Chapter 8

This is Microeconomics

People, Firms, and Monopolies in Markets

review for the exam

1. this chapter is about the interaction of consumers/buyers and firms/ businesses in competitive markets, the expansion and contraction of markets/industries in the long-run (4-5 years out), and the existence of all-powerful monopolies

Average Total Cost, Average Fixed Cost, and Average Variable Cost

1. the **average total cost** (ATC) or **cost per unit** is the total cost (TC) of production divided by the quantity (Q) produced
   A. if the total cost of producing 5 items is $900, then the average total cost or cost per unit is $180 ($900/5)
   B. ATC first decreases then increases as variable costs increase
2. the **average fixed cost** (AFC) is fixed costs divided by the quantity produced
3. the **average variable cost** (AVC) is variable costs divided by the quantity produced

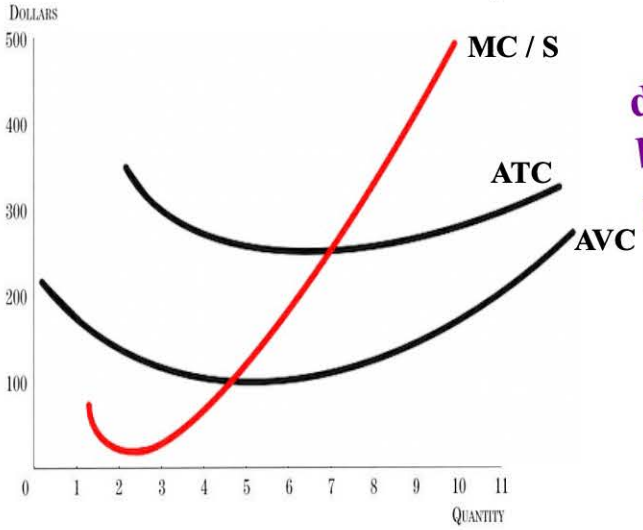
graph the three generic cost curves

micro. formulas #14, #15, and #16

Quantity (pianos moved per day) (*Q*)	Total Costs (*TC*)	Fixed Costs (*FC*)	Variable Costs (*VC*)	Average Total Cost (*ATC*)	Average Fixed Cost (*AFC*)	Average Variable Cost (*AVC*)	Marginal Cost (*MC*)
0	300	300	0	—	—	—	—
1	450	300	150	450	300	150	150
2	570	300	270	285	150	135	120
3	670	300	370	223	100	123	100
4	780	300	480	195	75	120	110
5	900	300	600	180	60	120	120

The Generic Cost Curves- Graphing the Status of Firms

1. the three graphed curves on the right use exactly the same information as the table on the left, but are more useful and easier to understand
2. the curves are called the **marginal cost curve** (MC/S), the **average total cost curve** (ATC), and the **average variable cost curve** (AVC)
3. the three cost curves visually show the status of a firm, but the average variable cost curve is only needed when graphing shutdown for a firm



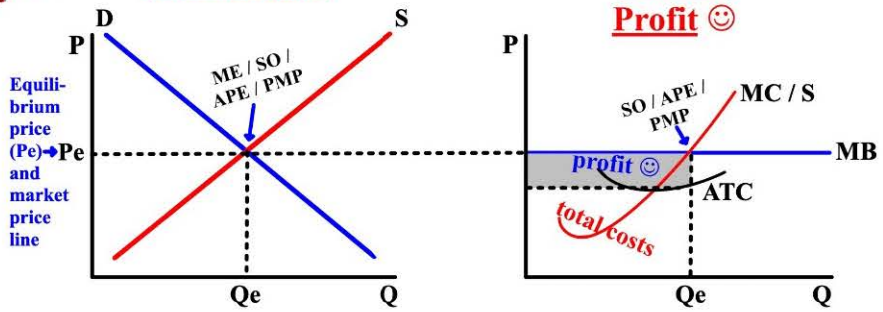
draw side-by-side graphs of a firm/ business in a perfectly competitive or pure market/industry showing a positive profit; shade in the profit

draw side-by-side graphs of a firm/ business in a perfectly competitive or pure market/industry showing a negative profit; shade in the loss

A Firm in a Perfectly Competitive/Pure Market

Profit ☺

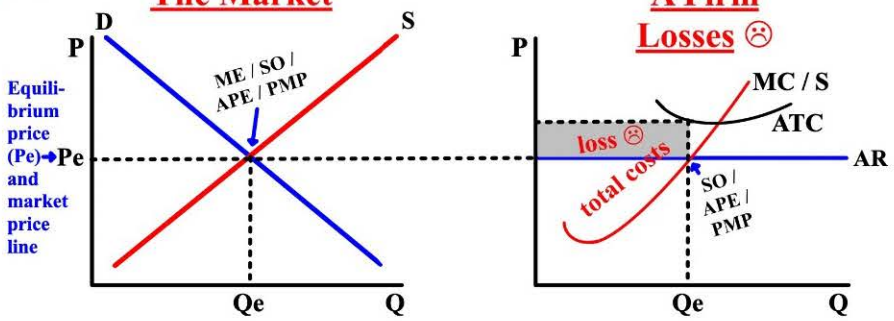
P > ATC (profit)

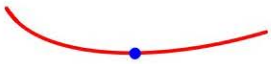


A Firm in a Perfectly Competitive/Pure Market

Negative Profit (Losses) ☹

P < ATC (loss)





Microeconomics Do-Now

Please do this:

1.

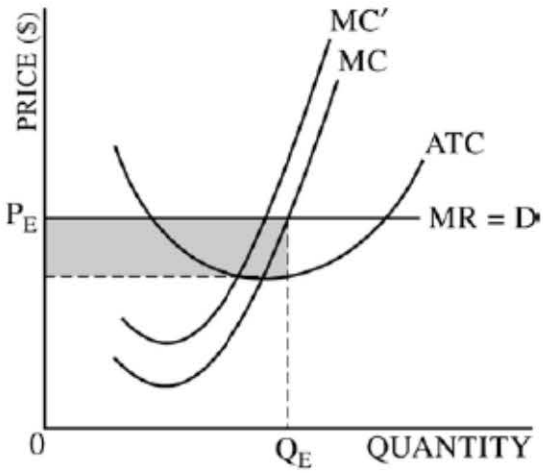
Assume that the market for avocados is perfectly competitive. The typical firm is earning positive economic profit in the short-run equilibrium.

(a) Draw a correctly labeled graph for the typical firm, illustrating the short-run equilibrium and labeling the equilibrium market price and output P_E and Q_E, respectively.

(b) Assume there is an increase in the market wage rate for labor, a variable input. Show on your graph in part (a) the effect of the wage increase on the marginal cost curve in the short run.

Microeconomics Do-Now

1.



(a) 3 points:

- One point is earned for a correctly labeled graph with a horizontal demand curve at the equilibrium price, P_E.
- One point is earned for showing the equilibrium quantity, Q_E, at MR = MC.

Microeconomics Do-Now

Please do this:

2.

Corn is used as food and as an input in the production of ethanol, an alternative fuel. Assume corn is produced in a perfectly competitive market.

(a) Draw correctly labeled side-by-side graphs for the corn market and a representative corn farmer. On your graphs show each of the following.

(i) The equilibrium price and quantity in the corn market, labeled P_M and Q_M, respectively

(ii) The profit-maximizing quantity of corn produced by the representative farmer earning zero economic profit, labeled Q_F

(b) Assume the demand for ethanol increases. On your graphs in part (a) show what will happen to each of the following in the short run.

(i) The market price and quantity of corn, labeled P^* and Q^*

(ii) The area of the profit or loss earned by the representative corn farmer, shaded completely

(c) Relative to your answer in part (b), state what will happen to the market equilibrium price and quantity of corn in the long run. Explain.

(d) Soybeans are produced in a perfectly competitive market. Assume farmers can grow either corn or soybeans on the same land. What happens to the price of soybeans in the next planting season if the price of corn increases? Explain.

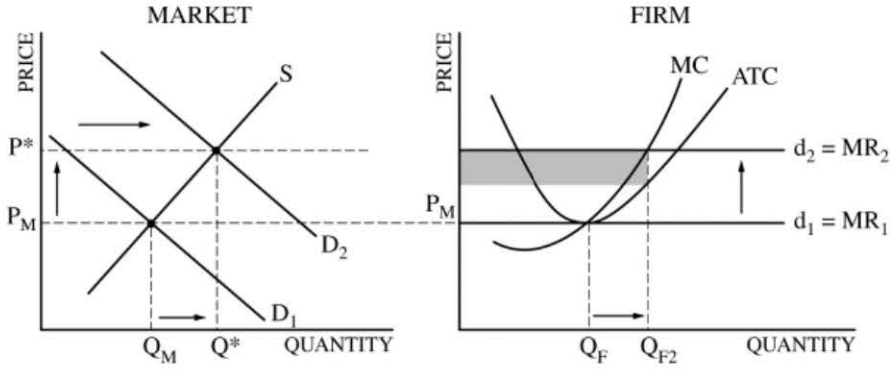
(e) Assume instead that the government sets a binding price ceiling in the corn market. Draw a new correctly labeled graph for the corn market and show each of the following.

(i) The binding price ceiling, labeled P_c

(ii) The quantity purchased by consumers in the corn market, labeled Q_p

Microeconomics Do-Now

2. **9 points** (3 + 2 + 1 + 1 + 2)



(a) 3 points:

- One point is earned for drawing a correctly labeled graph of the corn market with P_M and Q_M. The market demand curve must be downward sloping and the market supply curve must be upward sloping.
- One point is earned for showing a horizontal demand curve on the firm's graph extended from the market equilibrium price, P_M.
- One point is earned for identifying the firm's profit-maximizing quantity, Q_F, at marginal cost equal to marginal revenue ($MC=MR_1$).
- ~~One point is earned for showing the firm's average total cost (ATC) curve and marginal cost (MC) passing through the minimum point of ATC, and P = ATC = MC at Q_F.~~

Microeconomics Do-Now

2.

(b) 2 points:

- One point is earned for showing a rightward shift of the market demand curve and a higher price and quantity, P^* and Q^*.
- One point is earned for completely shading the area representing the profit for a representative corn farmer.

(c) 1 point:

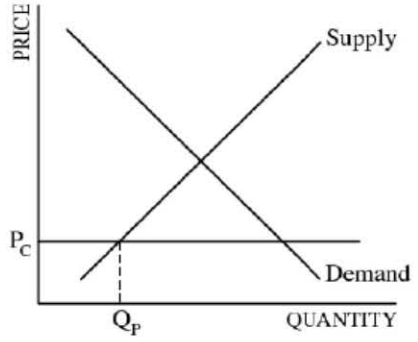
- One point is earned for stating that the market quantity will increase and the market's price will decrease in the long run, and for explaining that new corn farmers will enter the market, which will increase the market supply curve.

Microeconomics Do-Now

2.

(d) 1 point:

- One point is earned for stating that the price of soybeans in the next planting season will increase, and for explaining that the supply of soybeans will decrease because the higher price of corn encourages farmers to substitute corn for soybeans in production.



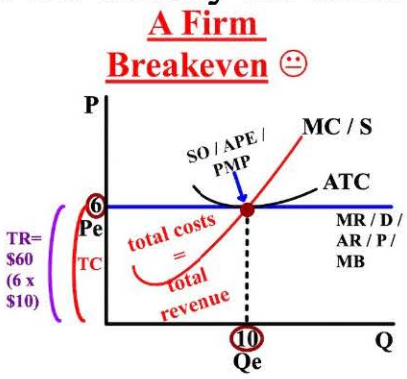
graph a firm at the breakeven point/in long-run equilibrium; label the profit maximizing point PMP

(e) 2 points:

- One point is earned for showing a correctly labeled graph of the corn market, with the price ceiling, P_C, below the equilibrium price of corn.
- One point is earned for showing the quantity purchased by consumers in the corn market labeled as Q_P where P_C intersects the supply curve.

Firms: Breaking Even

1. if the minimum point on the average total cost curve (ATC) intersects the marginal cost curve/supply curve (MC/S) and the demand curve (D) at the same point, the firm is at the **breakeven point**
2. the revenue rectangle's width (quantity) is 10 and the height (market price) is $6, but the average total cost curve (ATC) also intersects the MC/S and demand curves at $6
2. at the breakeven point, a firm's average total cost per unit ($6) equals the price ($6) they are selling it at: the total revenue (TR) rectangle and the total cost (TC) rectangle are exactly the same and economic profits are zero: P =ATC

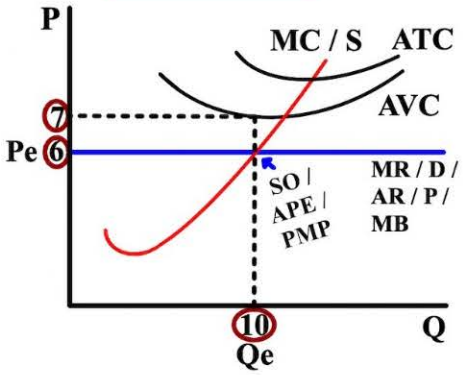


graph a firm at the shutdown point; label the socially optimal point SO

Firms: Shutting Down

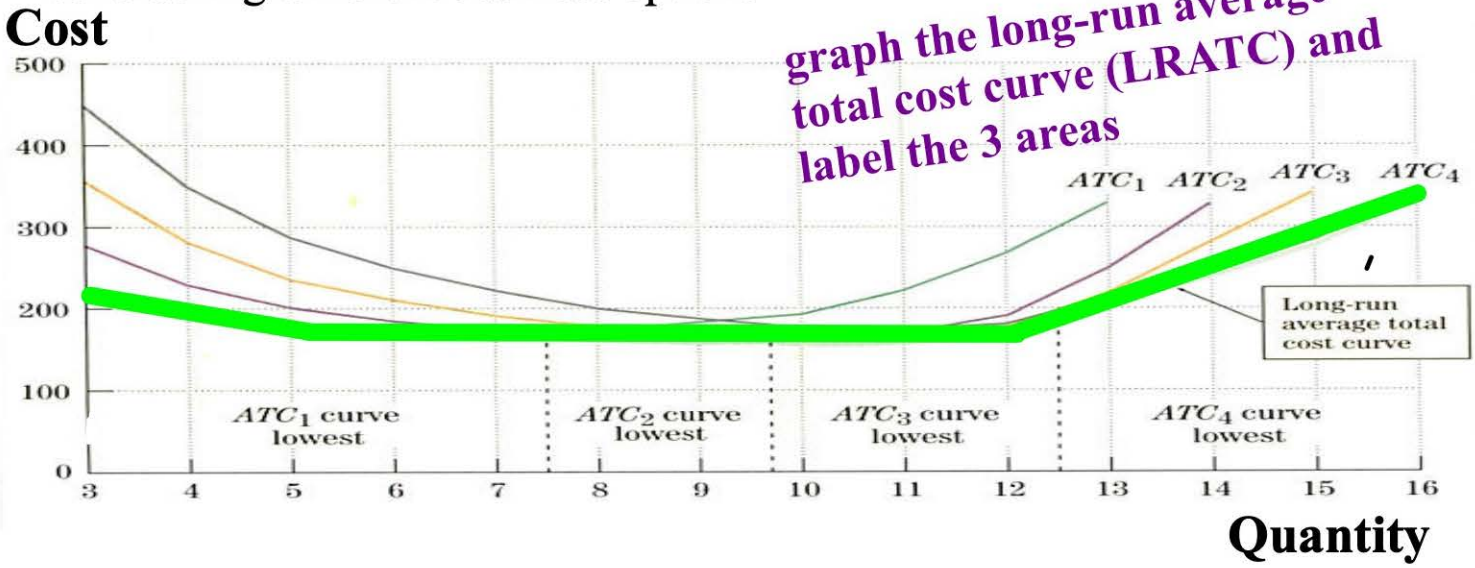
1. if the price (P) charged by the firm falls below where the average variable cost curve (AVC) intersects the quantity produced, this is referred to as the **shutdown point**: P < AVC
2. the AVC intersects the quantity produced (10) at $7, but the price (P) charged by the firm ($6) is less than the average variable cost ($7) of paying the workers
3. this is the only situation you need to use the average variable cost curve for

A Firm Shutdown ☠



The Long-Run ATC Curve

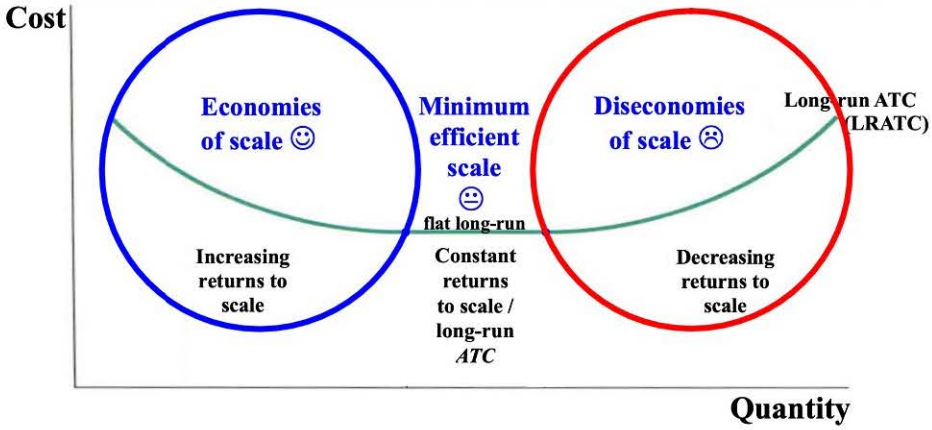
1. the thick light green curve is tracing the **long-run average total cost curve** (LRATC)... the curve that traces out the lowest points on the average total cost curves over time
2. the line tells firms what the average total cost is in the long-run when considering different business options



Economies and Diseconomies of Scale

1. there are **economies of scale**, or increasing returns to scale/size, if the long-run average total cost (LRATC) decreases as the scale increases
2. there are **diseconomies of scale**, or decreasing returns to scale/size, if the long-run average total cost increases as the scale increases
3. the **minimum efficient scale** or **constant returns to scale** is the situation in the middle (dot to dot) where the long-run average total cost is flat and at the minimum and is when a firm's output increases at the same rate the firm is utilizing its inputs

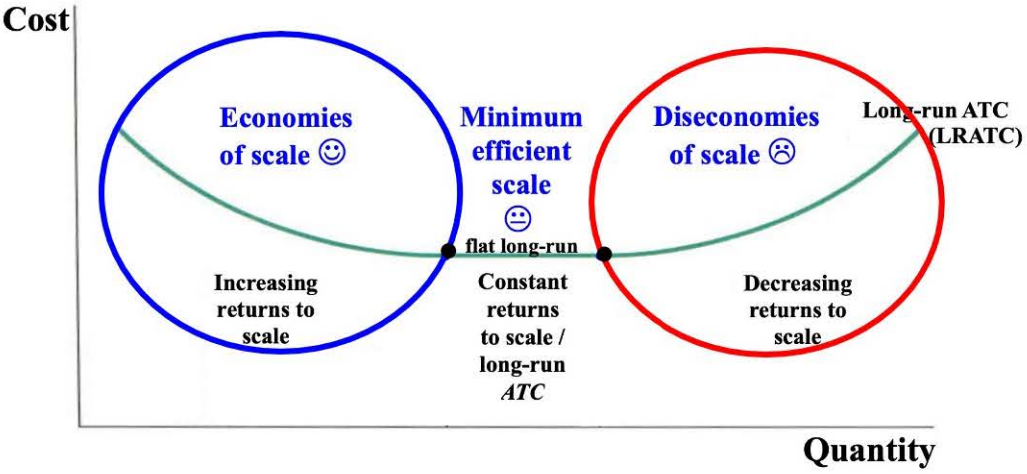
The Long-Run Average Total Cost Curve (LRATC)



Internal and External Economies and Diseconomies of Scale

1. **internal economies of scale** occur when the long-run average total cost (LRATC) decreases because of a reason internal to a firm, such as a grape firm hiring a specialist
2. **external diseconomies of scale** occur when the long-run average total cost (LRATC) increases because of a reason external to a firm, such as an increase in water prices for farmers

The Long-Run Average Total Cost Curve (LRATC)



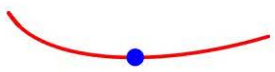
draw side-by-side graphs of a firm/ business in a perfectly competitive or pure market/industry in short-run equilibrium

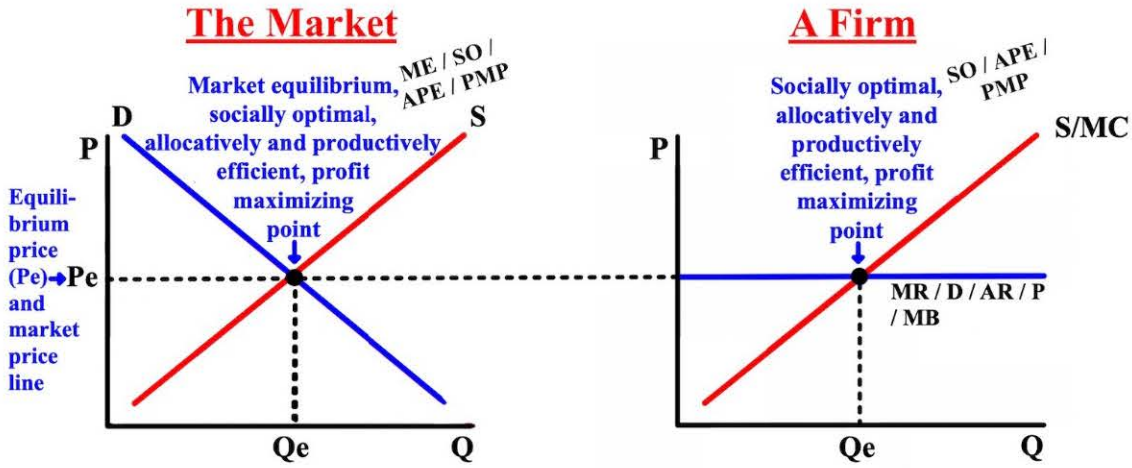
Short-Run Equilibrium

1. below is a graph showing a typical market with its market supply (S) and demand (D) curve and a firm in that market with a flat demand curve
2. where price (P) = marginal costs (MC), the profit maximizing price and quantity are determined for a firm
3. there are no generic cost curves below because this is short-run equilibrium (1 year or less)

A Firm in a Perfectly Competitive/Pure Market

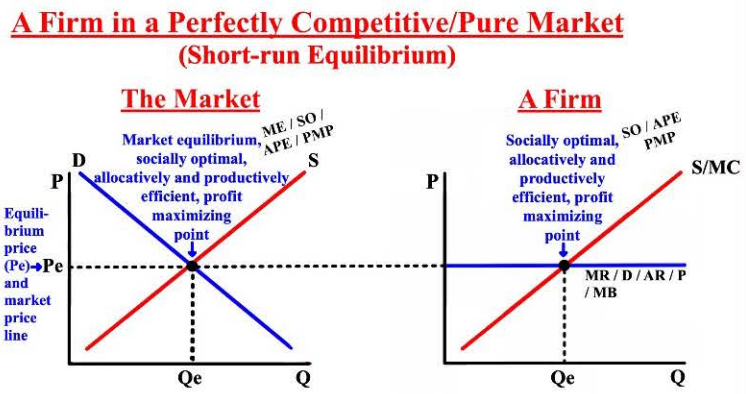
(Short-run Equilibrium)

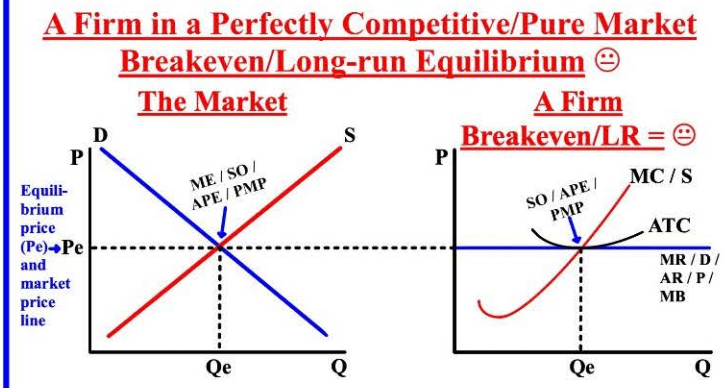




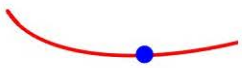
Short and Long-Run Equilibrium

1. the addition of generic cost curves is the only difference between short-run equilibrium and long-run equilibrium





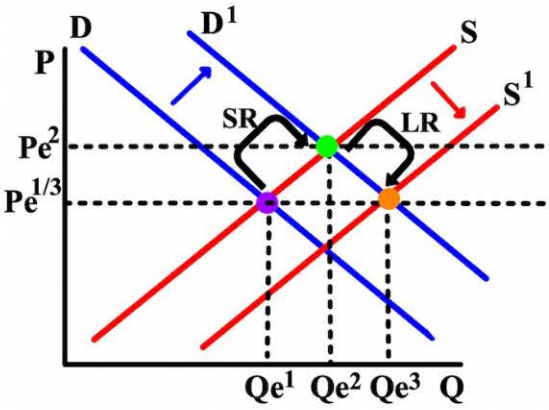
draw side-by-side graphs of a firm/business in a perfectly competitive or pure market/industry in long-run equilibrium then show an increase in demand in the market



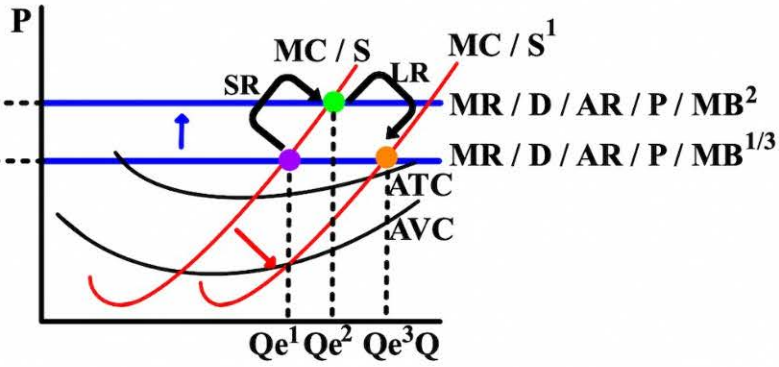
From LR Equilibrium to Expansion then back the LR Equilibrium

1. the long-run equilibrium model can be used to explain the expansion of a market and the firms in that market
2. demand (D) increases in the market from D to D1 (purple to green)
3. as firms make profit, the supply (S) curve for the whole market shifts to the right from S to S1 (from green to orange) because now there are firms entering the industry to make a profit, increasing supply

A Market Expansion ☺

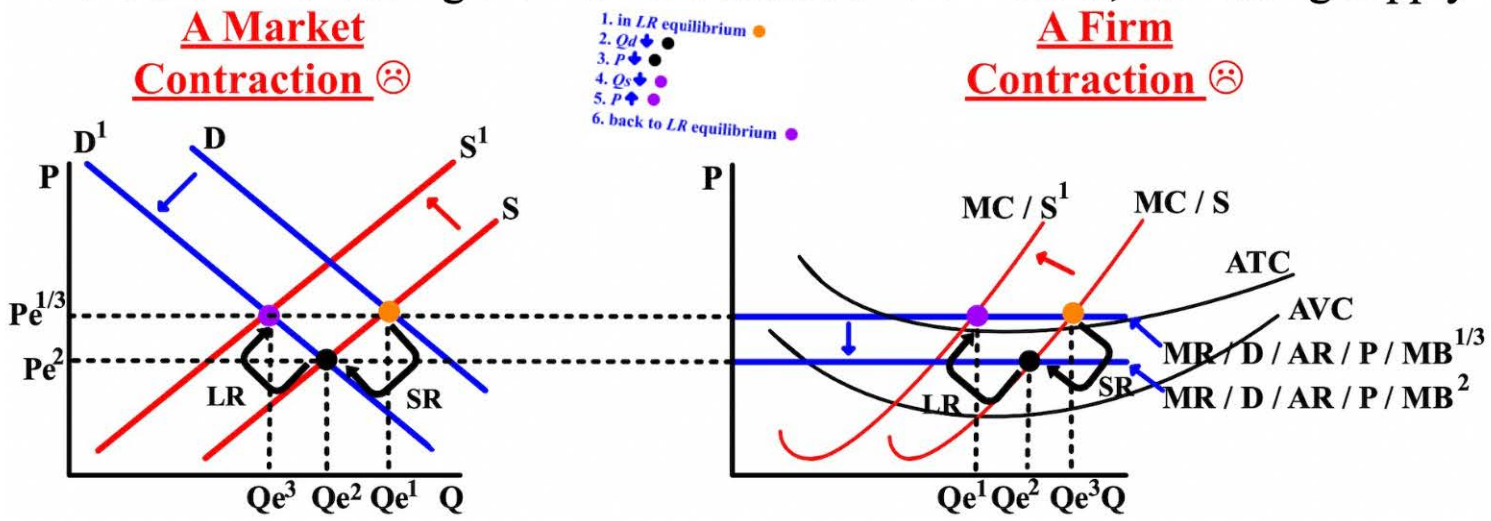


A Firm Expansion ☺



From LR Equilibrium to Contraction then back the LR Equilibrium

1. the long-run equilibrium model can also be used to explain the contraction of a market and the firms in that market
2. demand (D) decreases in the market from D to D1 (orange to black)
3. as firms make negative profit (losses), the supply (S) curve for the whole market shifts to the left from S to S1 (from black to purple) because now there are firms leaving the market because of their losses, decreasing supply



Accounting Profit versus Economic Profit

1. **accounting profit** (also called bookkeeping profit) for a firm consists of total revenue minus **explicit costs**, a firm's expenses)

micro. formula #17 **accounting profit = total revenue (TR) - explicit costs**

2. for an accountant, the total costs do not include the **implicit costs** (the opportunity cost of the owner's time, money, or the firm's resources)
3. an accountant only cares about the difference between total revenue and explicit costs

Accounting Profit versus Economic Profit (cont.)

1. **economic profit** is a more accurate and more used measure of the incentive for a firm to stay in business or enter a market because it takes into account all of the important financial factors

micro. formula #18

economic profit =
total revenue (TR) - total costs (implicit and explicit)

2. assume the profits for a bakery are $40,000 a year after deducting explicit costs like electricity and dough
3. now assume the owner of the bakery could earn $35,000 a year working at another job and invest money and earn $3,000 per year (implicit costs = $38,000)
4. economists would say the owner would have an economic profit of $2,000 keeping his bakery ($40,000 - $38,000), which is enough of an incentive for the firm to stay in business versus doing something else.
5. accountants don't care about implicit costs and would say that the accounting profit is $40,000

Accounting Profit versus Economic Profit (cont.)

1. the term **normal profit** is an economic condition that occurs when economic profits equal zero; the minimum level of profit needed for a company to remain in business (long-run equilibrium or the breakeven point when total revenue (TR) = total costs (TC)
   A. if a firm's economic total revenue (TR) is $40,000 and their total costs (TC) (explicit and implicit) equal $40,000, their economic profit and thus their normal profit would be $0.

micro. formula #19

Monopolies

1. finally, we'll talk about monopolies and how they decide what price (P) to charge their customers and what quantity (Q) to produce/sell, because profit is their one and only goal
   A. even though monopolies are illegal, sometimes they exist for the benefit of society, like having only one water company or one electric company in an area

The 4 Market Structures

Perfect/Pure Competition

1. profit max. and Q: P=MC and MR=MC
2. P is constant
3. no DWL or excess costs/capacity
4. one product/many close substitutes
5. many producers
6. no barriers to entry/exit
7. no market power/price taker
8. perfectly elastic D curve
9. no LR profit
10. example: stock market

Monopolistic Competition (imperfect)

1. profit max. and Q: MC=MR
2. P decreases, P>MC, & MR<P
3. DWL & excess costs/capacity
4. differentiated products
5. many producers
6. no barriers to entry/exit
7. market power/price maker
8. sloping D curve
9. no LR profit
10. example: cereal market

Oligopoly (imperfect competition)

1. profit max. determined by strategic beh.
2. P decreases, P>MC, & MR<P
3. DWL and excess costs/capacity
4. standardized/differentiated products
5. a few big producers
6. barriers to entry/exit
7. market power/price maker
8. sloping D curve
9. LR profit
10. example: sneaker market

Monopoly (imperfect competition)

1. profit max. and Q: MC=MR
2. P decreases, P>MC, & MR<P
3. DWL and excess costs/capacity
4. one product/no close substitutes
5. one big producer
6. barriers to entry/exit
7. market power/price maker
8. sloping D curve
9. LR profit with economies of scales
10. example: US Steel/FPL (nat. mono.)

Monopolies (cont.)

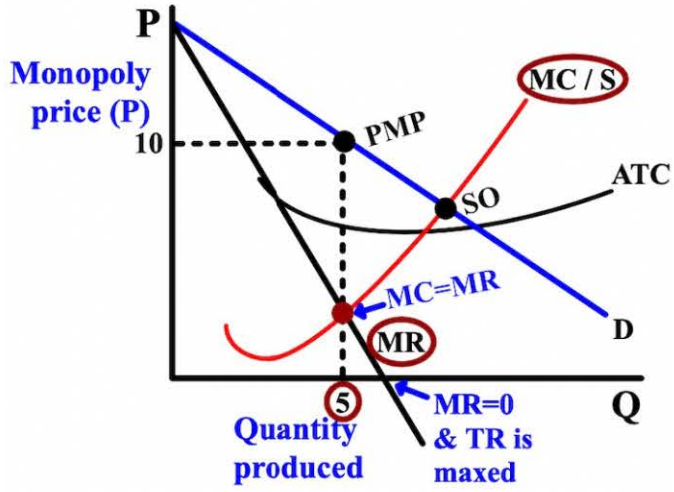
1. a **monopoly** occurs when there is only one firm in a market selling a product for which there are no close substitutes
2. monopolies create **barriers to entry** (when monopolies take active action to prevent other firms from entering the market they are in)
3. monopolies have **market power**
   A. monopolies are price-makers and not price-takers and there is no company that can undercut a monopoly's price, and what a monopoly does with its production levels can greatly impact its prices

graph a monopoly earning a positive profit, label the profit, shade in the deadweight loss, and label the elastic and inelastic ranges

Marginal Cost and Marginal Revenue

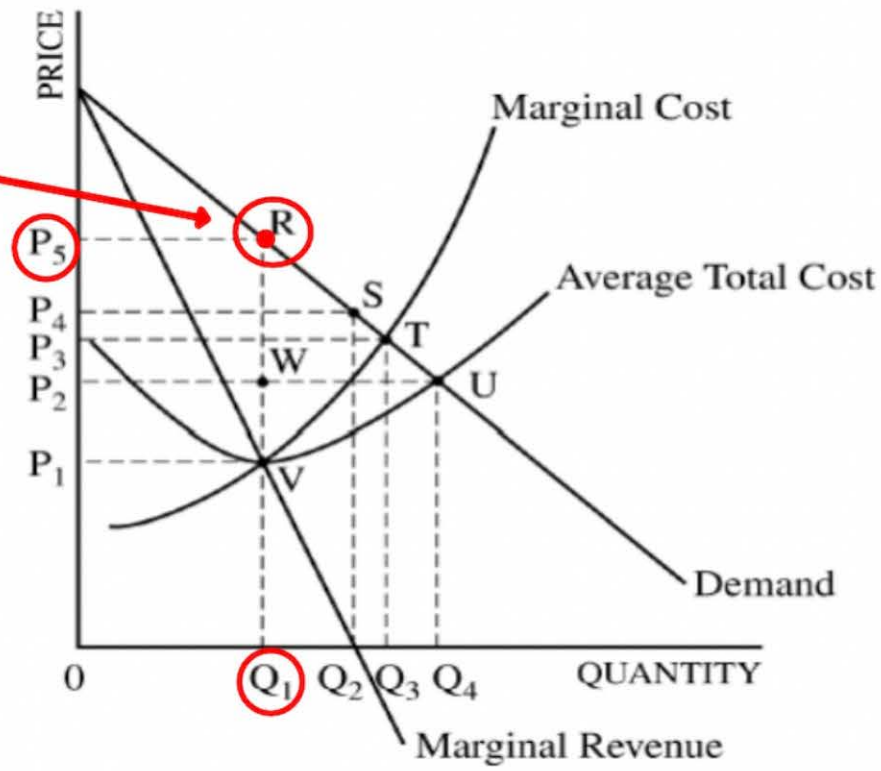
1. to maximize profit, the monopoly should produce the quantity where **marginal cost equals marginal revenue: MC = MR**, which is 5
2. the marginal revenue curve becoming negative shows that as total revenue continues to fall, at some point marginal revenue will become negative
3. where marginal revenue= 0, total revenue (TR) is at its maximum

A Monopoly: MC & MR



Marginal Cost and Marginal Revenue (cont.)

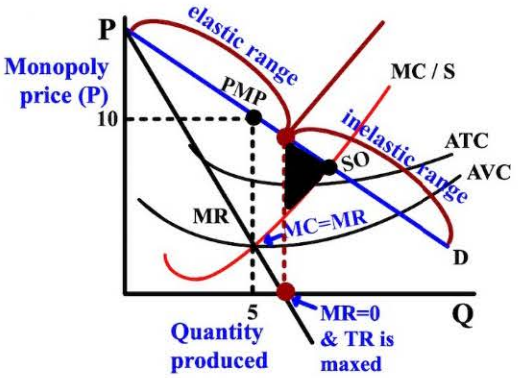
A non-regulated profit maximixing monopoly: MC=MR



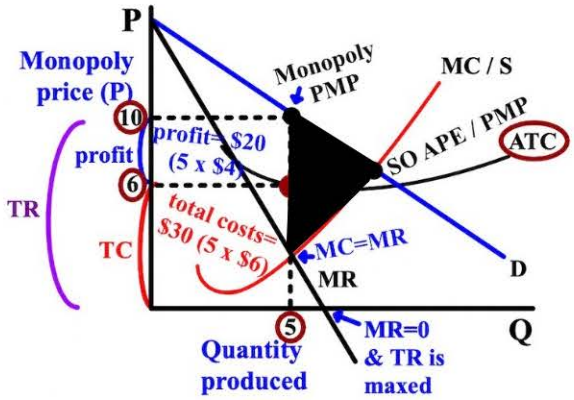
MC = MR for a Monopoly vs. P = MC for a Competitive Firm

1. unlike a firm in a perfectly competitive market, monopolies charge a higher price and produce a smaller quantity and therefore have excess capacity, are inefficient, create deadweight loss (DWL), and are not socially optimal in their business structure
2. on a graph of a monopoly, you can determine the socially optimal (SO), allocatively and productively efficient (APE), profit maximizing point (PMP) and the equilibrium quantity (8) and equilibrium price ($7) for a firm

A Monopoly: The Elastic and Inelastic Ranges



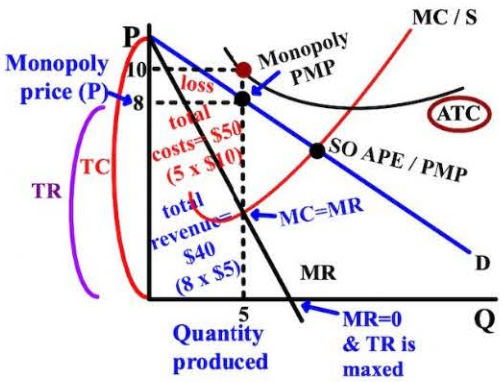
A Monopoly: Profit ☺



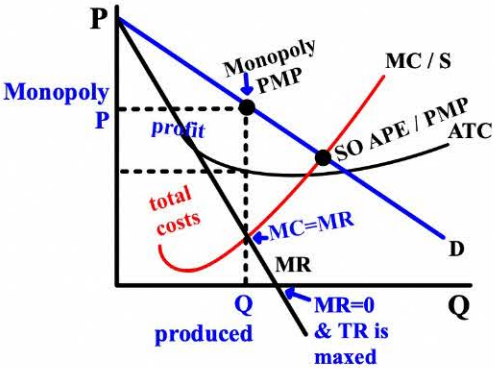
Monopolies: Negative Profit (losses)

1. at a production quantity of 5, the monopoly's price (P) would be $8 and total revenue (TR) would be $40 (5 x $8)
2. but, the average total cost curve (ATC) intersects the monopoly's quantity produced (5) at $10, so the total costs (TC) would be $50 (5 x $10)
3. in this case, the price is below average total cost: negative profit (losses)
3. like a competitive firm, a monopoly with negative profits will only shutdown if the price is less than the average variable cost (AVC)

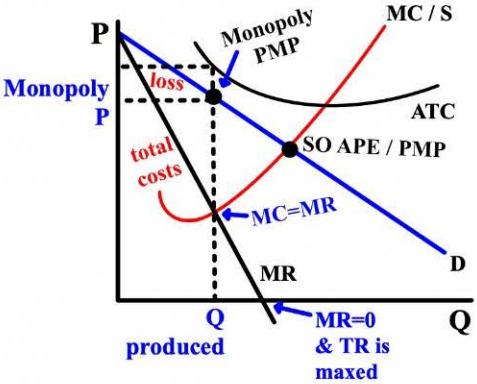
A Monopoly: Negative Profit (Losses) ☹



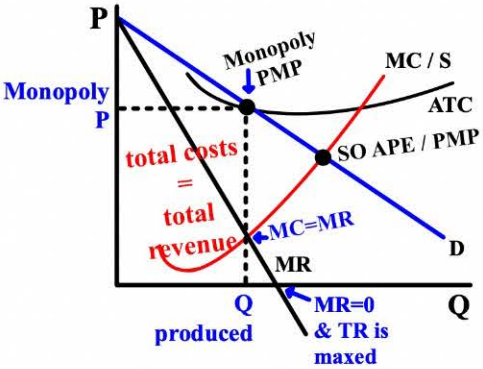
A Monopoly: Profit ☺



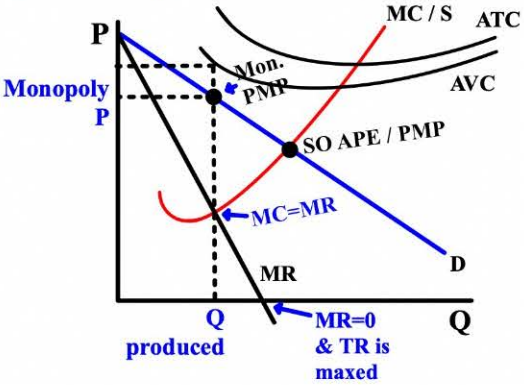
A Monopoly: Losses ☹



A Monopoly: Breakeven 😐

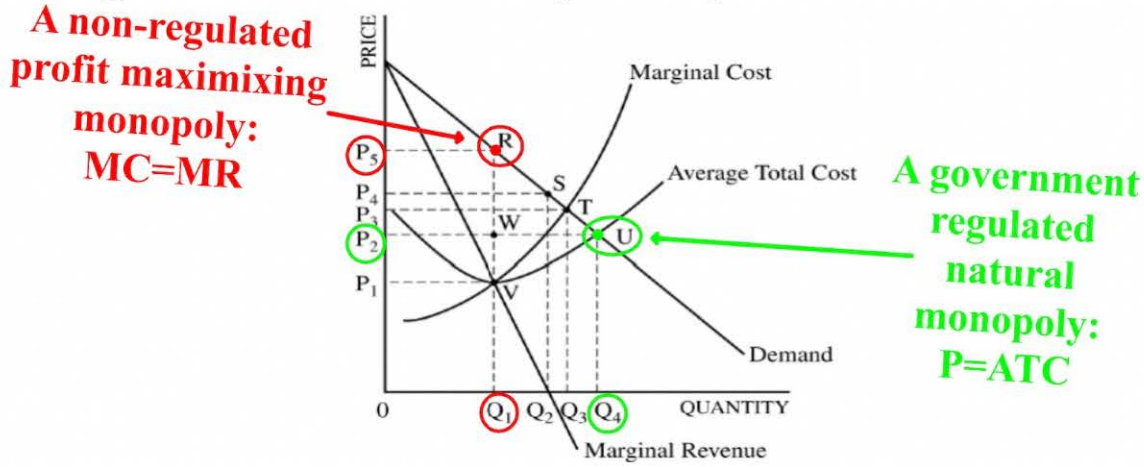


A Monopoly: Shutdown ☠



Natural Monopolies

1. **natural monopolies** exist when the average total cost (ATC) in a market is declining and the possible production is more than the market needs, like a water or electric company
2. the prices charged by many natural monopolies are regulated by the government and are set equal to the firm's ATC (P=ATC)
   A. the purpose of the regulation is to keep the price below what a monopoly would charge and closer to the competitive price

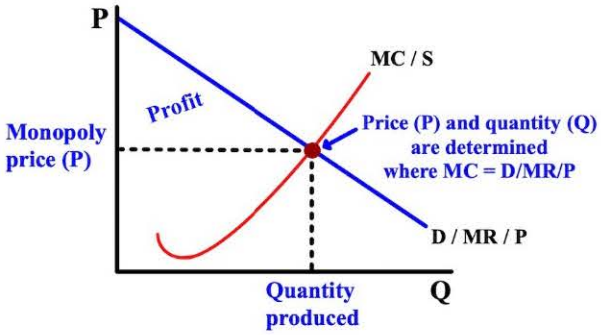
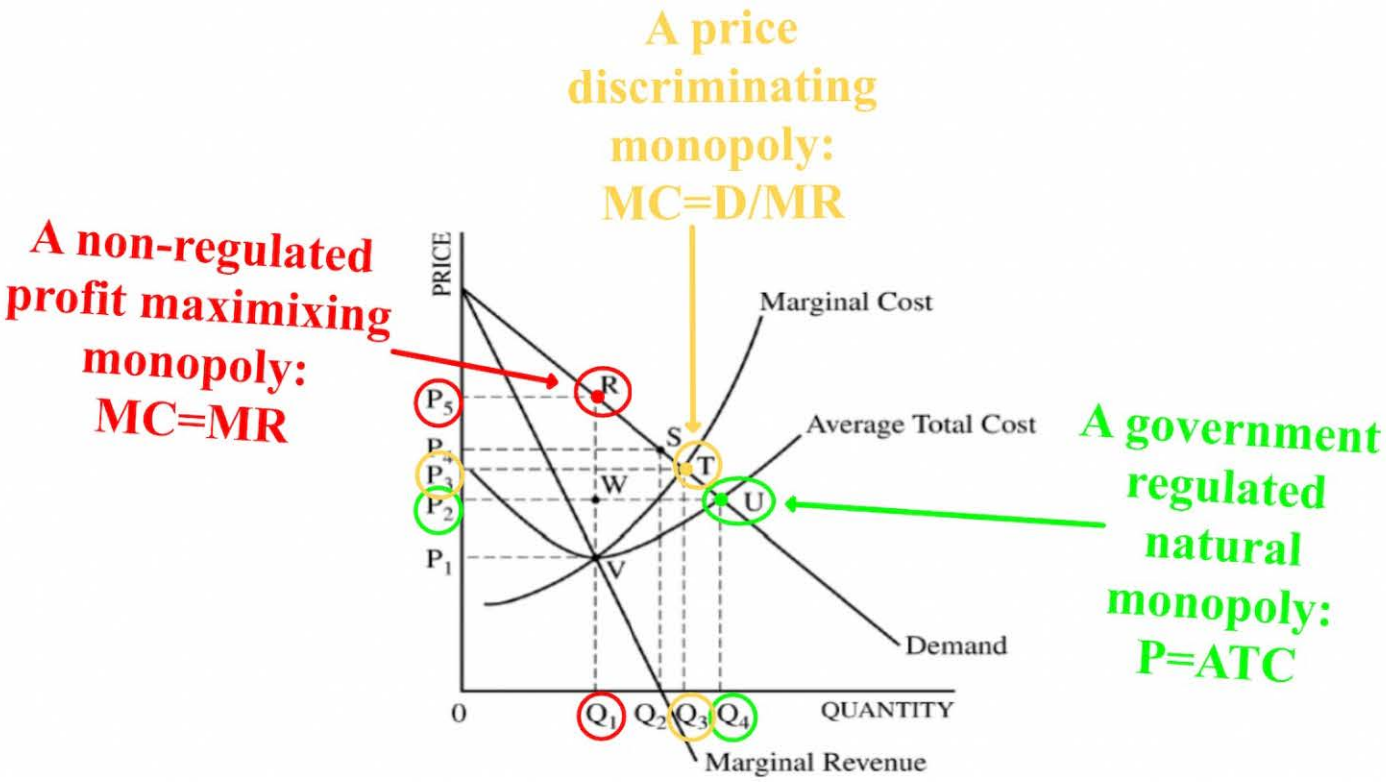


Price Discrimination

1. in some cases, monopolies charge different people different prices for the same product in order to make more profit
   A. this is called **price discrimination** or **perfect price discrimination**
      i. like senior citizen discounts at movie theaters
2. to maximize their profits when they price discriminate, monopolies set their price (P) and quantity (Q) equal to MC=D/MR/P, just like a firm in a perfectly competitive market
3. extra profit is earned because MR is now the same as D, which is an increase

A Monopoly

Perfect Price Discrimination



Profit-Maximizing vs. Government Regulated vs. Price Discriminating Monopolies