Demand and Supply Analysis

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- Fundamental and powerful tool that can be applied to a wide variety of interesting and important problems.
  - Understanding and predicting how changing world economic conditions affect market price and production
  - Determining how price controls, price supports, taxes, subsidies, tariffs, and import quotas affect consumers and producers.

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Demand

- The quantity demanded of any good is the amount of the good that buyers are willing and able to purchase.
- **Law of Demand**

  Other things being equal, when the price of a good rises, the quantity demanded of the good falls, and when the price falls, the quantity demanded rises.

- **Demand function**

$$Q_D = Q_D(P)$$

Individual Demand Curve

Graphical representation of the quantity demanded as the price per unit changes

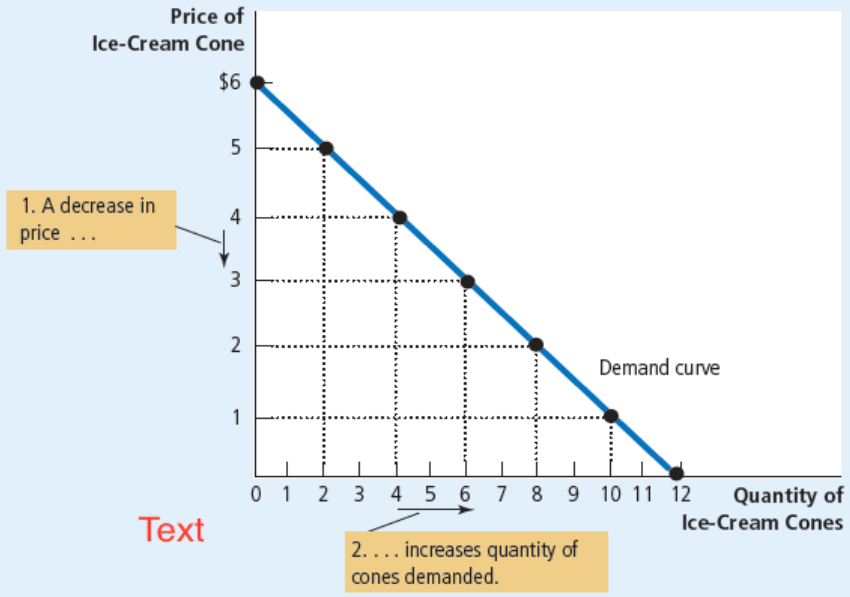
Law of demand ensures that the demand curve is downward sloping; holding other things equal, consumers will want to purchase more of a good as its price goes down.

FIGURE 1

Catherine's Demand Schedule and Demand Curve

The demand schedule is a table that shows the quantity demanded at each price. The demand curve, which graphs the demand schedule, illustrates how the quantity demanded of the good changes as its price varies. Because a lower price increases the quantity demanded, the demand curve slopes downward.

Price of Ice-Cream Cone	Quantity of Cones Demanded
$0	12 cones
1	10
2	8
3	6
4	4
5	2
6	0



Market Demand

A market is a group of buyers and sellers of a particular good or service. The buyers as a group determine the demand for the product, and the sellers as a group determine the supply of the product.

To analyse how markets work, we need to determine the market demand, the sum of all the individual demands for a particular good or service.

Price per packet of brown bread (in $)	Quantity Demanded per Day (million packets)
2.00	2
1.50	4
1.00	6
0.75	7
0.50	8

Market Demand Curve

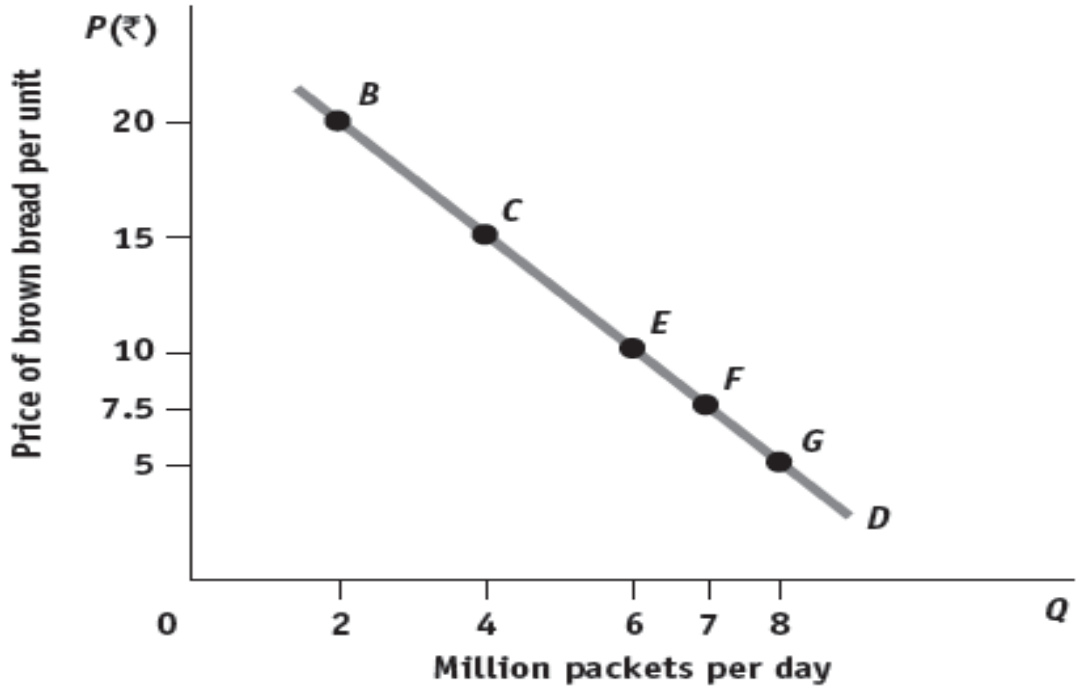


FIGURE 2-1 Market Demand Curve for Brown Bread Market demand curve *D* shows that at lower prices, greater quantities are demanded. This is reflected in the negative slope of the demand curve and is referred to as the "law of demand."

Change in Quantity Demanded

- Consumers buy more of goods with decrease in price of that good. This change occurs along the demand curve.

- Example, if price of burger goes down, consumers demand more burgers.

- This is called change is quantity demanded or movement along demand curve.

Note: This is different from a shift of the demand curve.

Shifts in the Demand Curve

- It occurs when factors other than price of the commodity change
  - Price of related good (substitutes or complements), Income of consumer (normal good, inferior good), Taste or preference of consumer, Expectations
- For example, If income of consumer increases, he demands more ice creams than earlier
- Then the demand of ice creams at each price increases and demand curve shifts towards right.

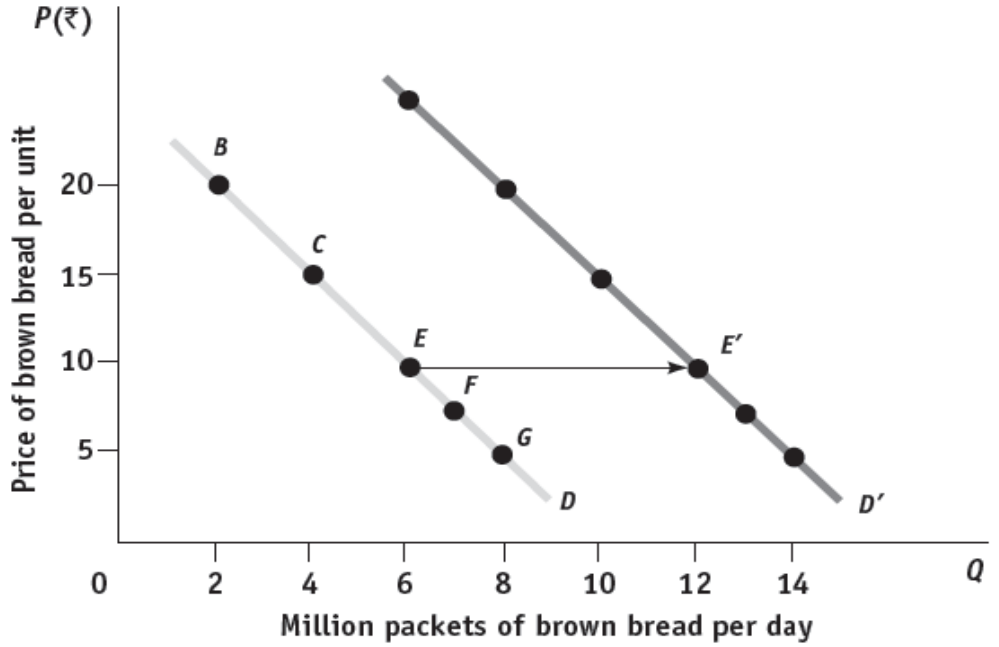


FIGURE 2-2 Change in Demand for Brown Bread Consumers demand more packets of brown bread at each price when the demand curve shifts to the right from *D* to *D'*. Thus, at *P* = ₹10, consumers purchase 12 million packets of brown bread with *D'* instead of only 6 million with *D*.

Pop Quiz

1. The best definition of a market is

a. a store that offers a variety of goods and services.

b. a place where buyers meet and an auctioneer calls out prices.

c. a group of buyers and sellers of a good or service.

d. a venue where the sole supplier of a good offers its product.

Two ways to reduce smoking

- Shifting the demand curve for cigarettes to the left - e.g. public service announcements.
- Increase the price of cigarettes- taxation

Supply

- The quantity supplied of any good is the amount of the good that sellers are willing and able to sell at any point in time.
- Law of Supply

  Other things being equal, when the price of a good rises, the quantity supplied of the good rises, and when the price falls, the quantity supplied falls.

- Supply function:

$$Q_S = Q_S(P)$$

Individual supply curve

Graphical representation of the quantity supplied as the price per unit changes

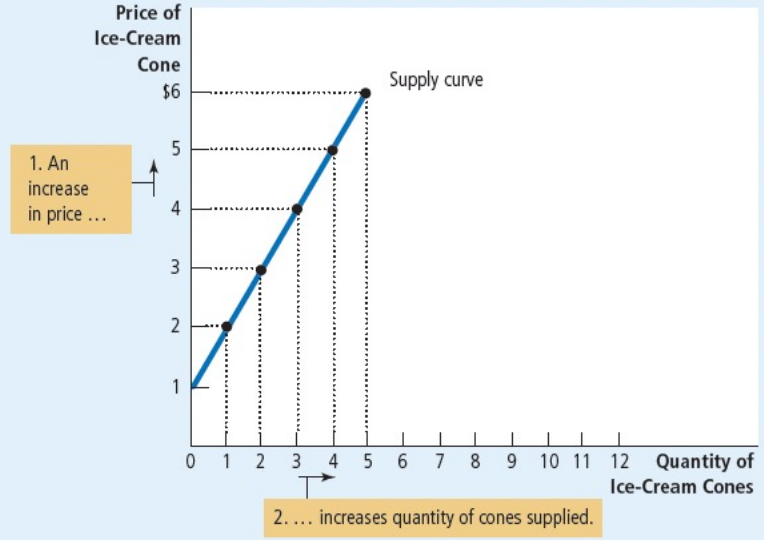
Law of supply ensures that the supply curve is upward sloping; holding other things equal, sellers will want to sell more of a good as its price goes rises.

FIGURE 5

Ben's Supply Schedule and Supply Curve

The supply schedule is a table that shows the quantity supplied at each price. This supply curve, which graphs the supply schedule, illustrates how the quantity supplied of the good changes as its price varies. Because a higher price increases the quantity supplied, the supply curve slopes upward.

Price of Ice-Cream Cone	Quantity of Cones Supplied
$0	0 cones
1	0
2	1
3	2
4	3
5	4
6	5



Market supply

The sum of the supplies of all sellers.

Price per packet of brown bread (in $)	Quantity Supplied per Day (million packets)
2.00	14
1.50	10
1.00	6
0.75	4
0.50	2

TABLE 2-2 Market Supply Schedule for Brown Bread

Market Supply Curve

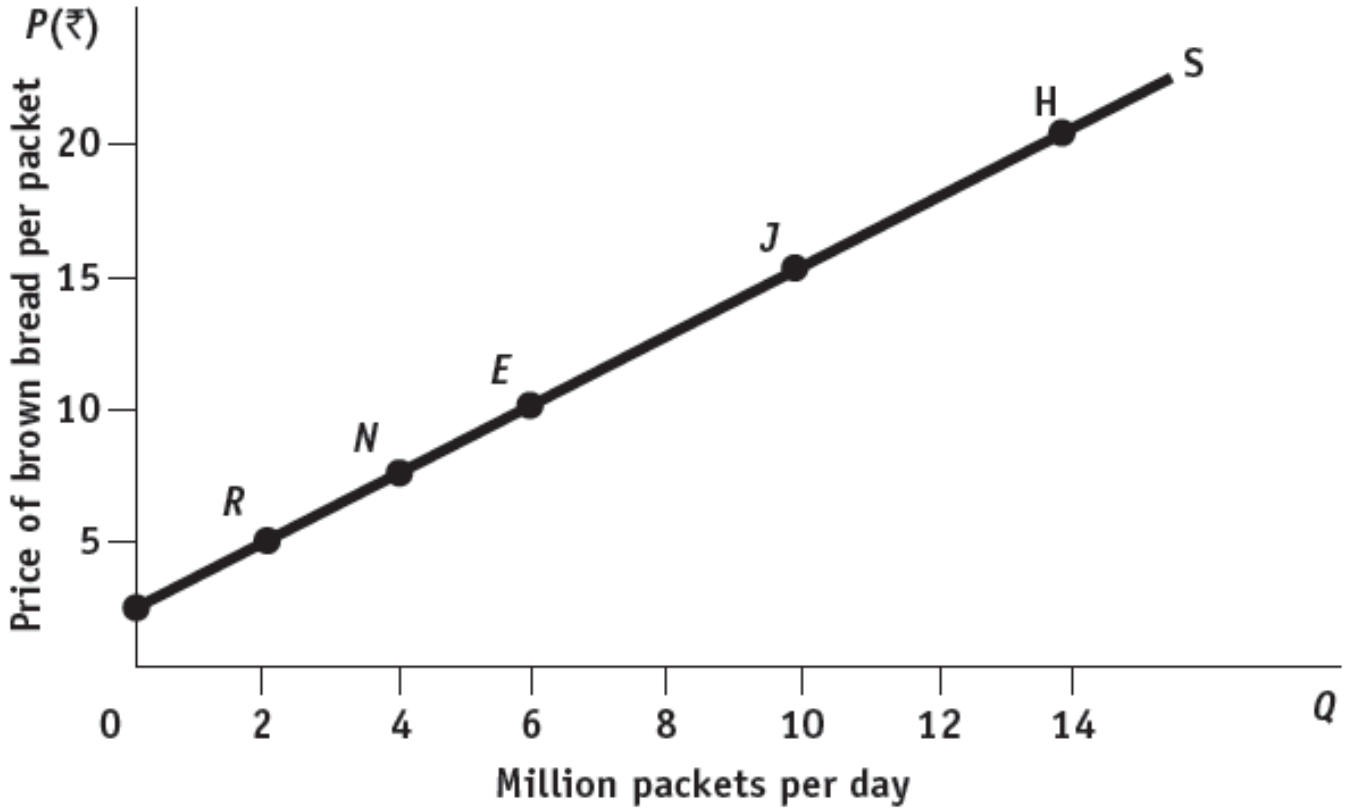


FIGURE 2-3: Market Supply Curve for Brown Bread Market supply curve *S* shows that higher prices induce producers to supply greater quantities.

Change in quantity supplied

- It happens due to change in price of the commodity.
- It is the movement along the supply curve.
- It does not shift the supply curve.

Shift in Supply Curve

- A shift in the supply curve happens due to change in the factors that affect supply other than the price of the commodity
  - Technology, input prices, expectations
- For example, a decline in input prices, like wage rates, makes the commodity cheaper to produce at every price level and sellers would like to produce more.
- Thus, supply curve shifts to the right.

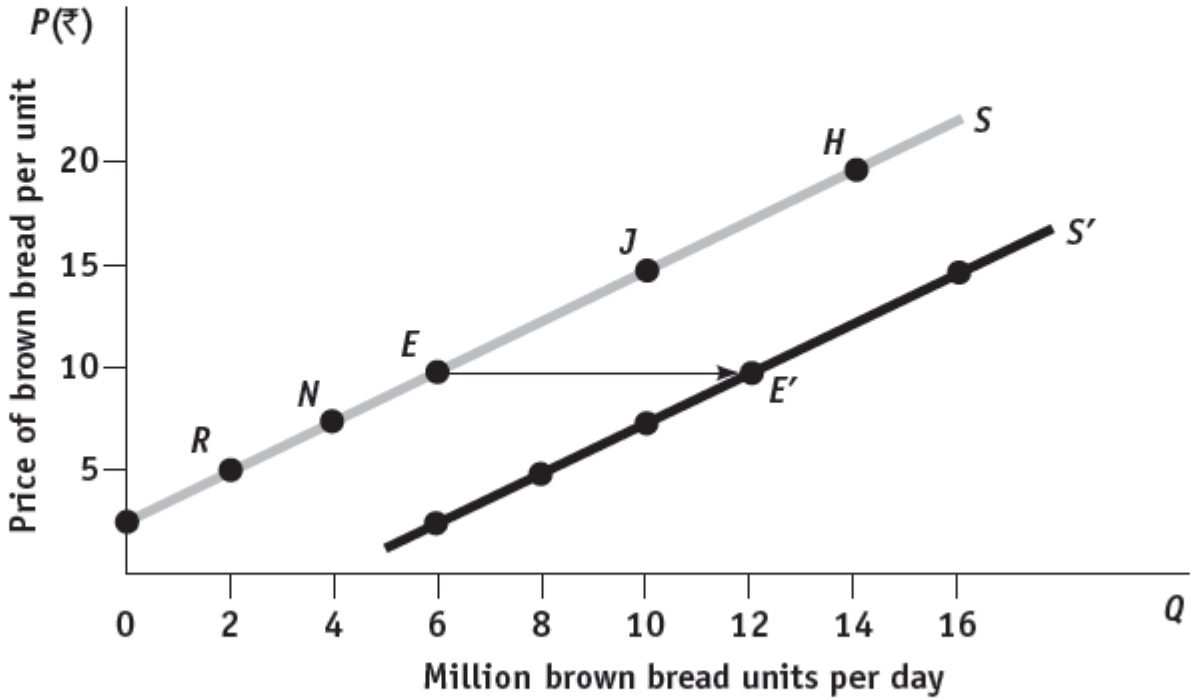


FIGURE 2-4 Change in the Supply of Brown Bread When the supply curve shifts to the right from *S* to *S'*, producers supply more at each price. Thus, at *P* = ₹10, producers supply 12 million packets of brown bread with *S'* instead of only 6 million with *S*.

Market Equilibrium

- Equilibrium Price of a Commodity:
  - The price at which the quantity demanded of the commodity equals the quantity supplied and the market clears.
- Tendency in a free-market economy is for a change in price till the market clears.
- Market mechanism in a free-market economy works with the help of **invisible hand**.
- Invisible hand is nothing but the price mechanism where there is an adjustment in demand and supply without any conscious effort by a visible agency.

Deviation from market equilibrium

- Surplus:
  - Occurs when the quantity supplied exceeds the quantity demanded.
- Shortage:
  - Occurs when the quantity demanded exceeds the quantity supplied.

Market Equilibrium Schedule

Price (in $)	Quantity Supplied	Quantity Demanded	Surplus (+) or Shortage (-)
2.00	14	2	+12
1.50	10	4	+6
1.00	6	6	0
0.75	4	7	-3
0.50	2	8	-6

Market equilibrium (graphically)

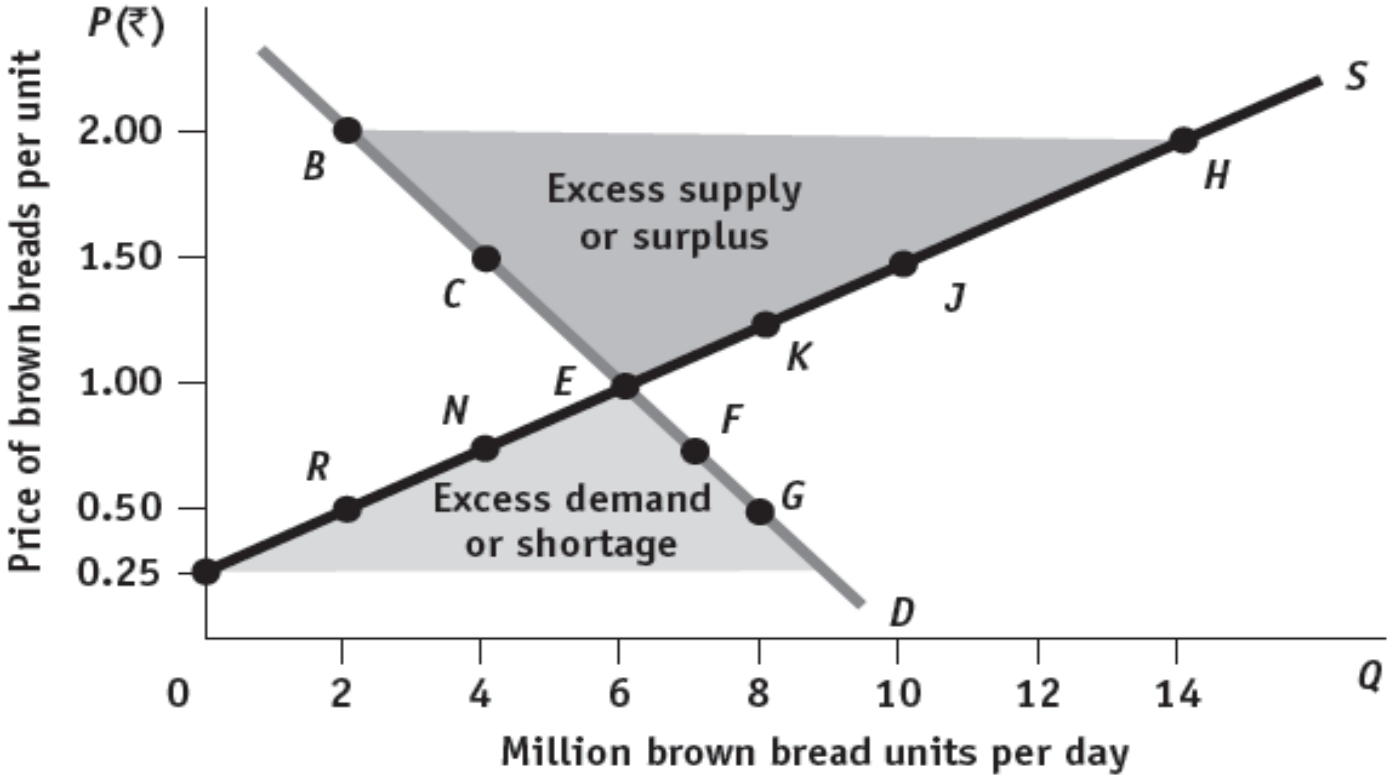


FIGURE 2-5 Demand, Supply, and Equilibrium The intersection of *D* and *S* at point *E* defines the equilibrium price of ₹1 per packet of brown bread and the equilibrium quantity of 6 million packets per day. At *P* greater than ₹1, the resulting surplus will drive *P* down toward equilibrium. At *P* smaller than ₹1, the resulting shortage will drive *P* up toward equilibrium.

Market Equilibrium: Summing up

- The term equilibrium in Economics means that forces working on variables like price and quantity are in balance and there is no tendency for it to change.

- Market equilibrium is reached when the quantity supplied of a good meet the quantity demanded of that good.

- At equilibrium, the sellers are willing to sell their product which is same as the quantity needed by the buyers.

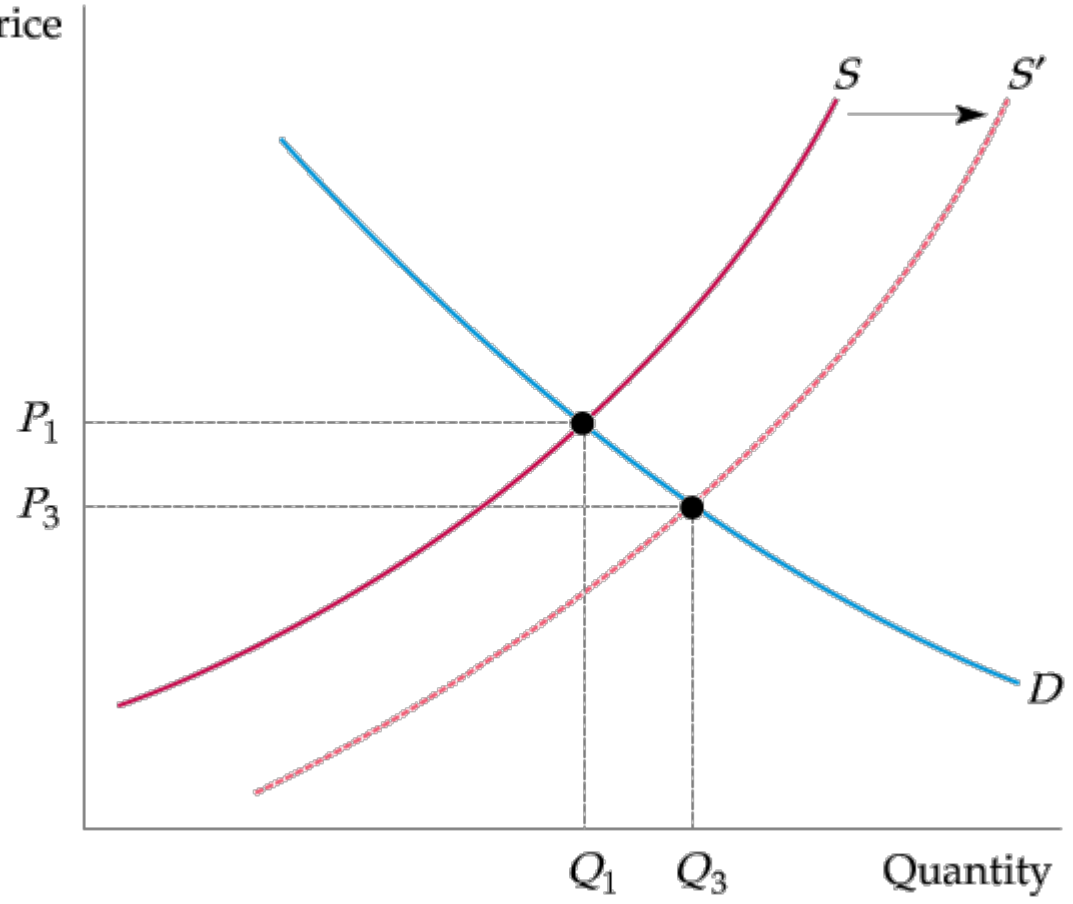
Change in market equilibrium: Comparative Statics

What is the effect of a change in the behaviour of buyers and sellers, and consequently, in demand and supply, on the equilibrium price and quantity?

Changes in Market Equilibrium

New Equilibrium Following Shift In Supply

When the supply curve shifts to the right, the market clears at a **lower price P_3 and a larger quantity Q_3.**



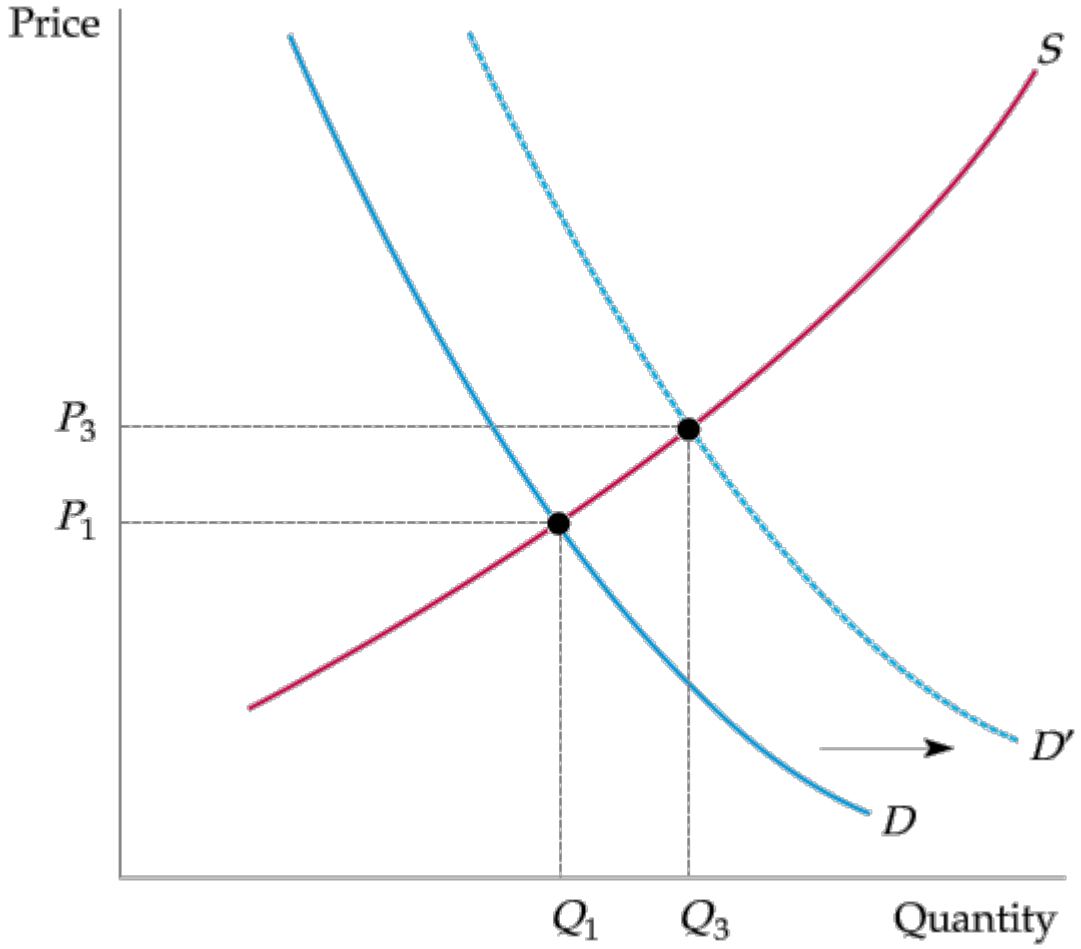
Think and Answer

- Do bumper harvest bring fortune for the farmers?

Changes in Market Equilibrium

New Equilibrium Following Shift In Demand

When the demand curve shifts to the right, the market clears at a **higher price P_3 and a larger quantity Q_3**.



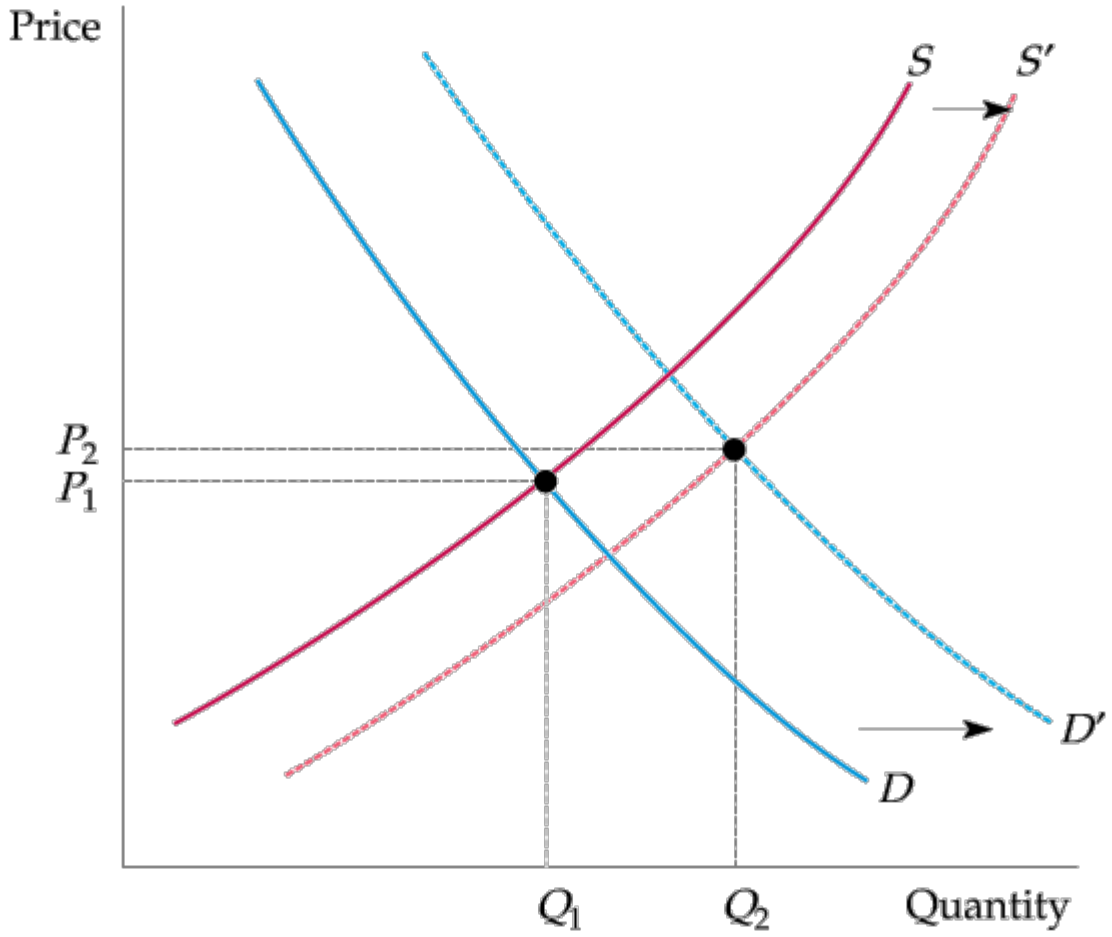
Changes in Market Equilibrium

New Equilibrium Following Shifts In Supply And Demand

Supply and demand curves shift over time as market conditions change

In this example, rightward shifts of the supply and demand curves lead to a **slightly higher price and a much larger quantity**.

In general, changes in price and quantity depend on the amount by which each curve shifts and the shape of each curve.



Three steps for analysing changes in equilibrium

1. Decide whether the event shifts the supply or demand curve (or perhaps both).

2. Decide in which direction the curve shifts.

3. Use the supply-and-demand diagram to see how the shift changes the equilibrium price and quantity

The economic essentials of digital strategy

A supply and demand guide to digital disruption

Consider a situation…

- Consider an insurance company in which the CEO and her top team have reconvened following a recent trip to Silicon Valley, where they went to observe the forces reshaping, and potentially upending, their business.
- The team has seen how technology companies are exploiting data, virtualizing infrastructure, reimagining customer experiences, and injecting social features into everything.

How can digital disruption affect this company?

Who?-Taking stock of which companies can potentially disrupt this business

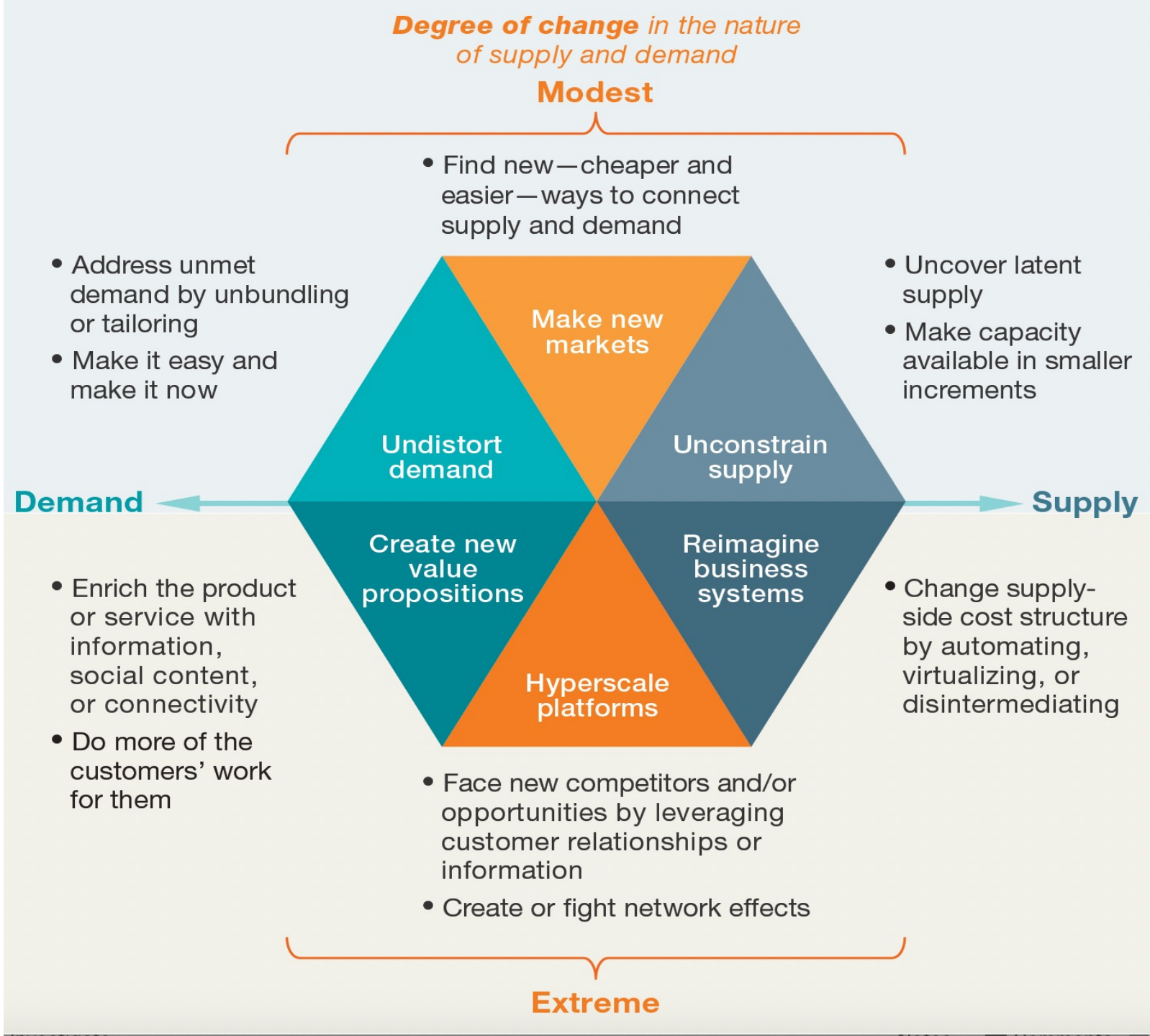
but more importantly….

Why?-the nature of transformation and disruption the company faces.

Demand–Supply Framework

- Explore supply and demand across a continuum-extent to which their underlying elements change
- This helps reveal the two primary sources of digital transformation and disruption:
  A. Realigning new markets
  B. Extreme shifts: Hyperscaling platforms
- Provide a measure of a company's exposure to a threat or a window of opportunity

Digitalisation can disrupt industries when it changes the nature of demand, supply or both



Realigning markets

Unmet demand and escalating expectations

- Today's consumers are empowered by technology, seeking convenience, choice, and affordability.
- Technology reshapes products/services and how consumers use them, addressing unmet needs.
- Rising customer expectations demand best-in-class user experiences across all interactions.
- Consumer experiences set new standards, influencing demand across industries.
- Customers expect free or low-cost options, challenging traditional business models.
- Adapting to consumer preferences is essential for business survival in the digital era.

Indicators of potential disruption?

A business model may be vulnerable if:

- Its customers have to cross-subsidize other customers.
- Its customers have to buy the whole thing for the one bit they want.
- Its customers can’t get what they want where and when they want it.
- Its customers get a user experience that doesn’t match global best practice.

Exposing New Supply

- Digitization enables new sources to enter product and labor markets, previously inaccessible.
- "Software eats the world," allowing companies to liberate supply from underutilized assets.
- Examples:
  - Airbnb unlocked lodging supply.
  - P&G uses crowdsourcing for innovation.
  - Amazon Web Services offers scalable infrastructure.
  - Number26, a digital bank, utilizes digital processes, replacing human labor.
- Digitization facilitates accessing and utilizing new supply closer to its maximum rate.

Indicators of potential disruption?

- Customers use the product only partially.
- Production is inelastic to price.
- Fixed costs are high.

Matching latent demand with unused supply: A new market!

Market Opportunity

- Previously unused supply and latent demand present opportunities for market makers to connect and create matches.
- Market makers can disrupt incumbents or eliminate them entirely by facilitating these connections.

Examples:

- Wikipedia unleashed latent supply by unbundling products, making information accessible and elastic.
- Google's AdWords reduces search costs for both users and advertisers, enhancing connectivity in the digital marketplace.

A company may be vulnerable to new markets if it has any of these:

- high information asymmetries between customers and suppliers
- high search costs
- fees and layers from intermediaries
- long lead times to complete transactions

Extreme Shifts

New and enhanced value propositions

- Purifying supply and demand involves offering customers what they've always wanted but in more efficient ways.
- Market evolution leads to escalating customer expectations and the emergence of new value propositions.
- Advanced smartphones, for instance, fulfilled a latent desire for portable Internet access.
- Digital companies offer unprecedented functionality and experiences, undistorting demand and introducing enhanced propositions.
- Many new propositions bridge the digital and physical worlds, leveraging connectivity and data abundance.
- Examples include Philips' digital apps for lighting solutions, Google's Nest for home thermostats, and FedEx's real-time delivery insights.

Indicators of potential disruption

- Information or social media could greatly enrich a product or service.
- A company offers a physical product, such as thermostats, that's not yet "connected."
- There's significant lag time between the point when customers purchase its product or service and when they receive it.
- The customer has to go and get the product—for instance, rental cars and groceries.

Reimagined business systems

- Delivering new value propositions requires reimagining underlying business systems.
- New entrants often introduce disruptive ways to monetize, stunning industry incumbents focused on traditional value chains.
- Examples:
  - Amazon transformed storage from a product to a service, challenging traditional hard-drive makers.
  - Dropbox offered free online storage, shaking up the storage industry's value structure.
- These changes enable step-change reductions in costs and shift products towards services, transforming scalability and cost structures.
- Effective incumbents adapt by developing innovative solutions

  Examples: Liberty Mutual, The New York Times, Walmart and Zara

Indicators of potential disruption

- Redundant value-chain activities, such as a high number of handovers or repetitive manual work
- Well-entrenched physical distribution or retail networks
- Overall industry margins that are higher than those of other industries

Hyperscaling Platforms

- Massive operating leverage from process automation, algorithms, and network effects created by interactions of millions or billions of users, customers, and devices.
- Distinct goals compared to traditional industry players, leveraging operating leverage for upselling and cross-selling products and services without human intervention.
- Examples:
  - Amazon introduced the Kindle to sell books and Amazon Prime subscriptions, demonstrating flexibility in pricing compared to rivals.
  - Failure to anticipate moves by players outside their ecosystems can lead to industry disruption, as seen with camera makers in the smartphone revolution.

Indicators of potential disruption?

- Existing business models charge customers for information.
- No single, unified, and integrated set of tools governs interactions between users and suppliers in an industry.
- The potential for network effects is high.

Summary: Coming back to the insurance company…

- *Starting with supply and demand fundamentals provides a deeper understanding of digital opportunities and threats.*

  -Investment in direct, lower-cost distribution prepared insurance executives for eroding cross-subsidies and evolving customer expectations.

  -Fundamental thinking about car ownership, driving, customer expectations as well as competitors

- *Evolving Customer Expectations*
  - -Customers increasingly expect tailored insurance based on precise car use and location, challenging traditional pricing models.
  - -Instant feedback through telematics shifts focus from demographics to driving quality.

- *Access to Information*
  - -Access to information about car usage and driving habits becomes crucial for underwriting insurance.
  - -Companies across industries must adapt to gather and profit from relevant information to stay competitive in a rapidly evolving landscape.