Demand and Supply

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Why Demand

- In the previous class we understood that economic agents specializes 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 has 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 has 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

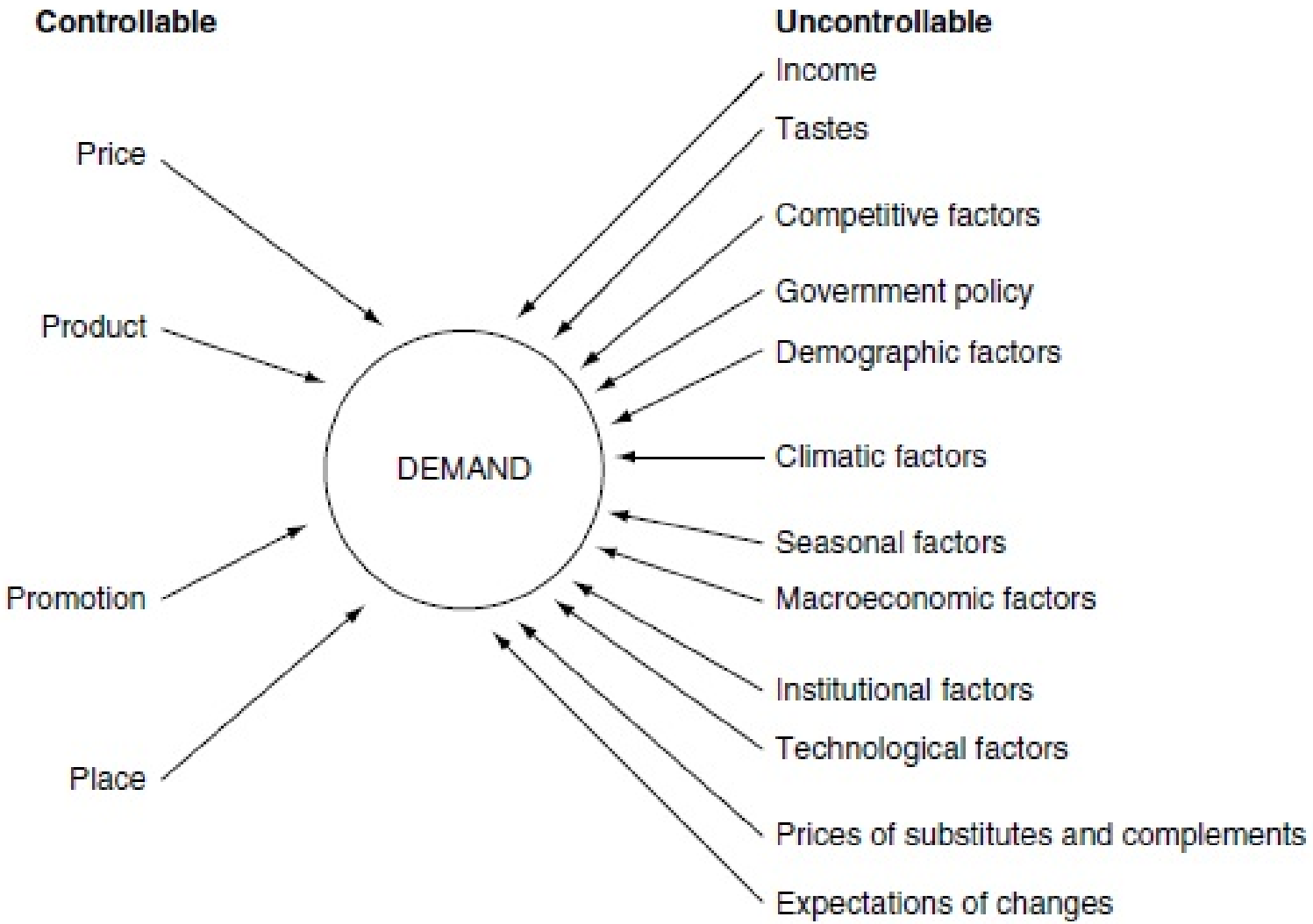
"The Law of Demand states that quantity demanded of a good is inversely related to its price other things remaining constant.

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

$$\begin{aligned} Q_x^D &= a + bP_x + \theta \text{ Linear Demand Function} \\ Q_x^D &= AP_x^{\alpha} \text{ Iso-Elastic.} \end{aligned}$$

- 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 firms Firm depends on the
  - Size of the Market
  - Industry's Organization
- **Price Taker**
  - Perfect Competition
- **Price Setter**
  - Monopoly
  - Monopolistic Competition
  - Oligopoly

Concepts

- Difference between **"Change in quantity demanded"** and **"Change in Demand"**
- *Diagram of these differences*
- *Difference between* **normal good** *and* **inferiror goods**
- *Diagram of these differences*
- **Gross Substitutes** *and* **Gross Complement**
- *Diagram of these differences*

Demand Functions

$$
\begin{aligned}
Q_x^D &= f(P_x, P_{\mathbf{Y}}, M, \Theta) \\
\frac{\partial Q_x^D}{\partial P_x} &< 0 \quad \text{Law of Demand} \\
\frac{\partial Q_x^D}{\partial P_y} &> 0 \quad \text{Gross Substitutes} \\
\frac{\partial Q_x^D}{\partial P_y} &< 0 \quad \text{Gross Complements} \\
\frac{\partial Q_x^D}{\partial M} &> 0 \quad \text{Normal Goods} \\
\frac{\partial Q_x^D}{\partial M} &< 0 \quad \text{Inferior Goods} \\
Q_x^D &= \alpha + \beta P_x + \gamma P_y + \eta M + \Theta \quad \text{Linear Demand Function}
\end{aligned}
$$

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?

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
  - Production substitutes and Complements
    - ★ Production Substitutes
    - ★ Production Complements
  - Technology
  - Taxes
    - ★ Excise Tax
    - ★ *Ad volerem* Tax

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 Satics

Comparative Statics

Let P^e: Equilibrium Price and Q^e:Equilibrium Quantity in a market

- What happens to P^e and Q^e as demand increases but supply remains constant
- What happens to P^e and Q^e as demand remains constant but supply increases
- What happens to P^e and Q^e as demand increases and supply increase

Practice Yourself

- What happens to P^e and Q^e as demand increases but supply decreases
- What happens to P^e and Q^e as demand decreases but supply increases

Concepts

- Derivation of the Market demand curve from the individual demand curve in the market
- What is the total society's benefit from a market transaction
  - What is Consumer Surplus
  - What is Producer Surplus
  - What is the total market surplus
- Why some goods are free and why some some consumer cannot access the market?

Example-II

- Why the Patients below the poverty line are consulted for free in many Government hospitals in India?
- Is it really free?
- If no then who pays the cost and how much?

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?

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.

Application

Questions from previous case

- Given the new developments what action you will take to reduce the expenditure in the air travel?
- 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

$$\begin{aligned} P_D &= D(Q) \\ P_S &= S(Q) \end{aligned}$$

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

$$P^S_{Tax} = P_S + \text{Tax}$$

- Market Equilibrium

$$P^S_{Tax} = P^D$$

- 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

- Policy A: Government buys enough wheat so that the price of $Rs.220$ is maintained
- Policy B: 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 Policy A?
- What is the cost to the government in implementing the Policy A?
- How much subsidy is needed if the farmers are to receive Rs.220 per metric ton in Policy B?
- What is the cost to the government in the Policy B?

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

- $$\begin{aligned} |E_{P_x}| &\rightarrow \infty \Rightarrow \text{Perfectly Elastic} \\ 1 < |E_{P_x}| &< M \Rightarrow \text{Elastic} \\ |E_{P_x}| &= 1 \Rightarrow \text{Unitary Elastic} \\ 0 < |E_{P_x}| &< 1 \Rightarrow \text{Inelastic} \\ |E_{P_x}| &= 0 \Rightarrow \text{Perfectly Inelastic} \end{aligned}$$

- 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*
- It two linear demand curve intersects at the point, the elasticity of the demand curve at the intersection point will be higher for that demand curve which is flatter
- Elasticity of the supply curve passing through the origin is alwasy one

Factors Affecting the Own Price Elasticity of a Good

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