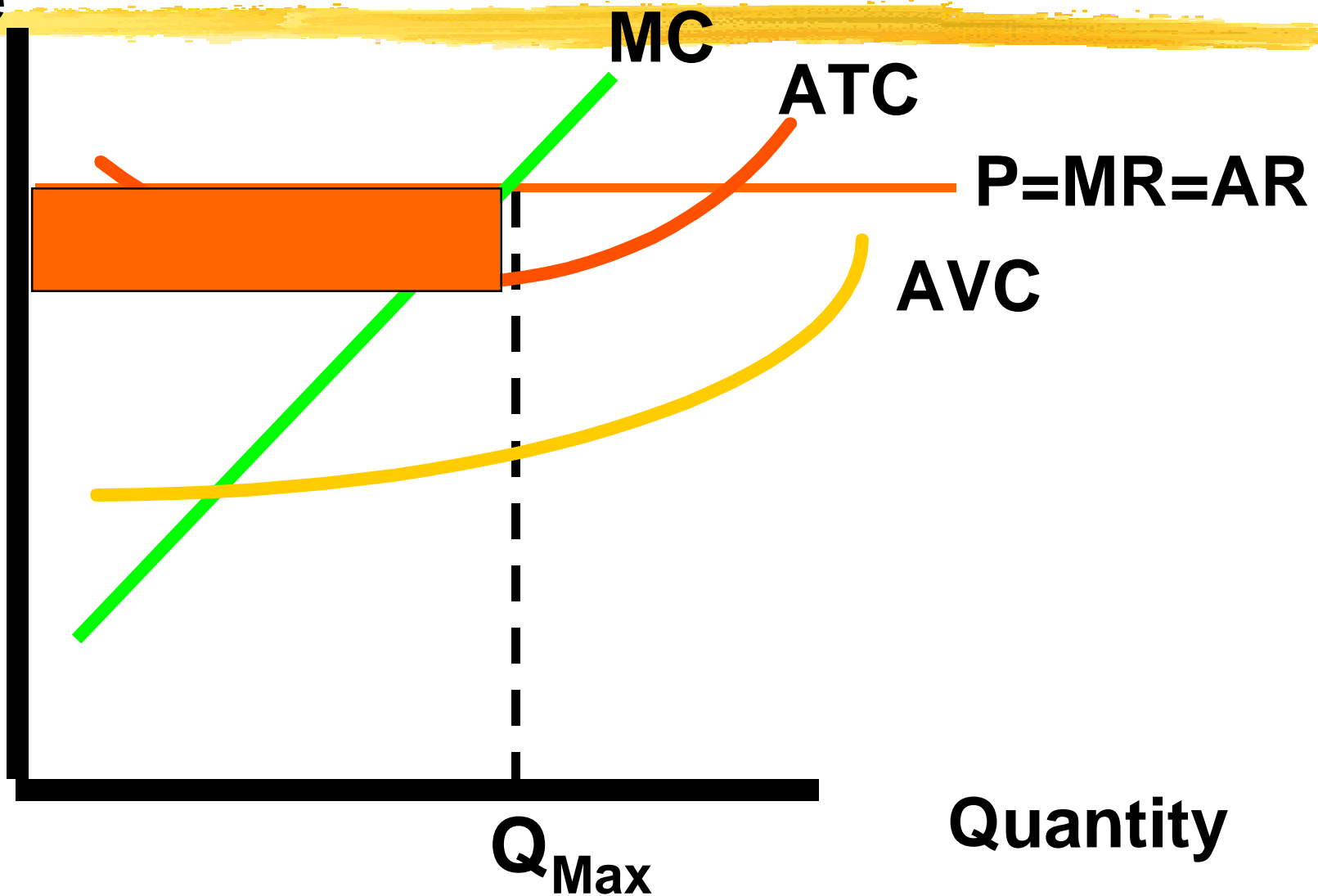
Price



Quantity

Profit Maximising Output

Price

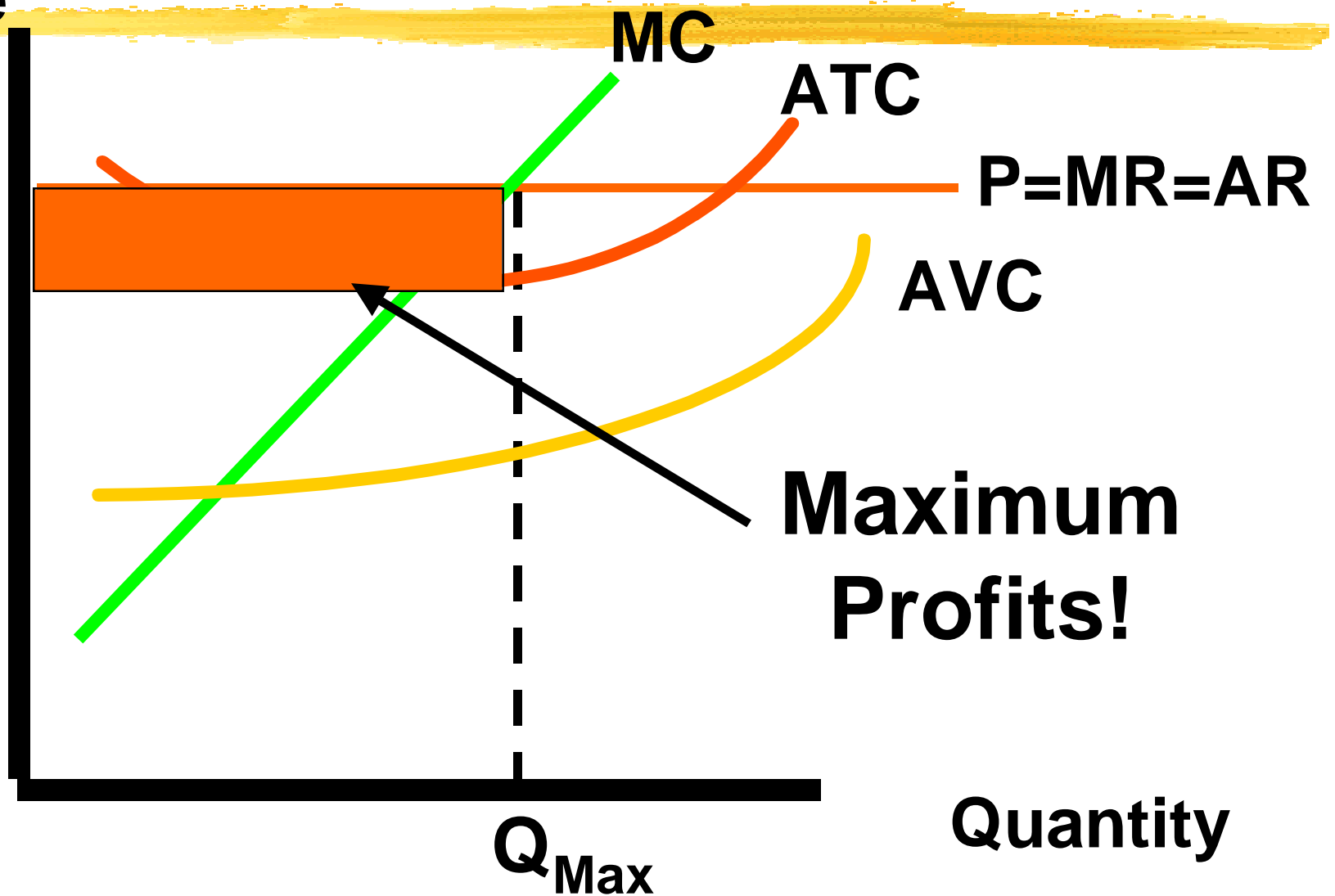


Quantity

Q_{Max}

Profit Maximising Output

Price



Quantity

Q_{Max}

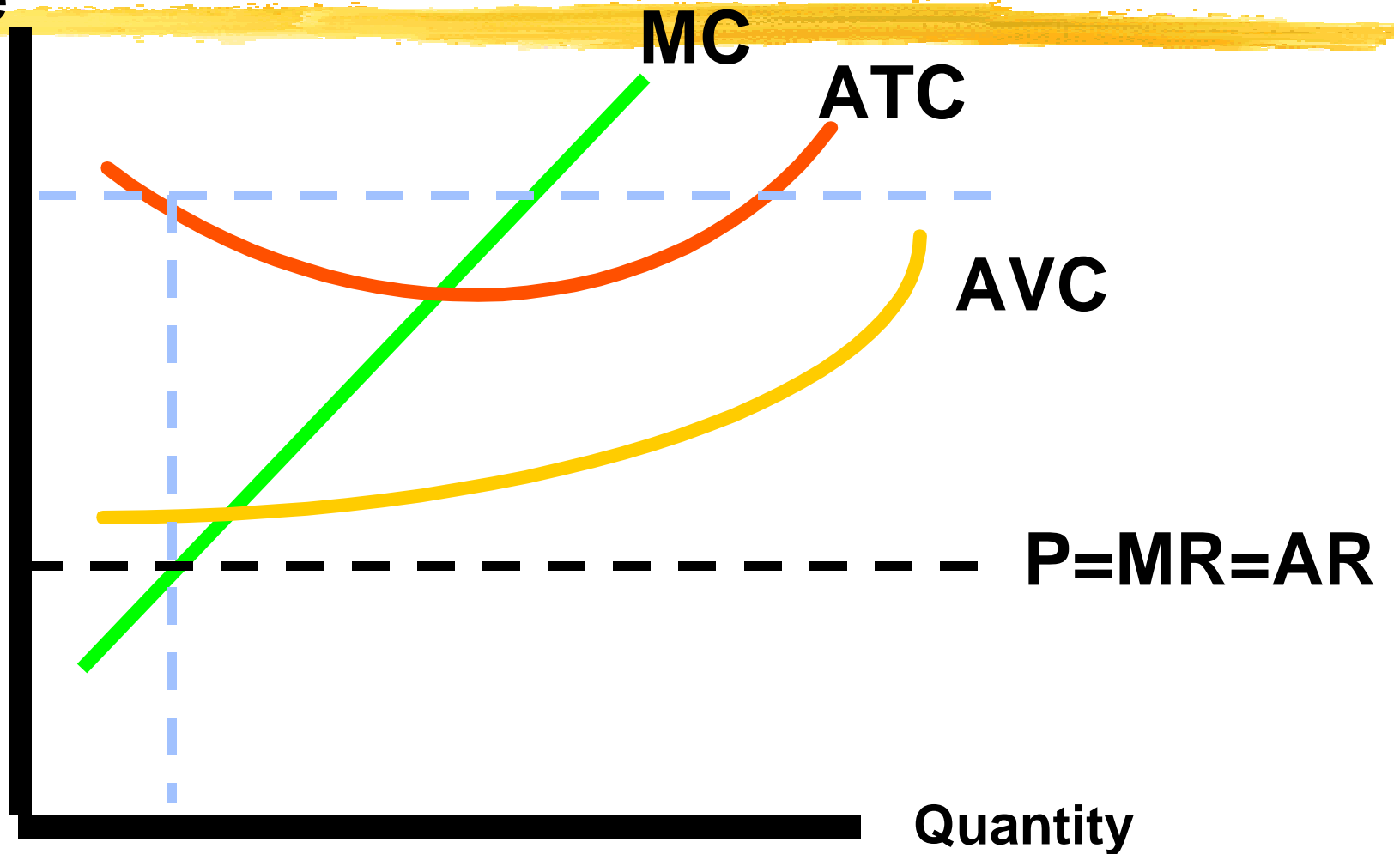
The Competitive Firm's Shut-Down Decision



- When should a firm choose to exit a perfectly competitive market?
 - Compare the economic profit from staying versus closing down.
 - Alternative levels of output produced because the firm is a price taker.
 - If the selling price is below the minimum average variable cost, the
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Shut Down! Costs are greater than market price

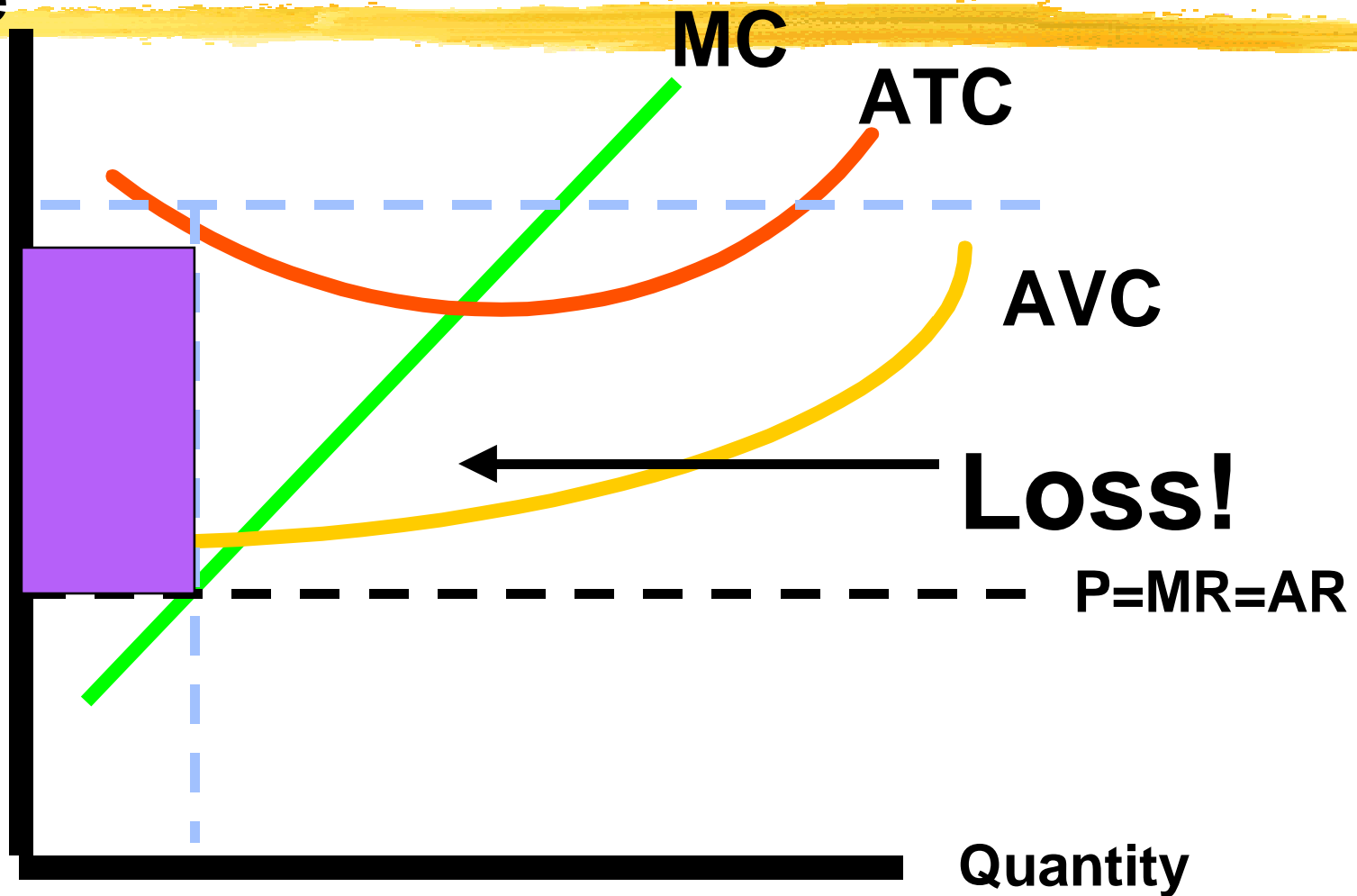
Price



Q Don't Produce!

Shut Down! Costs are greater than market price

Price



Q Don't Produce!

The Competitive Firm's Shut Down Decision

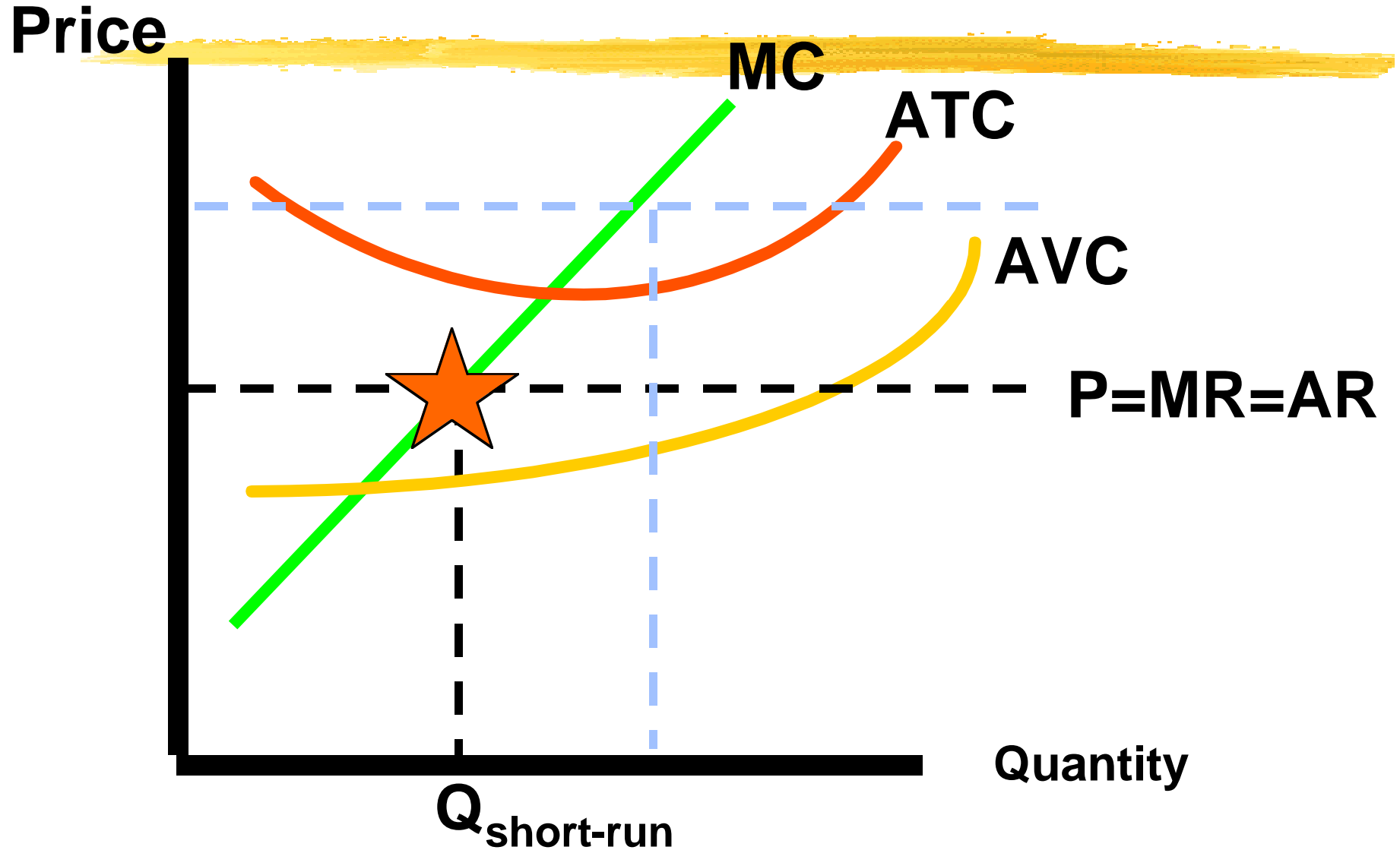


- Alternative levels of output produced because the firm is a price taker.
- If the selling price is above the minimum average variable cost *but below average total cost*, the firm should *produce in the short-run* a quantity that corresponds with $MR = MC$.

Incur economic losses, but minimized.

Short-Run Production

Minimize Losses when $MR = MC$



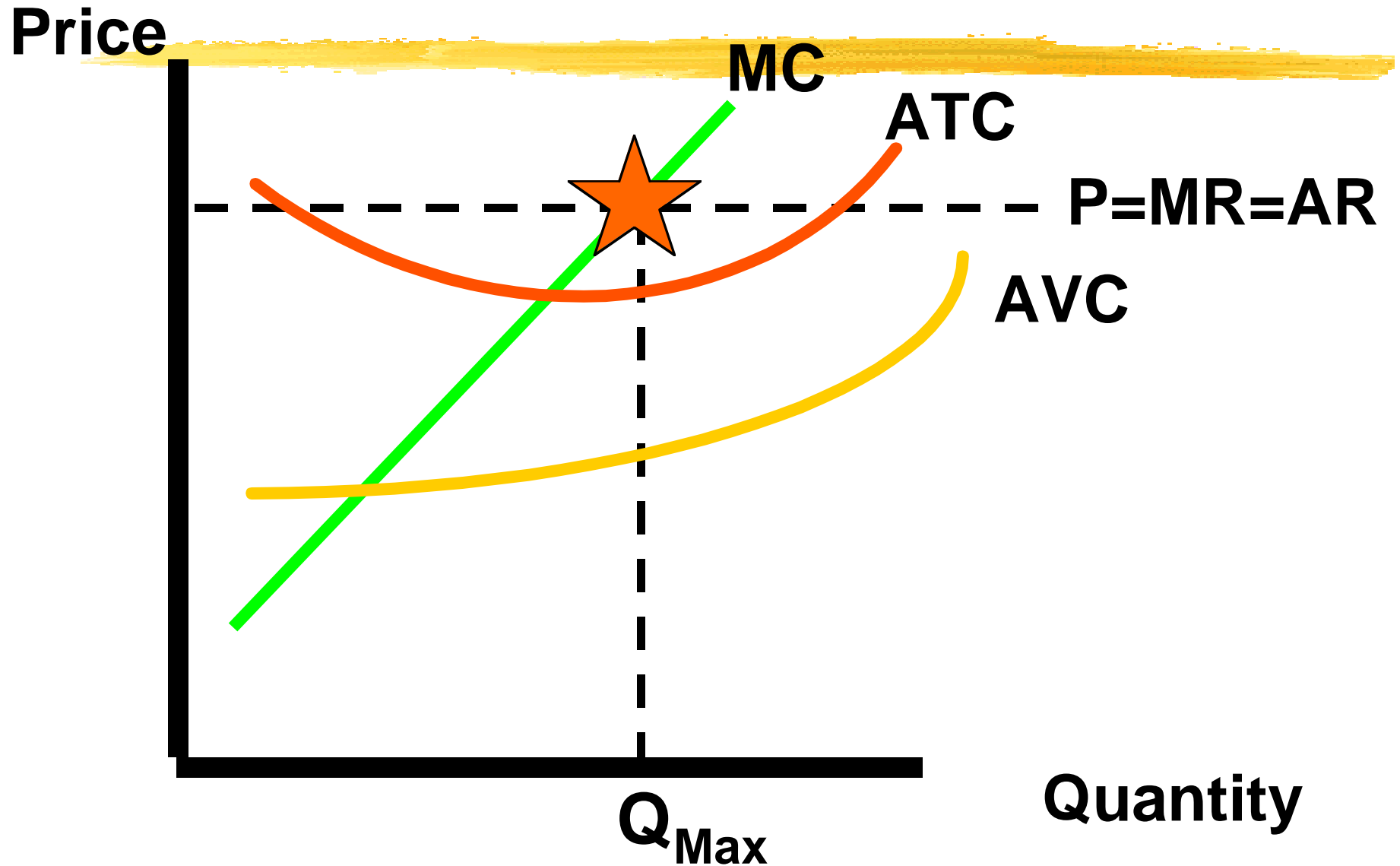
The Competitive Firm's Output Decision



- Alternative levels of output produced because the firm is a price taker.
- If the selling price is above the minimum average total cost the firm should *produce* a quantity that corresponds with $MR = MC$.

Incurs economic profits

The Competitive Firm's Output Decision



When Should A Firm Enter?



- A firm should enter into an industry if it believes price will exceed average total costs in the long-run
 - Enter if $P > AC$.
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Output, Price, and Profit in the Long Run

- In short-run equilibrium, a firm might make an economic profit, incur an economic loss, or break even (make a normal profit). Only one of these situations is a long-run equilibrium.
 - In the long run:
 - The number of firms in an industry changes.
 - Firms change the scale of their plants.
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Economic Profit and Economic Loss as Signals

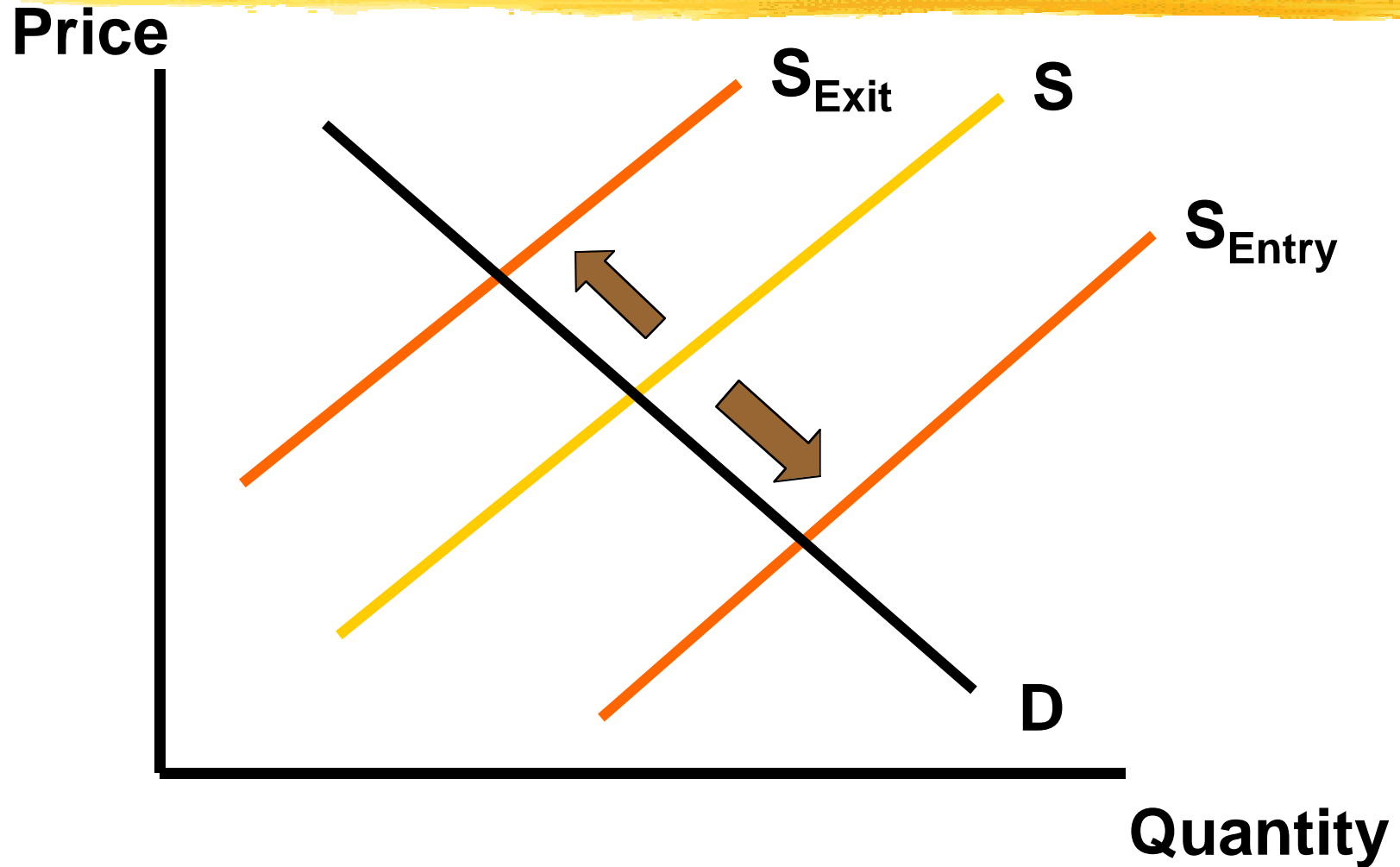
- If an industry is earning above normal profits (positive economic profits), firms will enter the industry and begin producing output.
 - This will shift the industry supply curve out, lowering price and profit.
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Economic Loss as a Signal



- If an industry is earning below normal profits (negative economic profits), some of the weaker firms will leave the industry.
 - This shifts the industry supply curve in, raising price and profit.
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Entry, Exit and Supply Shifts



Long-Run Equilibrium



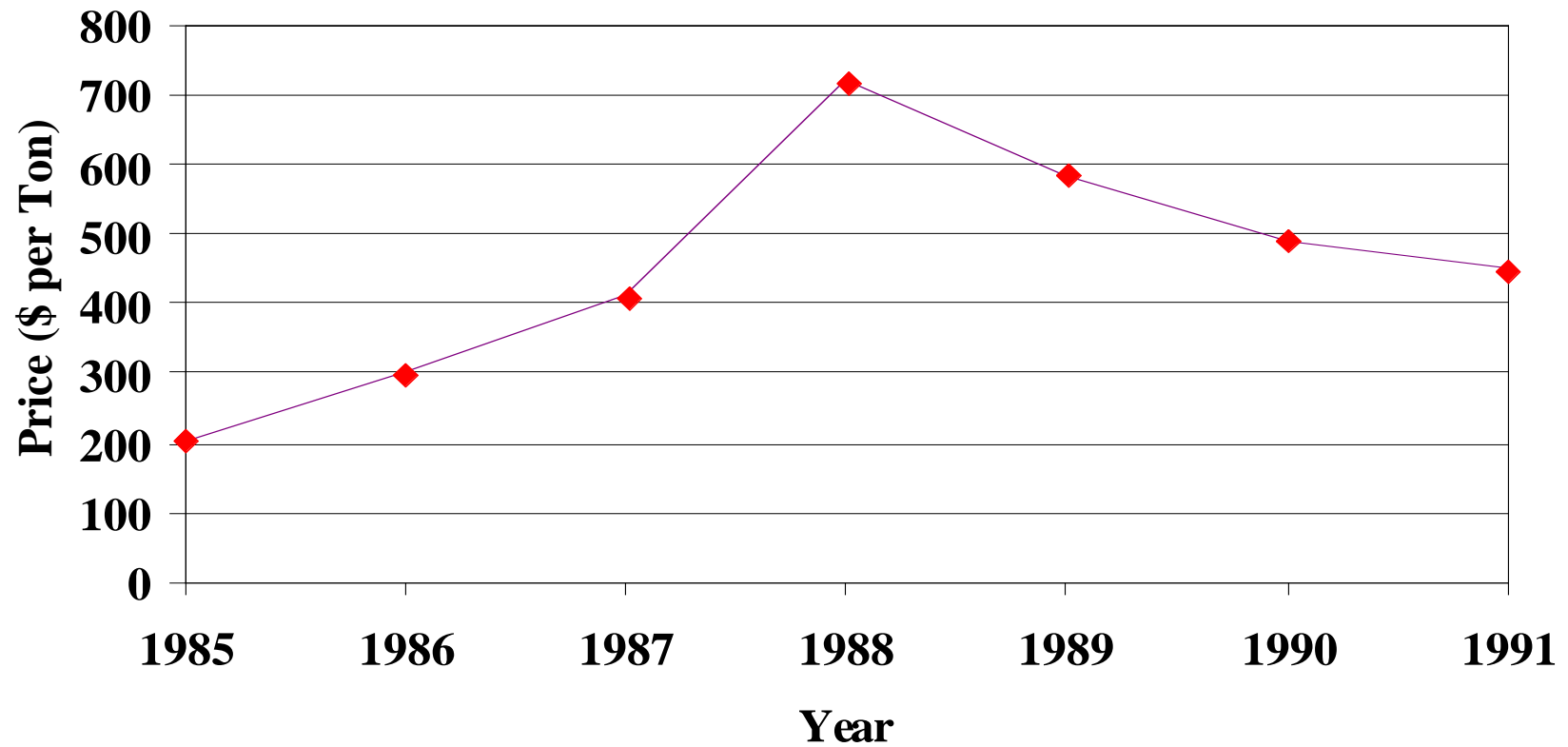
- In long-run equilibrium, firms will be earning only a normal profit. Economic profits will be zero.
 - Firms will neither enter nor exit the industry.
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Case: Entry in Response to a Demand Shift

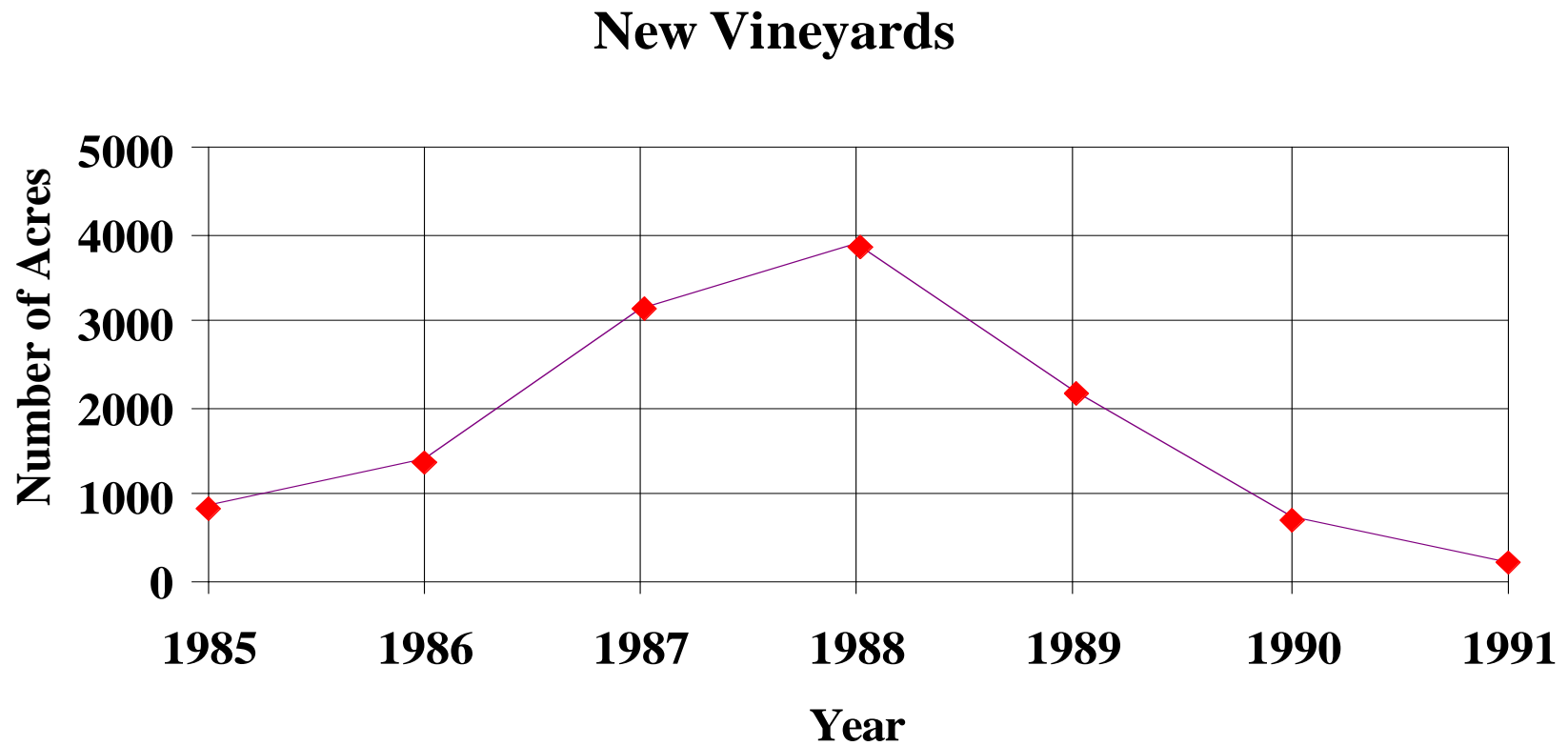


- Zinfandel grape: used in the U.S. to produce Zinfandel wine.
 - From 1985 to 1991, the price of these grapes rose and then fell.
 - What accounted for the price rise?
 - New product in mid-1980s: “white Zinfandel” which was more popular than the previous red wine
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Grape Price Movements



New Entry by Vineyards



Identifying Competitors



- Is another firm's product a close substitute to your own?
 - What are the close substitutes to ...
 - Mazda 323
 - Compaq Presario
 - Diet Coke
 - Yahoo
 - Melways
 - Gans et.al. textbook
-

Product Differentiation



- Two views:
 - competitive markets are characterised by relatively similar products
 - there are substitutes to monopoly products
 - Monopoly power is a matter of degree
 - what ability does an individual firm have to change price
 - look to cross price elasticities
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Cross Price Elasticity of Demand

- Cross price elasticity of demand is a measure of the sensitivity of demand to changes in the price of another product

- Consider two products, X and Y :

$$E_{XY} = \frac{\% \Delta Q_X}{\% \Delta P_Y} = \frac{\Delta Q_X / Q_X}{\Delta P_Y / P_Y} = \frac{P_Y}{Q_X} \frac{f Q_X}{f P_Y}$$

- Measure of how much a demand curve shifts
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Sources of Product Differentiation



- Differences in characteristics of products offered by different firms
 - breakfast cereals, magazines
 - Differences in the location of different firms
 - restaurant location
 - supermarkets
 - search engines?
 - Perceived differences
 - advertising, packaging, brand image
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Market Definition



- Why is market definition important?
 - Strategic: What firms constrain your pricing decision?
 - | Who limits your added value.
 - Antitrust: Does a firm have monopoly power?
 - | E.g., Staples and OfficeMax merger
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Product Differentiation



Softening Price
Competition

Differentiate Product



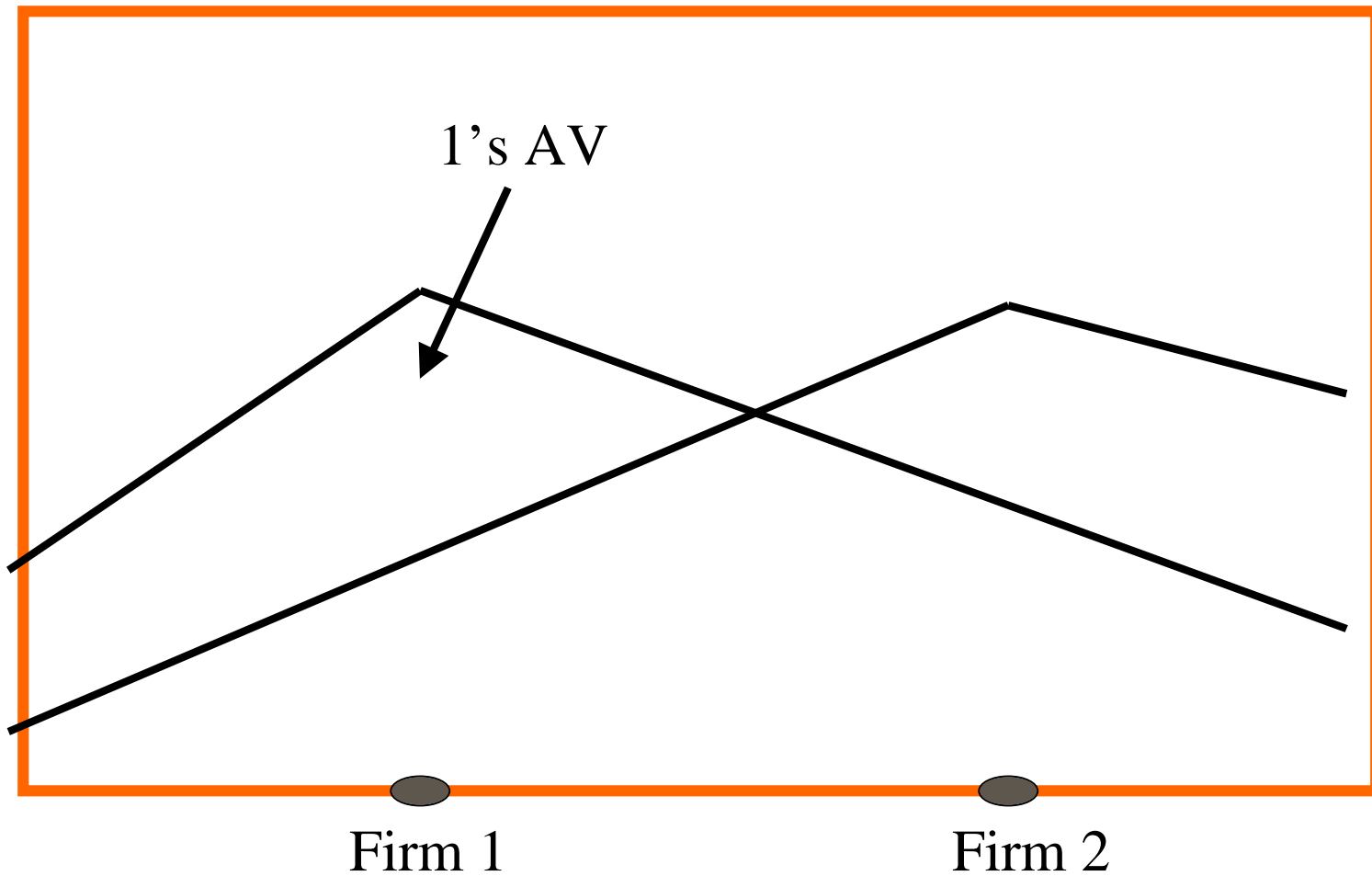
Develop content in difficult to replicate ways:

- Britannica: quality and size

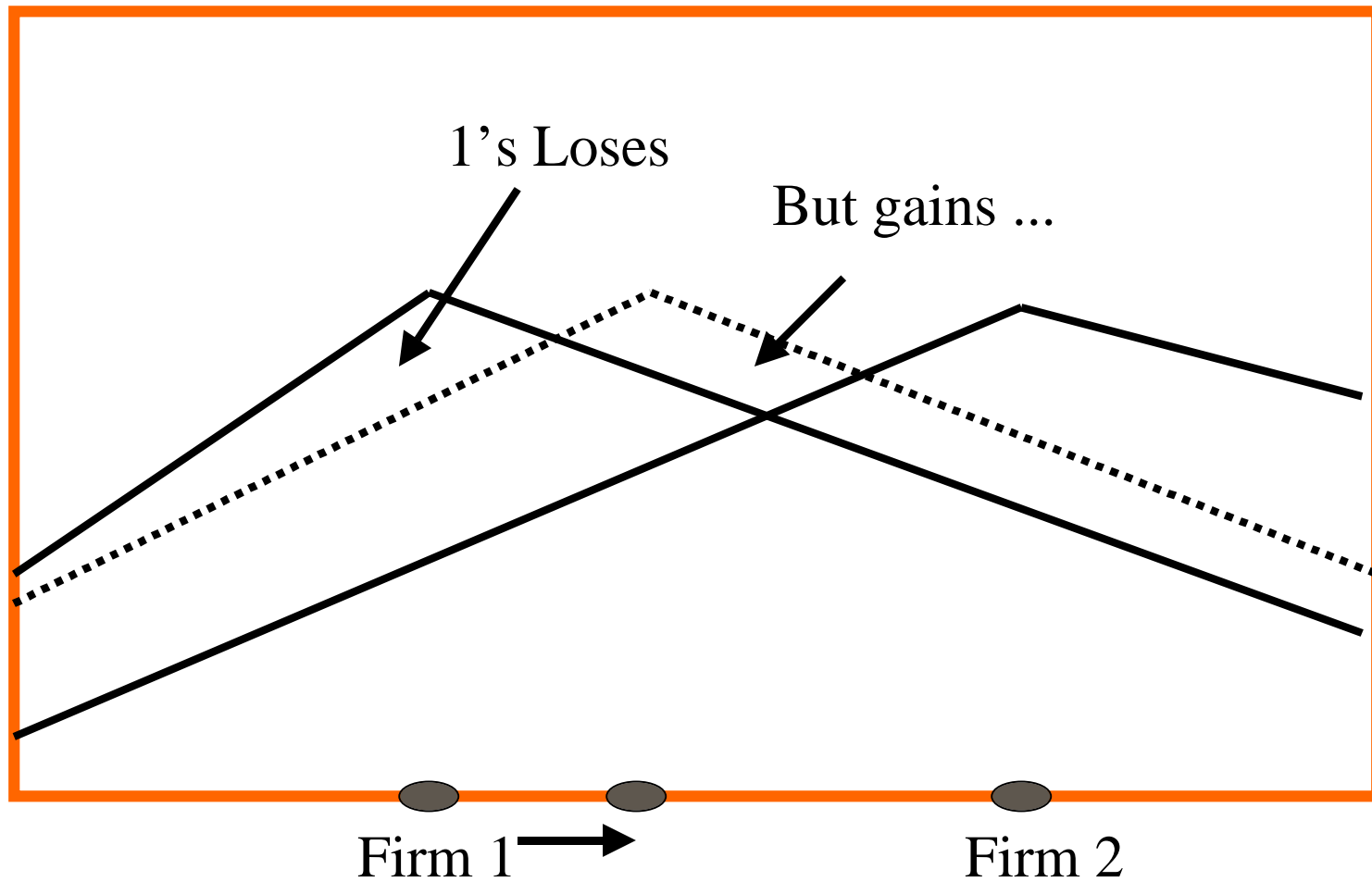
versus

- Bigbook and maps
 - West Publishing and page number system (need legal protection as well)
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Optimal Differentiation



Optimal Differentiation



Product Differentiation



- If have different product than rival,
 - then by cutting price will not capture entire market
 - therefore, lower price will not provoke as tough a response from rival.
 - A similar effect occurs if there are customer-specific switching costs
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Lock-In & Switching Costs



- 'Loyalty' programs
 - Learning by using
 - Connection and Disconnection Costs
 - Search costs
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Loyalty Programs



- Constructed by firm
 - Frequent flyer programs
 - Frequent coffee programs
 - Personalised Pricing
 - Gold status
 - Example: Amazon and Barnes and Noble
 - Amazon Associates Program v. B&N's Affiliates program
 - Add nonlinearity?
 - Power E-trade
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Small Switching Costs Matter



- Phone number portability
 - Bank account numbers
 - Stock broker account
 - Email addresses
 - Hotmail (advertising, portability)
 - Learning and Training
 - Word processor/file conversion
 - E-mail program
 - Browser bookmarks
-

Connection Costs



- Customer switches from A to “same position” w/ B
 - Total switching costs = customer costs + B's costs
 - Example
 - Switching ISPs costs customer \$50 new ISP \$25
 - New ISP make \$100 on customer, switch
 - New ISP makes \$70 on customer, no switch
 - Disruption costs
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Differentiation Strategy



- Can soften price competition
 - But if too successful, may change game to dominant firm outcome
 - Compete for the market
 - Standards wars
 - Grab installed base for lock-in
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