

# Demand and Supply

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# Why Demand

- In the previous class we understood that economic agents specialize in the production in which it has comparative advantage. This holds for firms also.
- **Question:** In what terms the producers should exchange goods that they have produced?
- The terms of exchange is determined by the interaction of the consumer and producer of a good and services in the market.
- **Question:** What is Market? Does every economic good or service have a market?
- What is the difference between marketable activity and economic activity?

# Who Demand's

- In microeconomics economics we are mainly concerned with the demand faced by firms.
- The demand faced by the firms depends on
  - ① Total demand in the industry. (Number of consumer in the industry and their market power)
  - ② Type of Industry and number of producers in the industry
- Individual Demand: Amount of goods or services each individual agents wants to consume give price of the good or the service
- Demand of a commodity arises from
- Consumer's willingness
- Ability to purchase goods

# Law of Demand

*“The Law of Demand states that quantity demanded of a good is inversely related to its price other things remaining constant.*

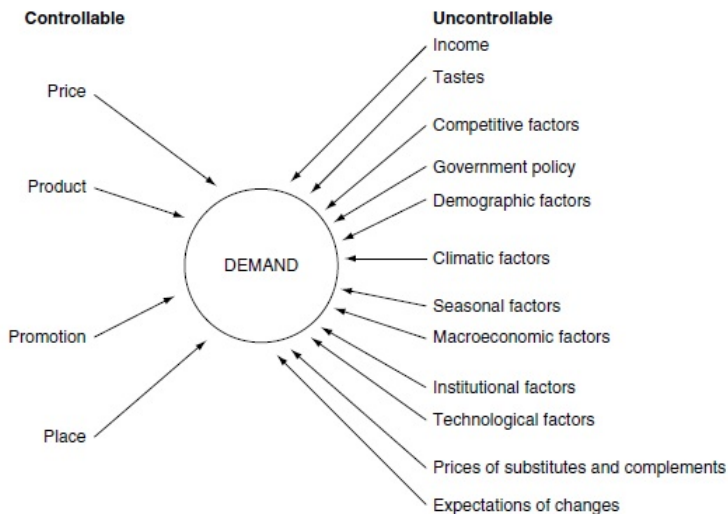
- Why Demand Curve is Negatively Sloped
  - ▶ Substitution Effect
  - ▶ Income Effect
- Example of a demand equation

$$Q_x^D = a + bP_x + \theta \quad \text{Linear Demand Function}$$

$$Q_x^D = AP_x^\alpha \quad \text{Iso-Elastic.}$$

- What are the factors that affects the demand of a good.

# Factors Affecting Demand



# Demand Curve Faced by Firms

- Demand Curve Faced by a particular firm depends on the
  - ▶ Size of the Market
  - ▶ Industry's Organization
- **Price Taker**
  - ▶ Perfect Competition
- **Price Setter**
  - ▶ Monopoly
  - ▶ Monopolistic Competition
  - ▶ Oligopoly

Some markets have only one seller, and this seller sets the price. Such a seller is called a monopoly.

Some markets fall between the extremes of perfect competition and monopoly. One such market, called an oligopoly, has a few sellers that do not always compete aggressively

# Demand Functions

$$Q_x^D = f(P_x, P_Y, M, \Theta)$$

$$\frac{\partial Q_x^D}{\partial P_x} < 0 \quad \text{Law of Demand}$$

$$\frac{\partial Q_x^D}{\partial P_y} > 0 \quad \text{Gross Substitutes} \quad \text{Text}$$

$$\frac{\partial Q_x^D}{\partial P_y} < 0 \quad \text{Gross Complements} \quad \text{as the price complement rises the demand of complement decreases hence demand of original prod also decreases}$$

$$\frac{\partial Q_x^D}{\partial M} > 0 \quad \text{Normal Goods} \quad \text{with increase in income demand curve shift right if commodity is normal}$$

$$\frac{\partial Q_x^D}{\partial M} < 0 \quad \text{Inferior Goods} \quad \text{when income falls people shift to less expensive goods ie inferior goods}$$

$$Q_x^D = \alpha + \beta P_x + \gamma P_y + \eta M + \Theta \quad \text{Linear Demand Function}$$

## Example-1

Japan saw many business failures. Even business that traditionally do well during recession like beer brewing industry, were hit hard. Analyst blame the downturn in the beer market due to two factors.

- Japanese income declined following recession.
- Beer tax.

As a result top Japanese breweries such as Kirin and Sapporo experienced sharp decline in domestic sales. Meanwhile their competitors-Asahi-touted double digit growth and increase in market share.

**Question:** What are the possible reason to the increase in the growth of Asahi's beer sold?

as income fall people tend to buy cheaper inferior goods



# Law of Supply

- Amount of goods or services offered for sale in a market during a period of time is called quantity supplied denoted by  $Q_x^S$

*“The Law of Supply states that quantity supplied of a good is directly related to its price other things remaining constant.”*

# Law of Supply

## ● Factors affecting Supply

- ▶ Cost of Production      cost of production increases quantity produced drops
- ▶ Production substitutes and Complements
  - ★ Production Substitutes      if price of substitute increases then quantity of original prod will fall  
producer will try to make more substitute to increase its profit
  - ★ Production Complements      if price of compliment increases then prod of good increases
- ▶ Technology      as tech advances more quantity can be produced at same price
- ▶ Taxes
  - ★ Excise Tax
  - ★ *Ad volerem* Tax

Text

# Equilibrium

- Excess Demand:  $ED = D(P_x, P_y, M, \Theta) - S(P_x, P_z, C_p, \Delta)$
- Auctioneer: Changes the Price
- Price Adjustment Process

$$\frac{\partial ED}{\partial P_x} < 0$$
$$\frac{\partial D}{\partial P_x} - \frac{\partial S}{\partial P_x} < 0$$

- Comparative Statics

## Example-II

because demand curve of bpl people and supply curve of treatment do not intersect

- Why the Patients below the poverty line are consulted for free in many Government hospitals in India?
- Is it really free? no it is just subsidised so that supply curve would shift to left and intersect the demand curve  
opposite effect of taxation
- If no then who pays the cost and how much?  
Text

## Example-III

*“It is commonly observed that the medical expenditure of the poor in India is higher than the rich.”*

- Can we conclude from the above observation that the poor are more health conscious than the rich in India?

no we can not conclude that poor are more health conscious  
their health condition is bad (as they only go for check up if the disease get serious)  
bad health condition has more cost

## Example-IV

Suppose you are a manager of a travel department that is in charge of scheduling the travel plans of sales team. The sales team makes substantial use of air travel to call on customers. The president of the corporation wants you to reduce the travel expenditure from last year. Recently you had read about two events in the Wall Street Journal.

- In the last couple of years number of new budget airlines has increased operation but last year due to economic crunch many of these airlines has stopped operation.
- Broadband internet video conferencing is becoming a popular, cost-effective alternative to business travel for many corporations. The trend is expected to accelerate in the present year as telecommunications firms begin cutting prices on teleconferencing rates.

budget airline and internet service are substitute of each other

# Application

## Questions from previous case

- Given the new developments what action you will take to reduce the expenditure in the air travel? *do video conferencing*
- Given the strategy taken by you can you ascertain that it will decrease the expenditure on the airline expenditure?

## Application

- How international Price is determined

# Taxes

- Market Equilibrium without taxes. The inverse demand function and the supply function

$$P_D = D(Q)$$

$$P_S = S(Q)$$

- If tax is imposed the supplier increases the price by the amount of tax.

$$P_{Tax}^S = P_S + \text{Tax}$$

- Market Equilibrium

$$P_{Tax}^S = P^D$$

- This is similar to

$$P^S = P_D - \text{Tax}$$

- So, taxing a consumer is similar to collecting the tax from the seller



## Example-V-Minimum Support Price

The Commission on Agriculture Cost and Prices (CACP) advises the Government of India on the Minimum Support Prices (MSP) on various crop. The Government of India purchases these crops at a specifies MSP so that the market price do not falls below the MSP. An alternative policy is that the Government provides subsidy for per unit of output, so that the farmer get the MSP. Suppose the inverse Market Demand and Supply of wheat is given to be

$$P_S = 2Q_S$$
$$P_D = 300 - Q_D$$

Suppose the quantity is measure in metric tonnes and price is Rs/metric tonnes. The government is considering two possible price support policies- A and B

- Government buys enough wheat so that the price of Rs.220 is maintained
- Government subsidizes wheat Rs.  $x$ /metric ton so that the price is maintained at Rs. 220 per metric ton

## Example-V-Question

- How much wheat the government buy in the first policy? 30
- What is the cost to the government in implementing the first policy?  $30 \times 220$
- How much subsidy is needed if the farmers are to receive Rs.220 per metric tone? 30 per tone
- What is the cost to the government in the second policy?  $30 \times 110$

# Elasticity of Demand

- One of the most important concept in the Managerial economics is the concept of Elasticity of Demand
- It measures the percentage change of demand due to the change in any factor that affect the quantity demanded.
- Own Price Elasticity of demand is the percentage in the demand due to one unit change of the demand

$$E_{P_x} = - \frac{\% \text{Change in Demand}}{\% \text{Change in Own Price}}$$

- Different measure of Elasticity
  - ▶ Arc Elasticity
  - ▶ Point Elasticity

# Elasticity of Measures



$$|E_{P_x}| \rightarrow \infty \Rightarrow \text{Perfectly Elastic}$$

$$1 < |E_{P_x}| < M \Rightarrow \text{Elastic}$$

$$|E_{P_x}| = 1 \Rightarrow \text{Unitary Elastic}$$

$$0 < |E_{P_x}| < 1 \Rightarrow \text{Inelastic}$$

$$|E_{P_x}| = 0 \Rightarrow \text{Perfectly Inelastic}$$

- The Elasticity of demand is not constant along the demand curve.  
*Illustrate using a linear Demand Curve*
- Relationship between Elasticity and the Marginal Revenue Curve.  
*Illustrate Using a Linear Demand Curve*

# Factors Affecting the Own Price Elasticity of a Good

- Availability of Substitutes
- Percentage of Consumer's Budget
- Time Period of Adjustment

less expensive goods like salt which have little impact on consumer budget are inelastic

In the short run, supply and demand are inelastic,

In the long run, supply and demand are elastic,