Demand, Supply, Equilibrium in Markets for Goods and Services

The Determination of Price and Quantity

The logic of the model of demand and supply is simple. The demand curve shows the quantities of a particular good or service that buyers will be willing and able to purchase at each price during a specified period. The supply curve shows the quantities that sellers will offer for sale at each price during that same period. By putting the two curves together, we should be able to find a price at which the quantity buyers are willing and able to purchase equals the quantity sellers will offer for sale.

Figure 4.1 “The Determination of Equilibrium Price and Quantity” combines the demand and supply data.Notice that the two curves intersect at a price of $6 per pound—at this price the quantities demanded and supplied are equal. Buyers want to purchase, and sellers are willing to offer for sale, 25 million pounds of coffee per month. The market for coffee is in equilibrium. Unless the demand or supply curve shifts, there will be no tendency for price to change. The equilibrium price in any market is the price at which quantity demanded equals quantity supplied. The equilibrium price in the market for coffee is thus $6 per pound. The equilibrium quantity is the quantity demanded and supplied at the equilibrium price.

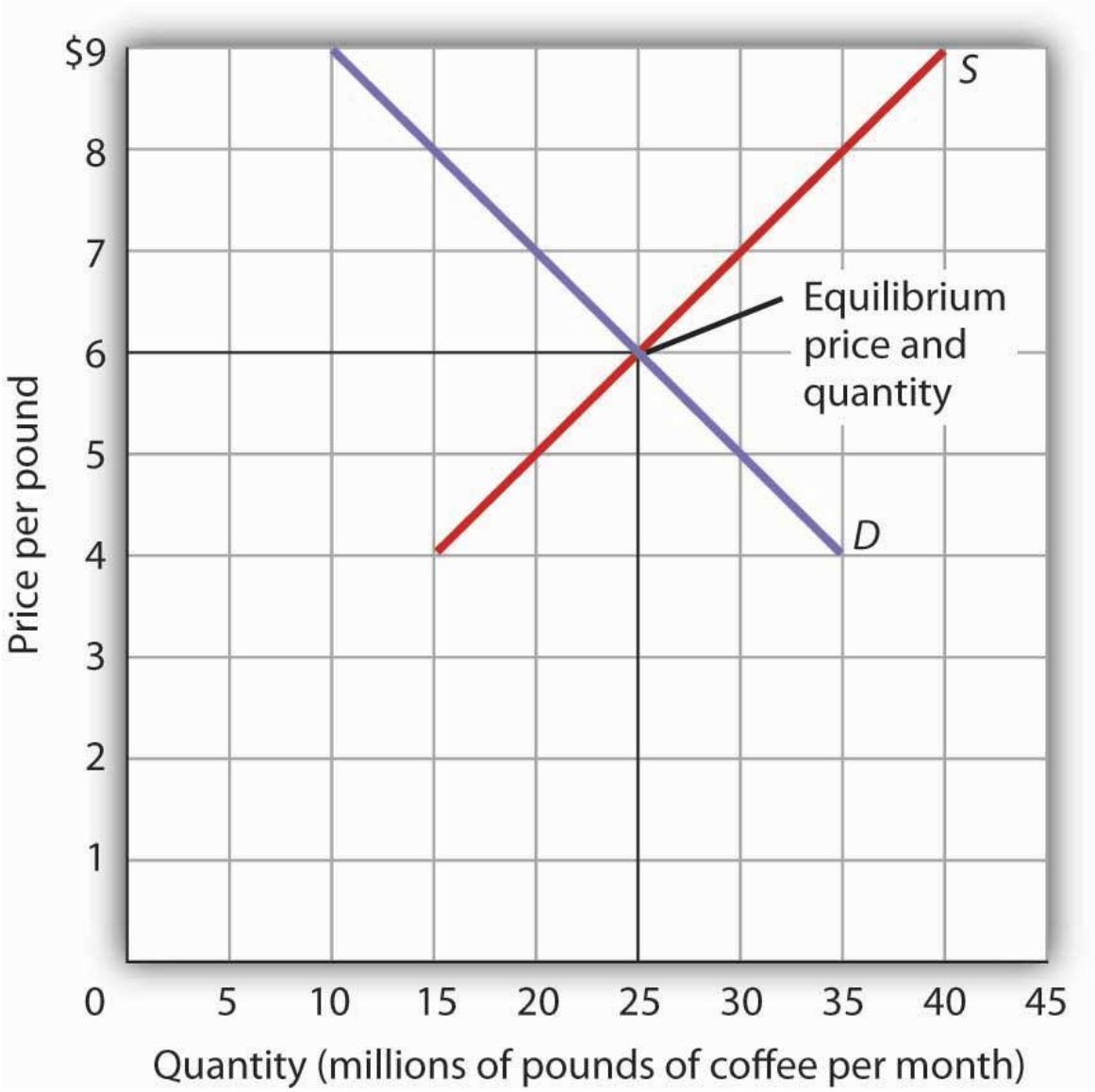

Figure 4.1 The Determination of Equilibrium Price and Quantity

When we combine the demand and supply curves for a good in a single graph, the point at which they intersect identifies the equilibrium price and equilibrium quantity. Here, the equilibrium price is $6 per pound. Consumers demand, and suppliers supply, 25 million pounds of coffee per month at this price.

With an upward-sloping supply curve and a downward-sloping demand curve, there is only a single price at which the two curves intersect. This means there is only one price at which equilibrium is achieved. It follows that at any price other than the equilibrium price, the market will not be in equilibrium. We next examine what happens at prices other than the equilibrium price.

Surpluses

Figure 4.2 “A Surplus in the Market for Coffee” shows the same demand and supply curves we have just examined, but this time the initial price is $8 per pound of coffee. Because we no longer have a balance

between quantity demanded and quantity supplied, this price is not the equilibrium price. At a price of $8, we read over to the demand curve to determine the quantity of coffee consumers will be willing to buy—15 million pounds per month. The supply curve tells us what sellers will offer for sale—35 million pounds per month. The difference, 20 million pounds of coffee per month, is called a surplus. More generally, a surplus is the amount by which the quantity supplied exceeds the quantity demanded at the current price. There is, of course, no surplus at the equilibrium price; a surplus occurs only if the current price exceeds the equilibrium price.

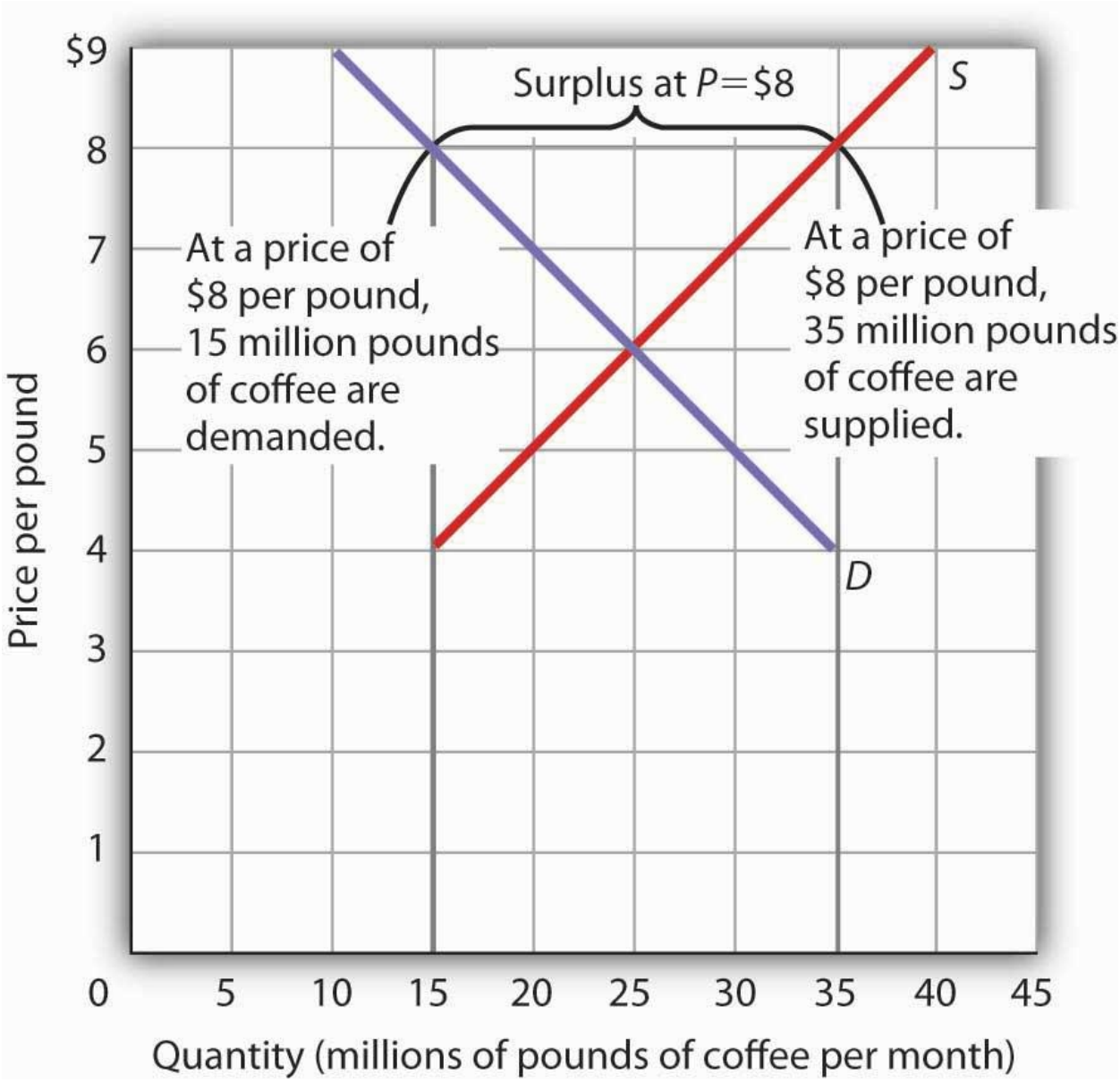

Figure 4.2 A Surplus in the Market for Coffee

At a price of $8, the quantity supplied is 35 million pounds of coffee per month and the quantity demanded is 15 million pounds per month; there is a surplus of 20 million pounds of coffee per month. Given a surplus, the price will fall quickly toward the equilibrium level of $6.

A surplus in the market for coffee will not last long. With unsold coffee on the market, sellers will begin to reduce their prices to clear out unsold coffee. As the price of coffee begins to fall, the quantity of coffee supplied begins to decline. At the same time, the quantity of coffee demanded begins to rise. Remember that the reduction in quantity supplied is a movement *along* the supply curve—the curve itself does not shift in response to a reduction in price. Similarly, the increase in quantity demanded is a movement *along* the demand curve—the demand curve does not shift in response to a reduction in price. Price will continue to fall until it reaches its equilibrium level, at which the demand and supply curves intersect. At that point, there will be no tendency for price to fall further. In general, surpluses in the marketplace are short-lived. The prices of most goods and services adjust quickly, eliminating the surplus. Later on, we will discuss some markets in which adjustment of price to equilibrium may occur only very slowly or not at all.

Shortages

Just as a price above the equilibrium price will cause a surplus, a price below equilibrium will cause a shortage. A shortage is the amount by which the quantity demanded exceeds the quantity supplied at the current price.

Figure 4.3 “A Shortage in the Market for Coffee” shows a shortage in the market for coffee. Suppose the price is $4 per pound. At that price, 15 million pounds of coffee would be supplied per month, and 35 million pounds would be demanded per month. When more coffee is demanded than supplied, there is a shortage.

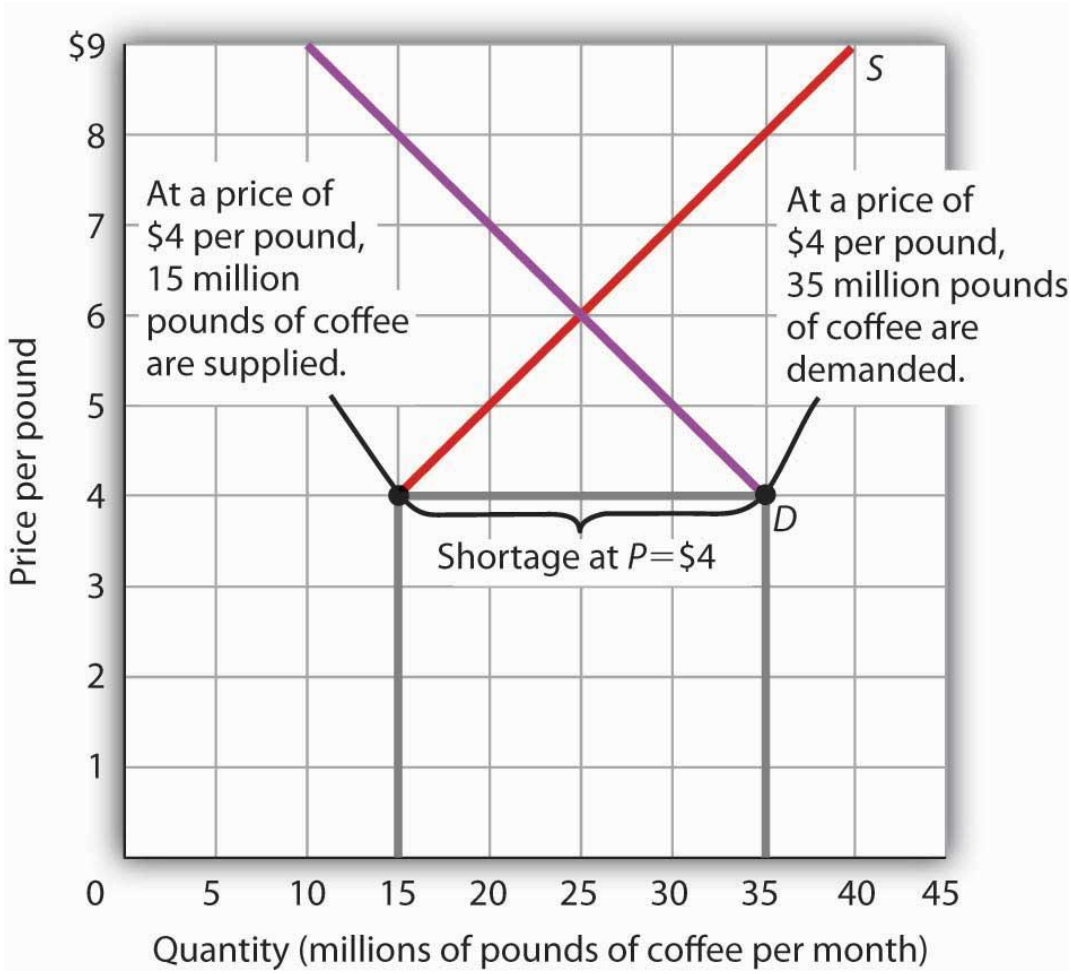

Figure 4.3 A Shortage in the Market for Coffee

At a price of $4 per pound, the quantity of coffee demanded is 35 million pounds per month and the quantity supplied is 15 million pounds per month. The result is a shortage of 20 million pounds of coffee per month.

In the face of a shortage, sellers are likely to begin to raise their prices. As the price rises, there will be an increase in the quantity supplied (but not a change in supply) and a reduction in the quantity demanded (but not a change in demand) until the equilibrium price is achieved.

Shifts in Demand and Supply

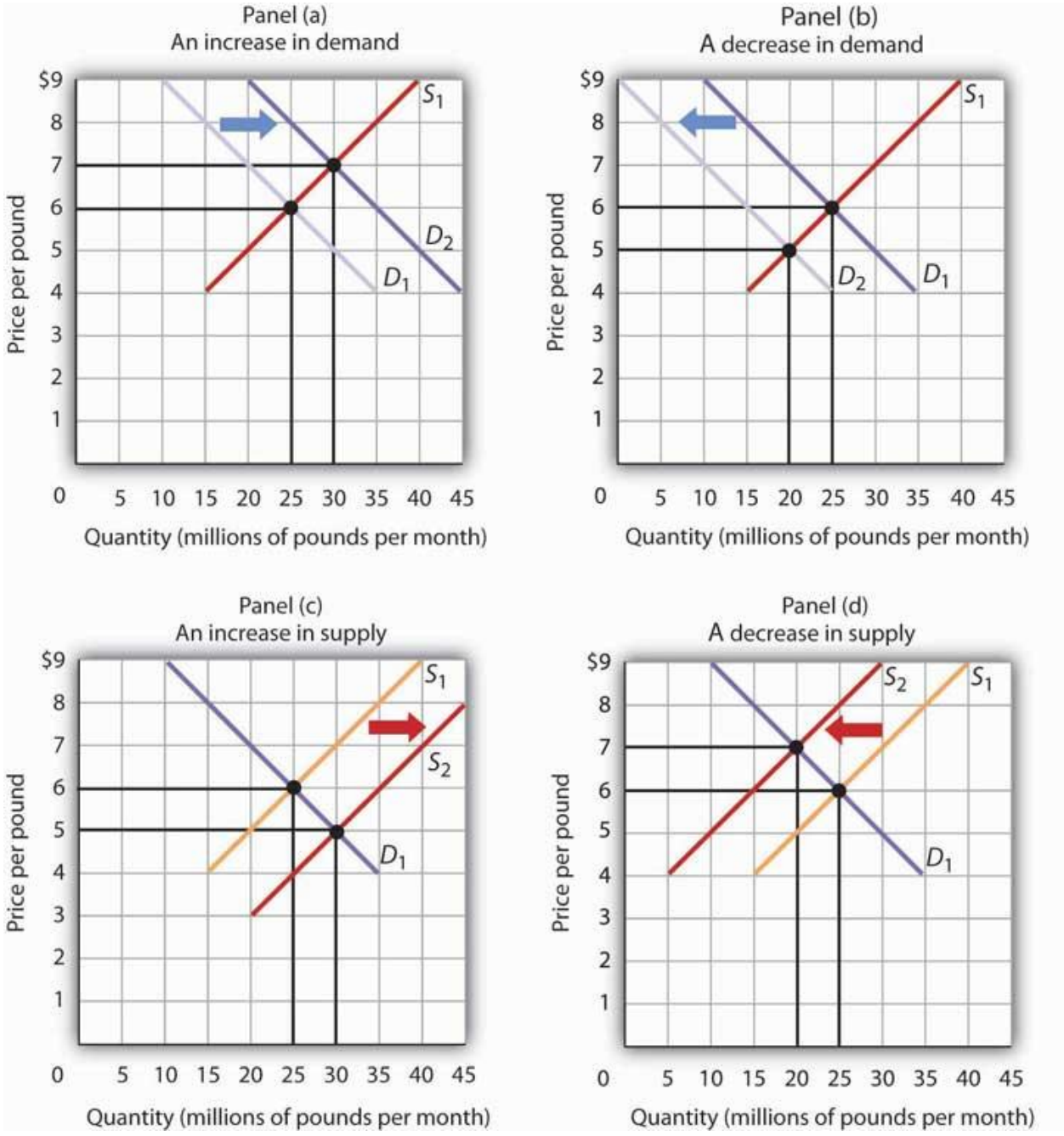

Figure 4.4 Changes in Demand and Supply

A change in demand or in supply changes the equilibrium solution in the model. Panels (a) and (b) show an increase and a decrease in demand, respectively; Panels (c) and (d) show an increase and a decrease in supply, respectively.

A change in one of the variables (shifters) held constant in any model of demand and supply will create a change in demand or supply. A shift in a demand or supply curve changes the equilibrium price and equilibrium quantity for a good or service. Figure 4.4 “Changes in Demand and Supply” combines the information about changes in the demand and supply of coffee presented in Figure 4.2 and 4.3 “An Increase

in Demand" Figure 4.4 (a) "A Reduction in Demand" Figure 4.4(b) "An Increase in Supply" and Figure 4.4(c) "A Reduction in Supply" Figure 4.4(d) In each case, the original equilibrium price is $6 per pound, and the corresponding equilibrium quantity is 25 million pounds of coffee per month. Figure 4.4 "Changes in Demand and Supply" shows what happens with an increase in demand, a reduction in demand, an increase in supply, and a reduction in supply. We then look at what happens if both curves shift simultaneously. Each of these possibilities is discussed in turn below.

An Increase in Demand

An increase in demand for coffee shifts the demand curve to the right, as shown in Panel (a) of Figure 4.4 "Changes in Demand and Supply". The equilibrium price rises to $7 per pound. As the price rises to the new equilibrium level, the quantity supplied increases to 30 million pounds of coffee per month. Notice that the supply curve does not shift; rather, there is a movement along the supply curve.

Demand shifters that could cause an increase in demand include a shift in preferences that leads to greater coffee consumption; a lower price for a complement to coffee, such as doughnuts; a higher price for a substitute for coffee, such as tea; an increase in income; and an increase in population. A change in buyer expectations, perhaps due to predictions of bad weather lowering expected yields on coffee plants and increasing future coffee prices, could also increase current demand.

A Decrease in Demand

Panel (b) of Figure 4.4 "Changes in Demand and Supply" shows that a decrease in demand shifts the demand curve to the left. The equilibrium price falls to $5 per pound. As the price falls to the new equilibrium level, the quantity supplied decreases to 20 million pounds of coffee per month.

Demand shifters that could reduce the demand for coffee include a shift in preferences that makes people want to consume less coffee; an increase in the price of a complement, such as doughnuts; a reduction in the price of a substitute, such as tea; a reduction in income; a reduction in population; and a change in buyer expectations that leads people to expect lower prices for coffee in the future.

An Increase in Supply

An increase in the supply of coffee shifts the supply curve to the right, as shown in Panel (c) of Figure 4.4 "Changes in Demand and Supply". The equilibrium price falls to $5 per pound. As the price falls to the new equilibrium level, the quantity of coffee demanded increases to 30 million pounds of coffee per month. Notice that the demand curve does not shift; rather, there is movement along the demand curve.

Possible supply shifters that could increase supply include a reduction in the price of an input such as labor, a decline in the returns available from alternative uses of the inputs that produce coffee, an improvement in the technology of coffee production, good weather, and an increase in the number of coffee-producing firms.

A Decrease in Supply

Panel (d) of Figure 4.4 “Changes in Demand and Supply” shows that a decrease in supply shifts the supply curve to the left. The equilibrium price rises to $7 per pound. As the price rises to the new equilibrium level, the quantity demanded decreases to 20 million pounds of coffee per month.

Possible supply shifters that could reduce supply include an increase in the prices of inputs used in the production of coffee, an increase in the returns available from alternative uses of these inputs, a decline in production because of problems in technology (perhaps caused by a restriction on pesticides used to protect coffee beans), a reduction in the number of coffee-producing firms, or a natural event, such as excessive rain.

Elasticity of Demand

Elasticity of demand measures the responsiveness of the quantity demanded of a good to a change in its price or other factors.

Types of Elasticity of Demand:

1. Price Elasticity of Demand (PED):

Formula:

$$PED = \frac{\%\ \text{Change in Quantity Demanded}}{\%\ \text{Change in Price}}$$

- Elastic (>1): Demand changes significantly with price.
- Inelastic (<1): Demand changes minimally with price.
- Unitary (1): Proportional change in demand to price.
- Perfectly Elastic (∞): Infinite demand at a specific price.
- Perfectly Inelastic (0): No change in demand with price.

2. Income Elasticity of Demand (YED):

Measures responsiveness of demand to income changes.

$$YED = \frac{\%\ \text{Change in Quantity Demanded}}{\%\ \text{Change in Income}}$$

- Positive for normal goods (e.g., luxury items).
- Negative for inferior goods (e.g., cheap alternatives)

Elasticity of Supply

Elasticity of supply measures the responsiveness of the quantity supplied of a good to a change in its price.

Price Elasticity of Supply (PES):

Formula:

$$PES = \frac{\%\ \text{Change in Quantity Supplied}}{\%\ \text{Change in Price}}$$

- Elastic (>1): Supply responds significantly to price.
- Inelastic (<1): Supply responds minimally to price.
- Unitary (1): Proportional response.
- Perfectly Elastic (∞): Supply is infinite at a specific price.
- Perfectly Inelastic (0): No change in supply with price.

Determinants of Elasticity

Demand:

1. Availability of Substitutes: More substitutes = higher elasticity.
2. Nature of the Good: Necessities are inelastic, luxuries are elastic.
3. Proportion of Income: Higher cost relative to income = elastic demand.
4. Time Period: Demand becomes more elastic over time.

Supply:

1. Production Flexibility: Easily scalable production = elastic supply.
2. Availability of Resources: Limited resources = inelastic supply.
3. Time Frame: Short run = inelastic; long run = elastic.

Let me know if you'd like further explanation on any of these points!

Price Elasticity of Demand and Price Elasticity of Supply

Both the demand and supply curve show the relationship between price and the number of units demanded or supplied**. Price elasticity** is the ratio between the percentage change in the quantity demanded (Qd) or supplied (Qs) and the corresponding percent change in price. The **price elasticity of demand** is the percentage change in the quantity demanded of a good or

service divided by the percentage change in the price. The **price elasticity of supply** is the percentage change in quantity supplied divided by the percentage change in price

We can usefully divide elasticities into three broad categories: elastic, inelastic, and unitary. An **elastic demand** or **elastic supply** is one in which the elasticity is greater than one, indicating a high responsiveness to changes in price. Elasticities that are less than one indicate low responsiveness to price changes and correspond to **inelastic demand** or **inelastic supply. Unitary elasticities** indicate proportional responsiveness of either demand or supply, as Table 4.1 summarizes.

If . . .	Then . . .	And It Is Called . . .
% change in quantity > % change in price	$\frac{\%\text{ change in quantity}}{\%\text{ change in price}} > 1$	Elastic
% change in quantity = % change in price	$\frac{\%\text{ change in quantity}}{\%\text{ change in price}} = 1$	Unitary
% change in quantity < % change in price	$\frac{\%\text{ change in quantity}}{\%\text{ change in price}} < 1$	Inelastic

Table 4.1 Elastic, Inelastic and Unitary, Three cases of elasticity

To calculate elasticity along a demand or supply curve economists use the average percent change in both quantity and price. This is called the Midpoint Method for Elasticity, and is represented in the following equations:

$$\%\text{ change in quantity} = \frac{Q_2 - Q_1}{(Q_2 + Q_1)/2} \times 100$$

$$\%\text{ change in price} = \frac{P_2 - P_1}{(P_2 + P_1)/2} \times 100$$

The advantage of the Midpoint Method is that one obtains the same elasticity between two price points whether there is a price increase or decrease. This is because the formula uses the same base (average quantity and average price) for both cases

Calculating Price Elasticity of Demand

Let's calculate the elasticity between points A and B and between points G and H as **Figure 4.5** shows

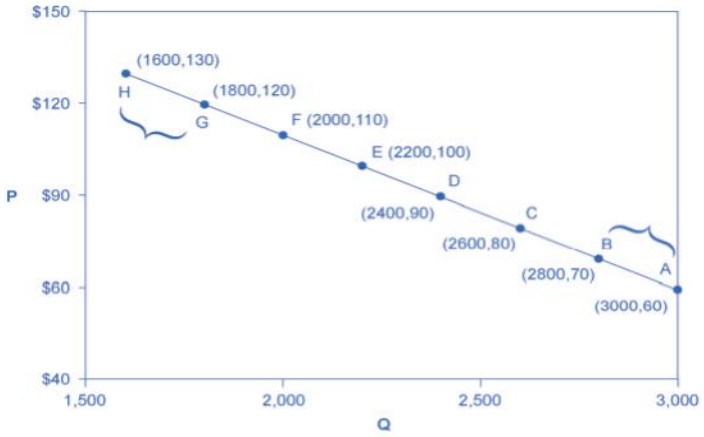

Fig 4.5 We calculate the price elasticity of demand as the ratio of percentage change in quantity to percentage change in price

First, apply the formula to calculate the elasticity as price decreases from $70 at point B to $60 at point A:

$$\begin{aligned}
\text{\% change in quantity} &= \frac{3{,}000 - 2{,}800}{(3{,}000 + 2{,}800)/2} \times 100 \\
&= \frac{200}{2{,}900} \times 100 \\
&= 6.9 \\
\text{\% change in price} &= \frac{60 - 70}{(60 + 70)/2} \times 100 \\
&= \frac{-10}{65} \times 100 \\
&= -15.4 \\
\text{Price Elasticity of Demand} &= \frac{6.9\%}{-15.4\%} \\
&= 0.45
\end{aligned}$$

Therefore, the elasticity of demand between these two points is 6.9% –15.4% which is 0.45, an amount smaller than one, showing that the demand is inelastic in this interval. Price elasticities of demand are always negative since price and quantity demanded always move in opposite directions (on the demand curve). By convention, we always talk about elasticities as positive numbers. Mathematically, we take the absolute value of the result. We will ignore this detail from now on, while remembering to interpret elasticities as positive numbers

This means that, along the demand curve between point B and A, if the price changes by 1%, the quantity demanded will change by 0.45%. A change in the price will result in a smaller percentage change in the quantity demanded. For example, a 10% increase in the price will result in only a 4.5% decrease in quantity demanded. A 10% decrease in the price will result in only a 4.5% increase in the quantity demanded. Price elasticities of demand are negative numbers indicating that the demand curve is downward sloping, but we read them as absolute values. The following Work It Out feature will walk you through calculating the price elasticity of demand.

Calculating the Price Elasticity of Supply

Assume that an apartment rents for $650 per month and at that price the landlord rents 10,000 units are rented as **Figure 4.6** shows. When the price increases to $700 per month, the landlord

supplies 13,000 units into the market. By what percentage does apartment supply increase? What is the price sensitivity?

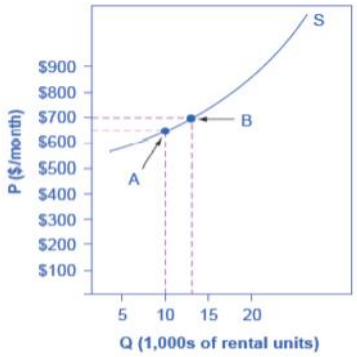

Fig 4.6 We calculate the price elasticity of supply by calculating the ratio of percentage change in quantity to the percentage change in price

Using the Midpoint Method,

$$\begin{aligned}
\%\text{ change in quantity} &= \frac{13{,}000 - 10{,}000}{(13{,}000 + 10{,}000)/2} \times 100 \\
&= \frac{3{,}000}{11{,}500} \times 100 \\
&= 26.1 \\
\%\text{ change in price} &= \frac{\$700 - \$650}{(\$700 + \$650)/2} \times 100 \\
&= \frac{50}{675} \times 100 \\
&= 7.4 \\
\text{Price Elasticity of Supply} &= \frac{26.1\%}{7.4\%} \\
&= 3.53
\end{aligned}$$

Again, as with the elasticity of demand, the elasticity of supply is not followed by any units. Elasticity is a ratio of one percentage change to another percentage change—nothing more—and we read it as an absolute value. In this case, a 1% rise in price causes an increase in quantity supplied of 3.5%. The greater than one elasticity of supply means that the percentage change in quantity supplied will be greater than a one percent price change. If you're starting to wonder if the concept of slope fits into this calculation, read the following Clear It Up box.

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NUMERICALS FOR PRACTICE: ELASTICITY OF DEMAND

(The answers are given in blue)

Q1) For a particulate product, price was reduced from Rs 50 per unit to Rs 48 in order to attract more customers. It was observed that demand for the product subsequently increased from 100 to 110 units. Calculate the price elasticity of demand

ANS: Ep= (ΔQ/ΔP) * P/Q

ΔQ(new-initial)= 110-100= 10 units

ΔP (new - initial) = 48-50 = Rs -2

Ep= 10/-2 * 50/100 = -2.5

The product has a relatively elastic demand

Q2) Find the income elasticity of demand for a consumer if his income rises from Rs 100 to Rs 200 and the quantity of a good purchased by him rises from 25 units to 30 units.

ANS: Ey= (ΔQ/ΔY) * Y/Q

ΔQ= 30 – 25= 5 units

ΔY= 200-100= Rs 100

Ey= 5/100 * 100/25 = 0.2

Q3) The quantity demanded of a commodity increases from 8000 units to 10,000 units due to increase in advertisement expenditure from Rs 6000 to Rs 12000. Find the promotional elasticity of demand

ANS: Ea=(ΔQ/ΔA) * A/Q

ΔQ= 2000

ΔA= 6000

Ea= 2000/6000 * 6000/ 8000

= 0.25. As this value is positive it is beneficial for the firm to undergo the promotional expenditure.

Changes in Income and Prices Affecting Consumption Choices

Key Concepts

Utility: Consumers derive satisfaction (utility) from goods and services. The aim of consumers is to maximize their total utility based on their budget constraints.

Budget Constraint: The limitation on the consumption choices available due to income and prices. It represents all combinations of goods and services that a consumer can purchase given income and prices.

Impact of Income Changes

Normal Goods: When income rises, demand for normal goods increases. For example, as people earn more, they tend to buy more organic foods or luxury items.

Inferior Goods: If income rises, demand for inferior goods typically decreases (e.g., instant noodles, used clothes). Consumers can afford better alternatives.

Income Effect: When consumers' income changes, it affects their purchasing power, which in turn influences demand for products. If income increases, consumers can buy more goods, shifting the demand curve to the right.

Impact of Price Changes

Substitution Effect: When the price of a good falls, it becomes cheaper relative to substitutes, leading consumers to purchase more of it and less of the alternatives. For instance, if the price of chicken decreases compared to beef, consumers may buy more chicken.

Income Effect (related to price): If the price of a good falls, consumers feel richer as they can now purchase the same quantity of goods for a lower expense. This effect can lead to increased consumption of that good.

Demand Curve Shifts: A decrease in price generally increases the quantity demanded, shifting the demand curve to the right, while an increase in price reduces quantity demanded, shifting it to the left.

Indifference Curves and Consumer Choice

Indifference Curves: These curves represent combinations of different goods that provide the same level of utility to the consumer. Changes in income and prices can lead to shifts in how consumers reach an optimal point on these curves.

Optimal Consumption Point: This occurs where the consumer's budget line is tangent to an indifference curve, indicating the best possible combination of goods that maximizes utility given income and prices.

Real-World Application

Policy Implications: Understanding changes in income and prices is critical for policymakers. For instance, stimulus measures that increase income can boost consumption in the economy, while taxes that raise prices may lead to lower consumption temporarily.

Market Research: Businesses analyze how changes in income and prices affect consumer preferences and adjust marketing strategies accordingly.

What is Monopolistic Competition?

Monopolistic competition is a type of market structure where many companies are present in an industry, and they produce similar but differentiated products. None of the companies enjoy a monopoly, and each company operates independently without regard to the actions of other companies. The market structure is a form of imperfect competition.

The characteristics of monopolistic competition include the following:

- The presence of many companies
- Each company produces similar but differentiated products
- Companies are not price takers
- Free entry and exit in the industry
- Companies compete based on product quality, price, and how the product is marketed

Companies in a monopolistic competition make economic profits in the short run, but in the long run, they make zero economic profit. The latter is also a result of the freedom of entry and exit in the industry. Economic profits that exist in the short run attract new entries, which eventually lead to increased competition, lower prices, and high output.

Such a scenario inevitably eliminates economic profit and gradually leads to economic losses in the short run. The freedom to exit due to continued economic losses leads to an increase in prices and profits, which eliminates economic losses.

In addition, companies in a monopolistic market structure are productively and allocatively inefficient as they operate with existing excess capacity. Because of the large number of companies, each player keeps a small market share and is unable to influence the product price. Therefore, collusion between companies is impossible.

In addition, monopolistic competition thrives on innovation and variety. Companies must continuously invest in product development and advertising and increase the variety of their products to appeal to their target makers. Competition with other companies is thus based on quality, price, and marketing.

Quality entails product design and service. Companies able to increase the quality of their products are, therefore, able to charge a higher price and vice versa. Marketing refers to different types of advertising and packaging that can be used on the product to increase awareness and appeal.

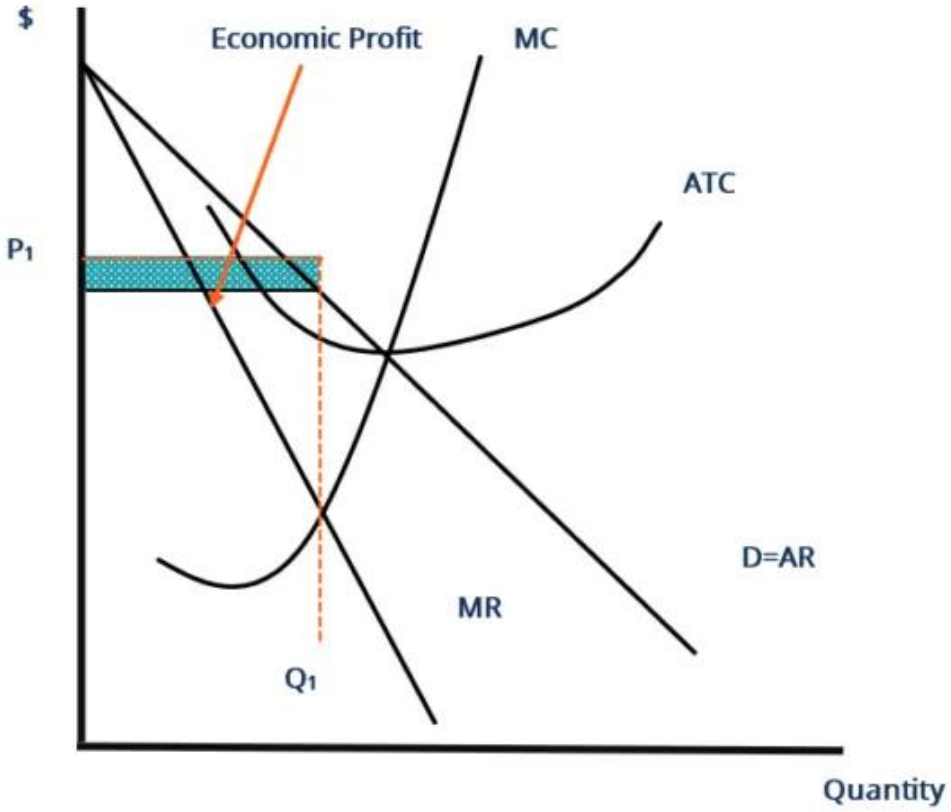
Industries Exhibiting Features of Monopolistic Competition

Examples of industries in monopolistic competition include the following:

- Clothing and apparel
- Sportswear products
- Restaurants
- Hairdressers
- PC manufacturers
- Television services

Short-Run Decisions on Output and Price

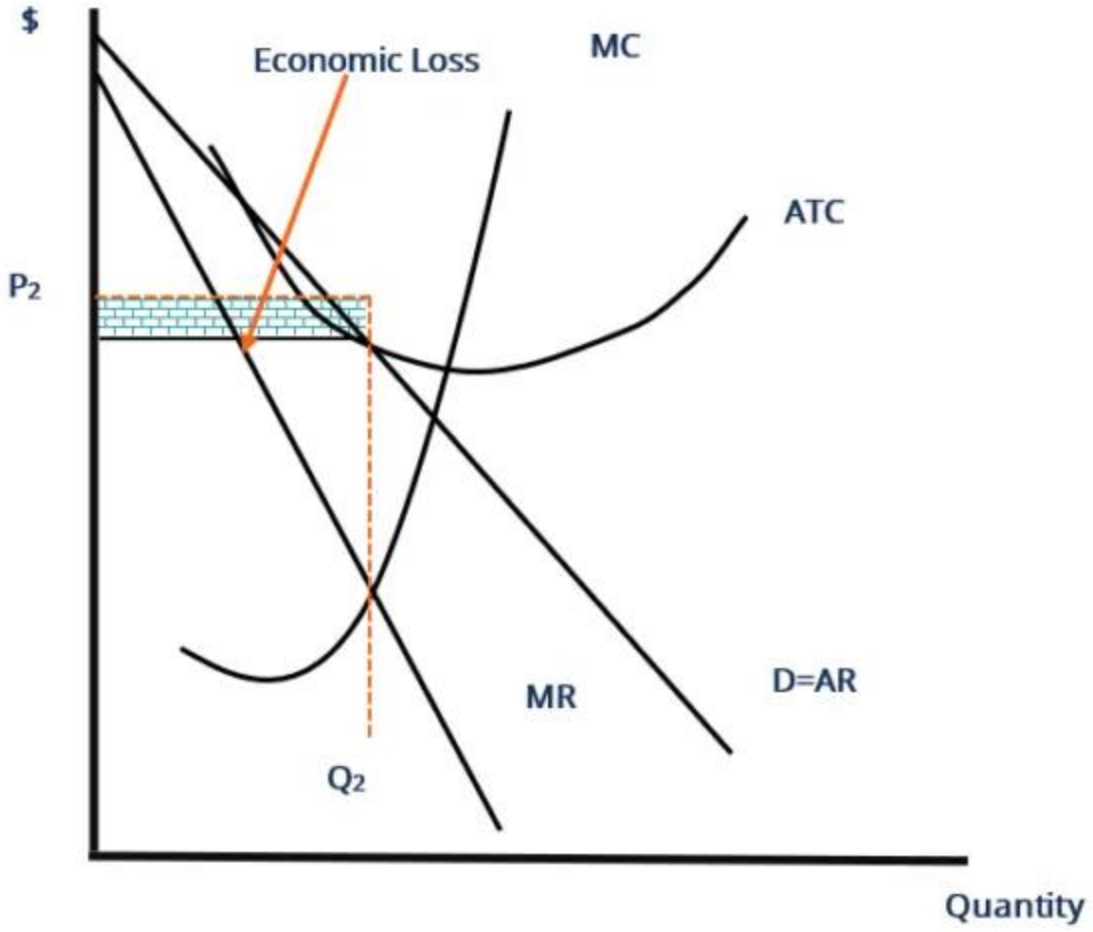
The short-run equilibrium under monopolistic competition is illustrated in the diagram below:



Profits are maximized where **marginal revenue (MR)** is equal to **marginal cost (MC)**. The point determines the company's equilibrium output. The price is determined at a point where the imaginary line from the equilibrium output passes through the point of intersection of the MR, and MC curves and meets the **average revenue (AR)** curve, which is also the demand curve.

Total profit is represented by the cyan-colored rectangle in the diagram above. It is determined by the equilibrium output multiplied by the difference between AR and the **average total cost (ATC)**. Companies in monopolistic competition determine their price and output decisions in the short run, just like companies in a monopoly.

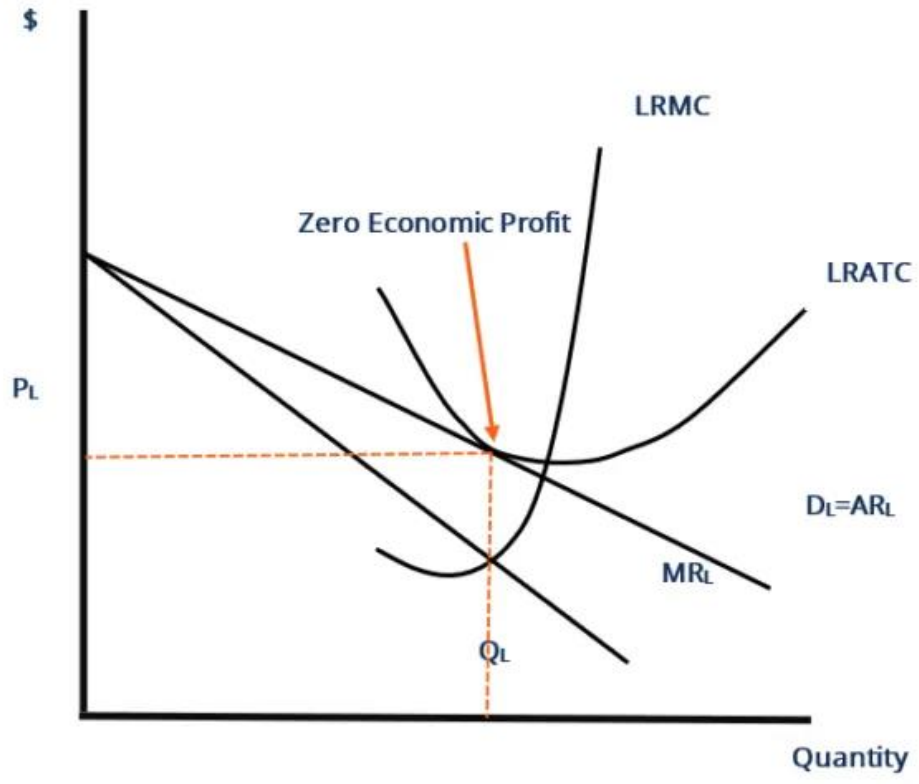
Companies in monopolistic competition can also incur economic losses in the short run, as illustrated below. They still produce equilibrium output at a point where MR equals MC in which losses are minimized. The cyan-colored rectangle shows the economic loss incurred.



Long-Run Decisions on Output and Price

In the long run, companies in monopolistic competition still produce at a level where marginal cost and marginal revenue are equal. However, the demand curve will have shifted to the left due to other companies entering the market. The shift in the demand curve is a result of reduced demand for an individual company's products due to increased competition.

Such action reduces economic profits, depending on the magnitude of the entry of new players. Individual companies will no longer be able to sell their products at above-average cost.



Companies in monopolistic competition will earn zero economic profit in the long run. At this stage, there is no incentive for new entrants in the industry.

Monopolistic Competition vs. Perfect Competition

Companies in monopolistic competition produce differentiated products and compete mainly on non-price competition. The demand curves in individual companies for monopolistic competition are downward sloping, whereas perfect competition demonstrates a perfectly elastic demand schedule.

However, there are two other principal differences worth mentioning – excess capacity and mark-up. Companies in monopolistic competition operate with excess capacity, as they do not produce at an efficient scale, i.e., at the lowest ATC. Production at the lowest possible cost is only completed by companies in perfect competition.

Mark-up is the difference between price and marginal cost. There is no mark-up in a perfect competition structure because the price is equal to marginal cost. However, monopolistic competition comes with a product mark-up, as the price is always greater than the marginal cost.

Inefficiencies in Monopolistic Competition

- The equilibrium output at the profit maximization level (MR = MC) for monopolistic competition means consumers pay more since the price is greater than marginal revenue.
- As indicated above, monopolistic competitive companies operate with excess capacity. They do not operate at the minimum ATC in the long run. Production capacity is not at full capacity, resulting in idle resources.
- Monopolistic competitive companies waste resources on selling costs, i.e., advertising and marketing to promote their products. Such costs can be utilized in production to reduce production costs and possibly lower product prices.
- Since companies do not operate at excess capacity, it leads to unemployment and social despondency in society.
- Inefficient companies continue to exist under monopolistic competition, as opposed to exiting, which is associated with companies under perfect competition.
- Another scope of inefficiency for monopolistic competitive markets stems from the fact that the marginal cost is less than the price in the long run.
- Monopolistic competitive market structures are also allocatively inefficient. Their prices are higher than the marginal cost.

Limitations of Monopolistic Competition Market Structure

- Companies with superior brands and high-quality products will consistently make economic profits in the real world.
- Companies entering the market will take a long time to catch up, and their products will not match those of the established companies for their products to be considered close substitutes. New companies are likely to face barriers to entry because of strong brand differentiation and brand loyalty.

What is an Oligopoly?

The term “oligopoly” refers to an industry where there are only a small number of firms operating. In an oligopoly, no single firm enjoys a large amount of market power. Thus, no single firm is able to raise its prices above the price that would exist under a perfect competition scenario. In an oligopoly, all firms would need to collude in order to raise prices and realize a higher economic profit. Most oligopolies exist in industries where goods are **relatively** undifferentiated and broadly provide the same benefit to consumers.

Why do oligopolies exist?

The biggest reason why oligopolies exist is collaboration. Firms see more economic benefits in collaborating on a specific price than in trying to compete with their competitors. By controlling prices, oligopolies are able to raise their barriers to entry and protect themselves from new potential entrants into the market. This is quite important, as new firms may offer much lower prices and thus jeopardize the longevity of the colluding firms’ profits.

In most markets, antitrust laws exist that aim to prevent price collusion and protect consumers. Nonetheless, firms have devised ways to achieve price collusion without being detected by regulators. For example, firms

might elect a price leader that is tasked with leading changes in prices before other firms follow suit in order to "react to competition." Firms may also agree to change their prices on specific dates; in such cases, the changes may be seen as merely a reaction to economic conditions such as fluctuations in inflation.

How do oligopolies work?

Below is a game theory example that models collusion in a two-firm oligopoly:

		Firm A	
		Collude	Don't Collude
Firm B	Collude	100,100	150,30
	Don't Collude	30,150	50,50

It is important to note that in real-life oligopolies, the games (instances of collusion) are sequential; meaning that one firm's behavior in one game may influence the game's outcome in future periods. In this scenario, we see that the optimal outcome that generates the most cumulative profits occurs if both firms collude. This situation would be the best long-run equilibrium situation that would provide the most benefit to all the firms.

Nonetheless, in this equilibrium, firms have an incentive to cheat and not collude. For example, if both firms agree to set a price of $10, but Firm A cheats and sets prices at $5, Firm A will essentially capture the entire market (assuming little to no differentiation). While this may result in high profits for Firm A in this game, Firm B now knows that Firm A is a cheater and thus will never collude again.

Therefore, the new equilibrium would be the one where neither firms collude and achieve profits that would occur under perfect competition (which is significantly less profitable than colluding). Thus, to realize the best long-run profits, firms in an oligopoly choose to collude.

How to protect consumers from oligopolies?

While some oligopolies do not significantly harm consumers, others do. In such cases, governments can take a range of actions to protect consumers, such as:

Lowering barriers to entry

By incentivizing new companies by providing tax relief, special grants, or other financial aid. New firms that are not part of the collusion agreement will pull the industry closer to a perfect competition state, where prices are lower.

Antitrust laws

Imposing strict penalties for breaching antitrust laws can deter firms from excessive price manipulation. Periodic reviews of the state of competition and extensive market impact studies during M&As will also help keep price collusion in check.

Price ceilings

Price ceilings can be implemented to limit how high prices in an oligopoly are set.