

ENGINEERING ECONOMICS

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WHAT IS ECONOMICS?

- **Economics** is a social science that studies the production, distribution, and consumption of goods and services.
- Alfred Marshall- “Economics is a study of man in the ordinary business of life. It enquires how he gets his income and how he uses it. Thus, it is on the one side, the study of wealth and on the other and more important side, a part of the study of man”.
- Economics focuses on the behavior and interactions of economic agents and how economies work.

PEOPLE RESPOND TO INCENTIVE

An incentive is something (the prospect of a punishment or reward) that induces a person to act in a certain manner

Primary School - To avoid parents coming late, what could have been done?

WHY IS IT IMPORTANT TO ANALYSE THE IMPACT OF INCENTIVE?

TAX

SUBSIDIES

RATIONALITY

PEOPLE FACE TRADE OFF

OPPORTUNITY COST

MARKETS ARE EFFICIENT

SYLLABUS

- **Ten Principles of Economics**
- **Thinking like an Economist**
- **Market Forces of Demand & Supply**
- **Elasticity and its Applications**
- Consumer, Producer and Efficiency of Markets
- Cost of Production
- Market Structure
- Measuring a nation's income
- Measuring the cost of living
- The Monetary System
- Public Economics-Externalities, Public Goods, and tax system
- Open Economy and basic concepts

TH

The Hindu

<https://www.thehindu.com> > ... > ICC World Cup

India-Aus World Cup Final match creates record peak ...

20 Nov 2023 — India-Aus WC Final sets record peak viewership of **5.9 cr** on Disney+Hotstar. Surpassing 5.3 cr peak concurrency in India-NZ semi-final.

bt

Business Today

<https://www.businesstoday.in> > LATEST > Trends

IPL 2023 records massive viewership of half a billion ...

8 Jun 2023 — **IPL 2023** registered 505 million **viewers** on television. The television broadcaster of the cricketing bonanza Indian Premiere League (**IPL**) **2023** ...

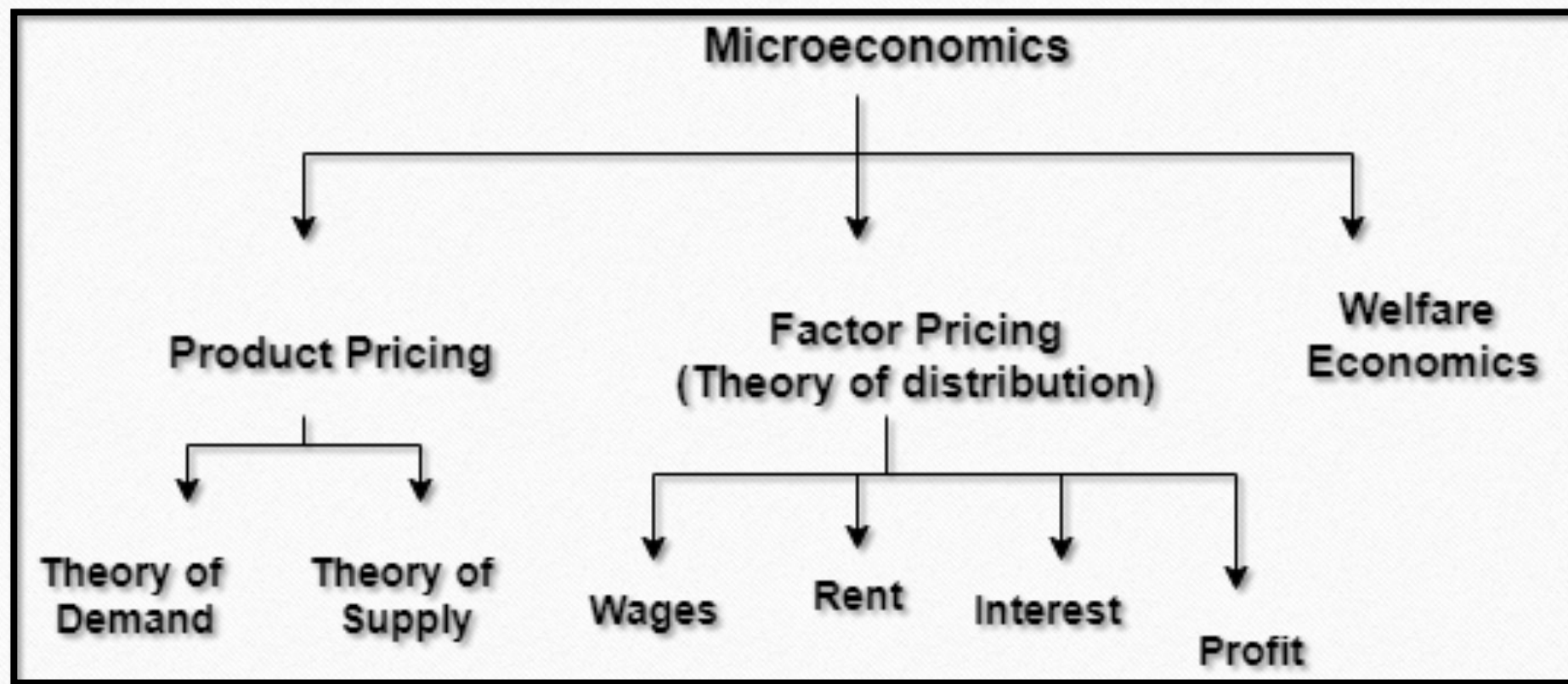
Quantitative Insights into Sports Media Consumption Pattern

...

The **Hockey India** League (HIL) attracts around 40 million **viewers** per year! How are Indians Watching their Favorite Sport. Infographic on how ...

MICROECONOMICS

- Microeconomics deals with analysis of small individual units of economics- Individual consumers, firms, industries, wages, income, etc-
- It is generally believed that microeconomics is not concerned with the study of economy as a whole- Untrue-Microeconomics examines the behaviour of individual units to determine the allocation of resources.
- Microeconomics answers 4 basic questions
 1. What goods shall be produced
 2. How to produce
 3. How to distribute
 4. Whether the production and distribution is efficient



DEMAND

- Quantity that the consumer is willing to purchase at different prices in a given time period.
- Demand for a commodity= **Desire** to purchase+ **Ability** of Buy
- Demand is determined by several factors like income of the consumer, taste & preferences, price of the good, price of related goods, etc.
- **Utility- Want satisfying power of a commodity**
- Market demand is the summation of individual demand functions.

LAW OF DEMAND

- Shows the relationship between quantity demanded and price.

$$Q_x = f(P_x, Y)$$

Q_x = quantity demanded of good X

P_x - Price of good X

Y = Other factors which are kept constant.

If price of a particular commodity increase, then its quantity demanded falls.

- Demand for a commodity also depends on other factors apart from price (Discussed Later)



<https://www.indiatoday.in> › india › story › lockdown-q... ⋮

Lockdown: Queues outside liquor shops amid confusion on ...

04-May-2020 — Long queues were seen outside **liquor** outlets in Mumbai and Pune on Monday, a day after the state government said **shops** of non-essential items, ...

<https://www.livemint.com> › companies › news › steep-c... ⋮

Steep cess on alcohol has affected sales: AB InBev - Mint

18-Jun-2020 — ... due to the **coronavirus lockdown**. Even as the restrictions were eased and **liquor stores opened**, consumers lapped up hard liquor for its ...

<https://www.business-standard.com> › ... › News ⋮

Liquor sales fall 60% in states with high Corona cess in May ...

02-Aug-2020 — States, which imposed more than 50 per cent **Covid-cess** on **liquor** after the resumption of retail trade post **lockdown**, witnessed an average 59 ...

EXCEPTIONS TO LAW OF DEMAND

- Veblen Effect- Goods having prestige value

- I. Some consumers measure the utility of a commodity on the basis of its price- Higher price= Higher utility.
- II. E.g. -?
- III. For these kind of goods quantity demanded will increase with the increase in price.
- IV. High-quality, premium goods

DETERMINANTS OF DEMAND

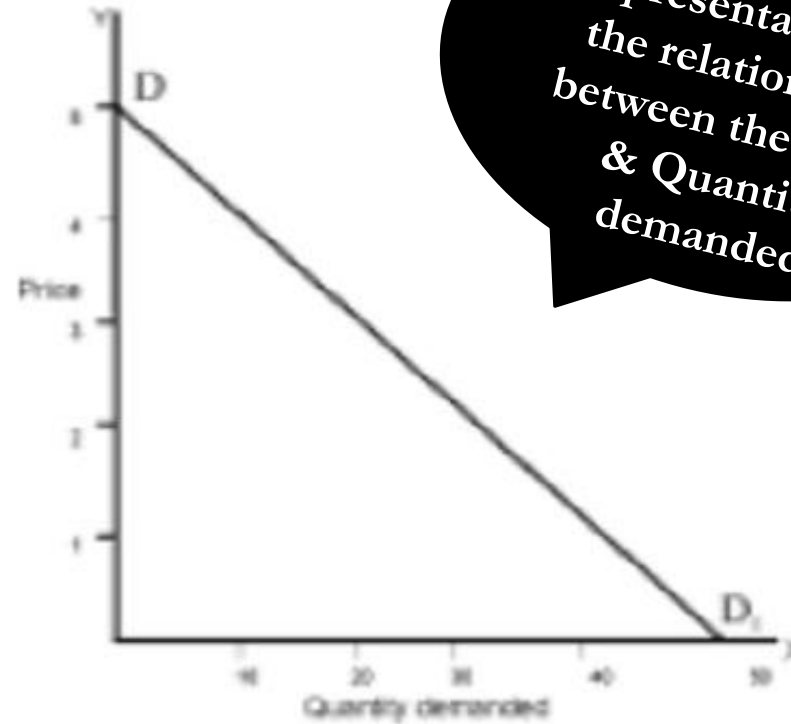
- Taste and Preferences of Consumers
- Income
- Price of related goods
- Number of consumers in the market
- **Consumers' expectation regarding future prices**

DEMAND SCHEDULE

**Table Demand
Schedule**

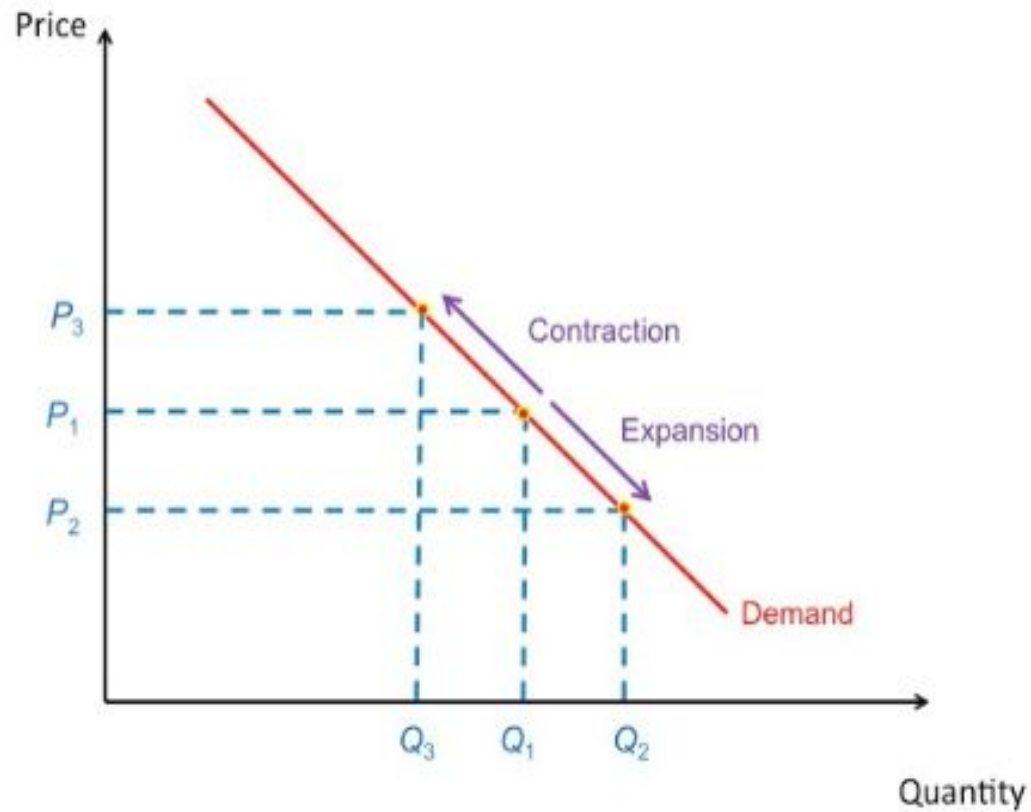
Price (Rs)	Quantity Demanded (Units)
5	10
4	20
3	30
2	40
1	50

**Figure Demand
Curve**



Graphical
representation of
the relationship
between the price
& Quantity
demanded

EXPANSION AND CONTRACTION IN DEMAND

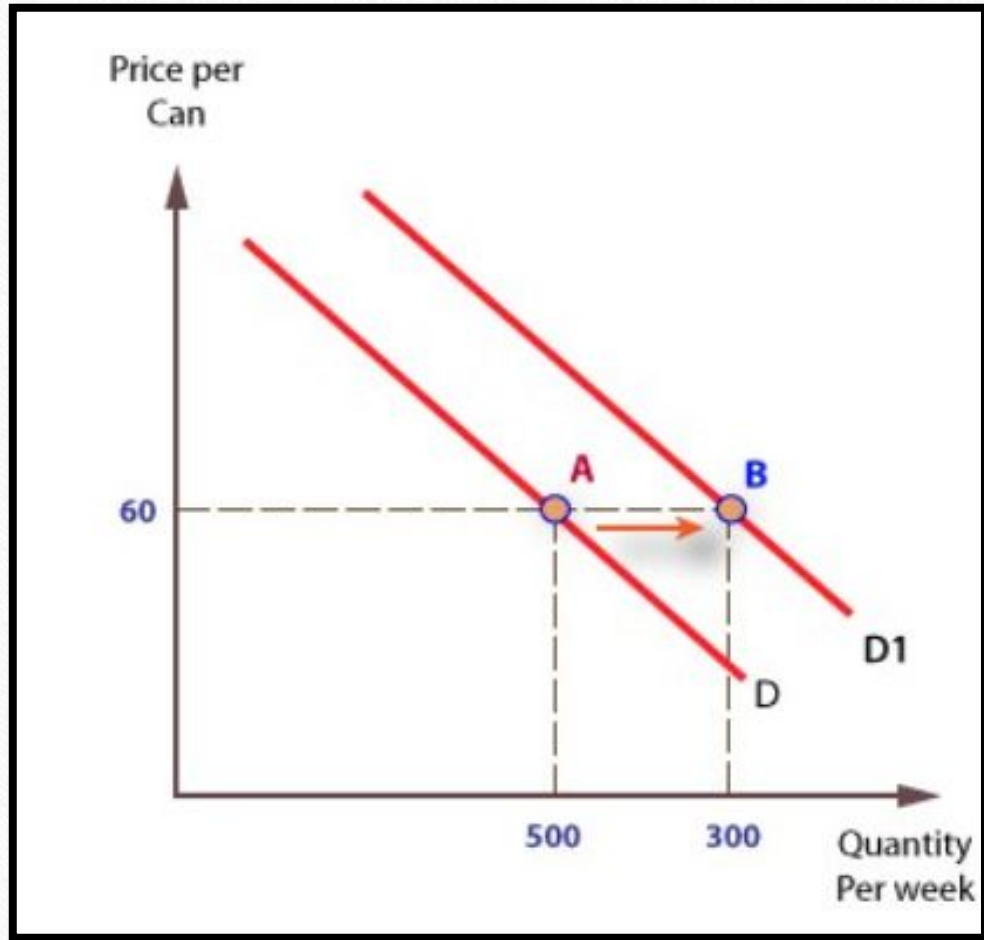


- If quantity demanded increases/decreases due to change in price expansion/contraction
- In case of expansion and contraction, only price effect is considered, **other factors** are assumed to be constant.

Demand Vs Quantity Demanded

- Demand represents entire schedule or curve
- Quantity demanded refers to the quantity an individual buys at a **particular price**.

INCREASE/DECREASE IN DEMAND



- When demand changes due to factors other than price, then the entire demand curve shifts.
- If there is an adverse change in factor influencing demand then it will lead to decrease in demand causing a leftward shift in the demand curve & vice-versa.
- The factors which cause shifts in demand are called shift factors.
- Generally demand is considered to be of linear form.
- $Q_d = a - bP_x$ ($Q_d = 12 - 6P_x$)
- a = Constant intercept term, b = Slope of Demand curve

ELASTICITY OF DEMAND

$$E = \left| \frac{\text{\% change in quantity demand}}{\text{\% change in price}} \right| = \left| \frac{p}{q} \cdot \frac{dq}{dp} \right|$$

- Law of demand indicates only the direction of change in quantity demanded
- **It is imperative to know the extent to which quantity demanded of a good will change in response to change in price.**
- Price elasticity represents the degree of responsiveness of quantity demanded of a good in response to change in its price.
- Cross elasticity is the degree of responsiveness of quantity demanded of a good to change in price of related good (Substitute/Complementary Goods)
- Income elasticity shows change in quantity demanded to change in Income.

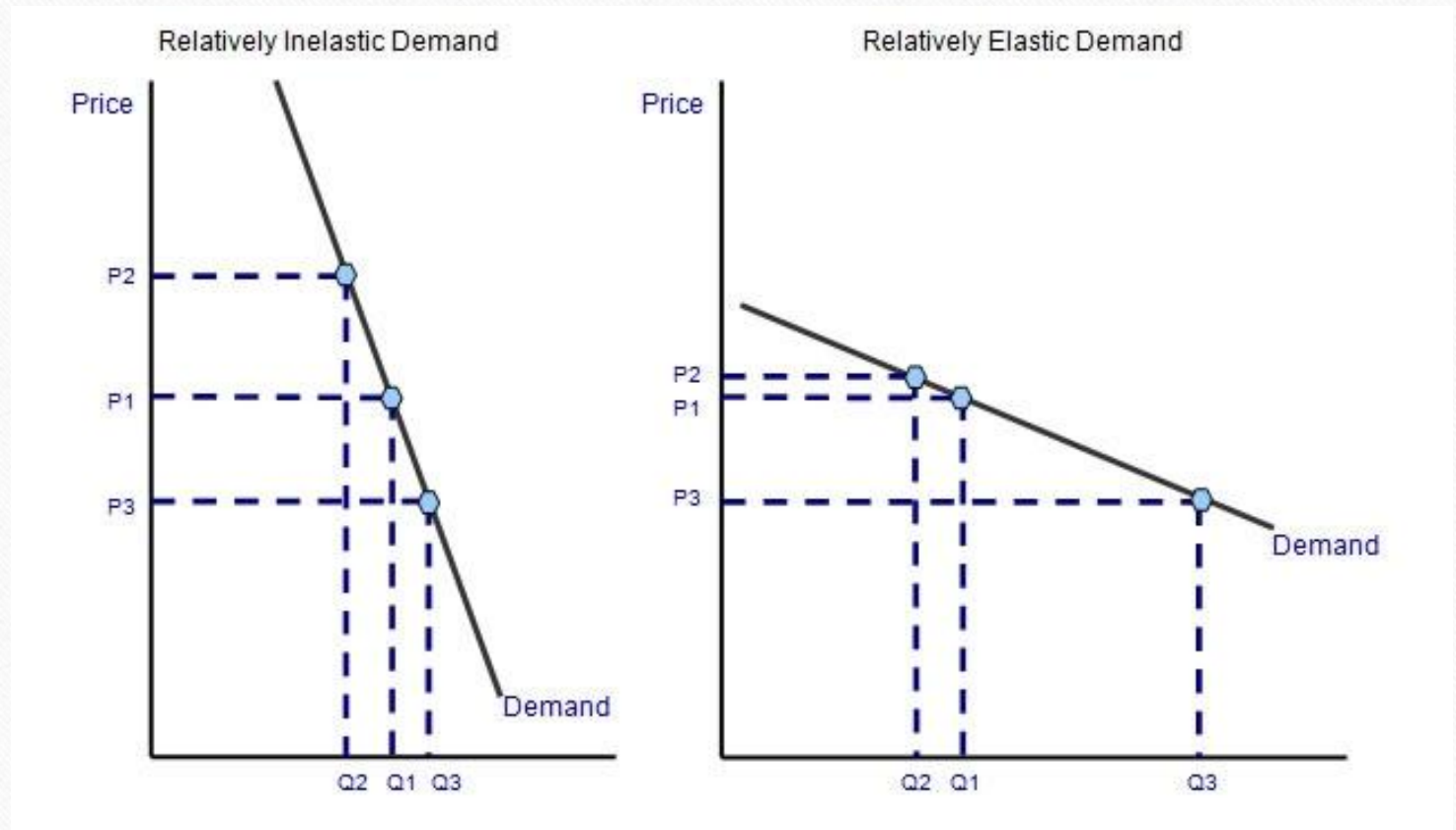
PRICE ELASTICITY

CROSS PRICE ELASTICITY

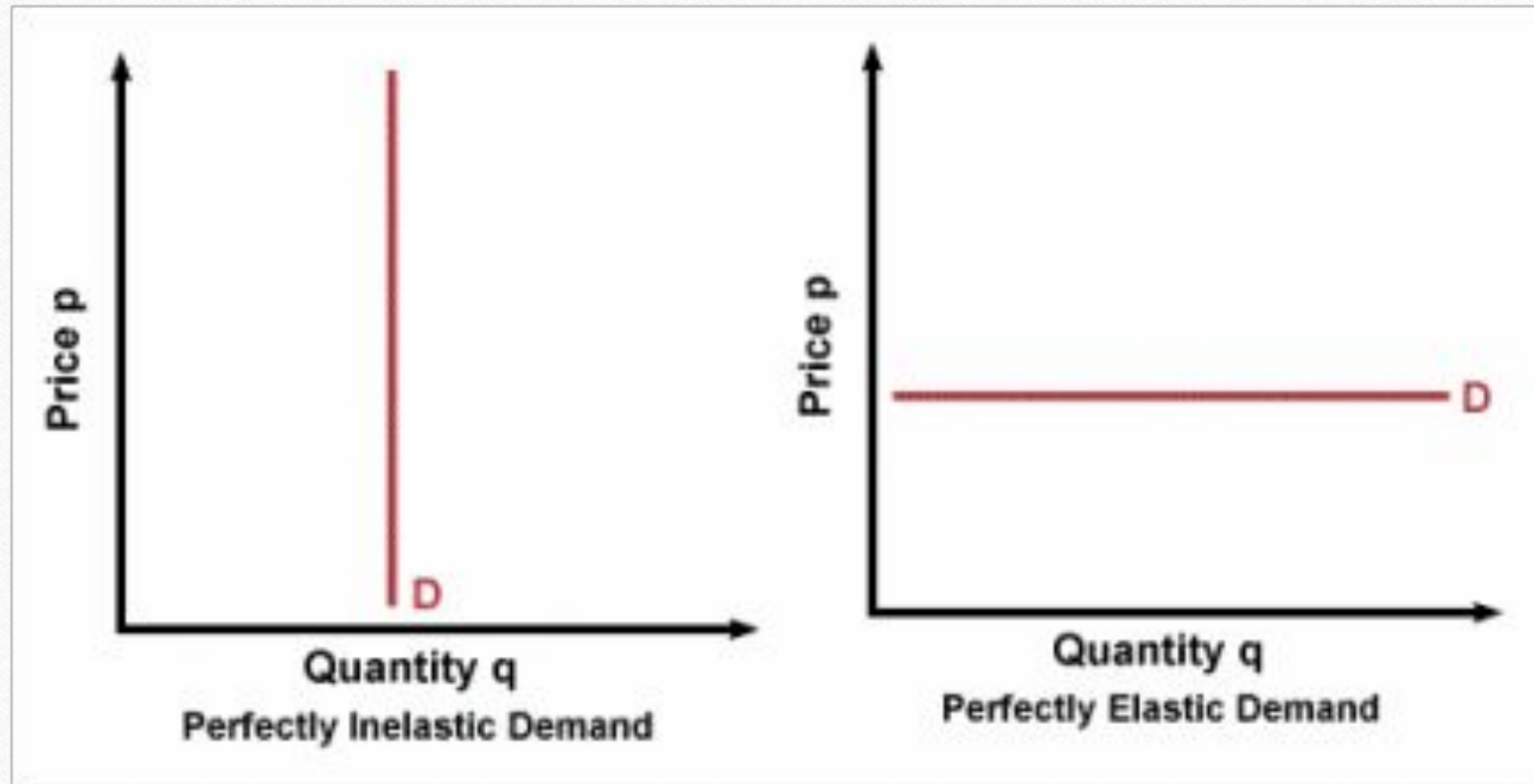
INCOME ELASTICITY

PRICE ELASTICITY OF DEMAND

- $E_p = \text{Percentage change in quantity demanded} / \text{Percentage change in price}$
- If $e_p > 1$ – Elastic
- $E_p < 1$ – Inelastic
- Unitary elastic- $e_p = 1$



PERFECTLY INELASTIC & ELASTIC DEMAND



DRAW DEMAND CURVE FOR PEPSI AND WATER

DETERMINANTS OF PRICE ELASTICITY OF DEMAND

Implication
for
producer?

- **Availability of substitutes-** If close substitutes of a commodity are available demand tends to be elastic. If prices increase, people tend to switch to other products over a period of time.
- **Proportion of consumer's income spent on a particular commodity-** Demand for salt is relatively inelastic- Why?

If consumers spend very less of their income on a particular product, then its demand will be relatively inelastic.

- **Number of uses of a commodity- Milk**

If prices are high, it will be used for only essential uses.

INCOME ELASTICITY

Income elasticity= Percentage change in purchases of a good/Percentage change in income

- Income elasticity can be 0 as it signifies that in response to change in income, quantity demanded does not change at all
- Positive income elasticity-
- Negative income elasticity-
- If income elasticity is greater than 1-
- If income elasticity is lesser than 1-

Nokia's failure was not solely due to its lack of innovation but also its shortcomings in leadership and guidance. These factors, combined with its inability to adapt to market demands and technological advancements, sealed the company's fate. 9 Jan 2024



StartupTalky

<https://startuptalky.com/reasons-why-nokia-failed>

Top 9 Reasons Why Nokia Failed | Nokia Failure Case Study



HOW CAN WE REVIVE THIS COMPANY WITH LIMITED RESOURCES?

INCOME ELASTICITY

Income elasticity= Percentage change in purchases of a good/Percentage change in income

- Income elasticity can be 0 as it signifies that in response to change in income, quantity demanded does not change at all
- Positive income elasticity- Normal goods
- Negative income elasticity- Inferior goods
- If income elasticity is greater than 1- Luxury
- If income elasticity is lesser than 1- Necessity

CROSS ELASTICITY OF DEMAND

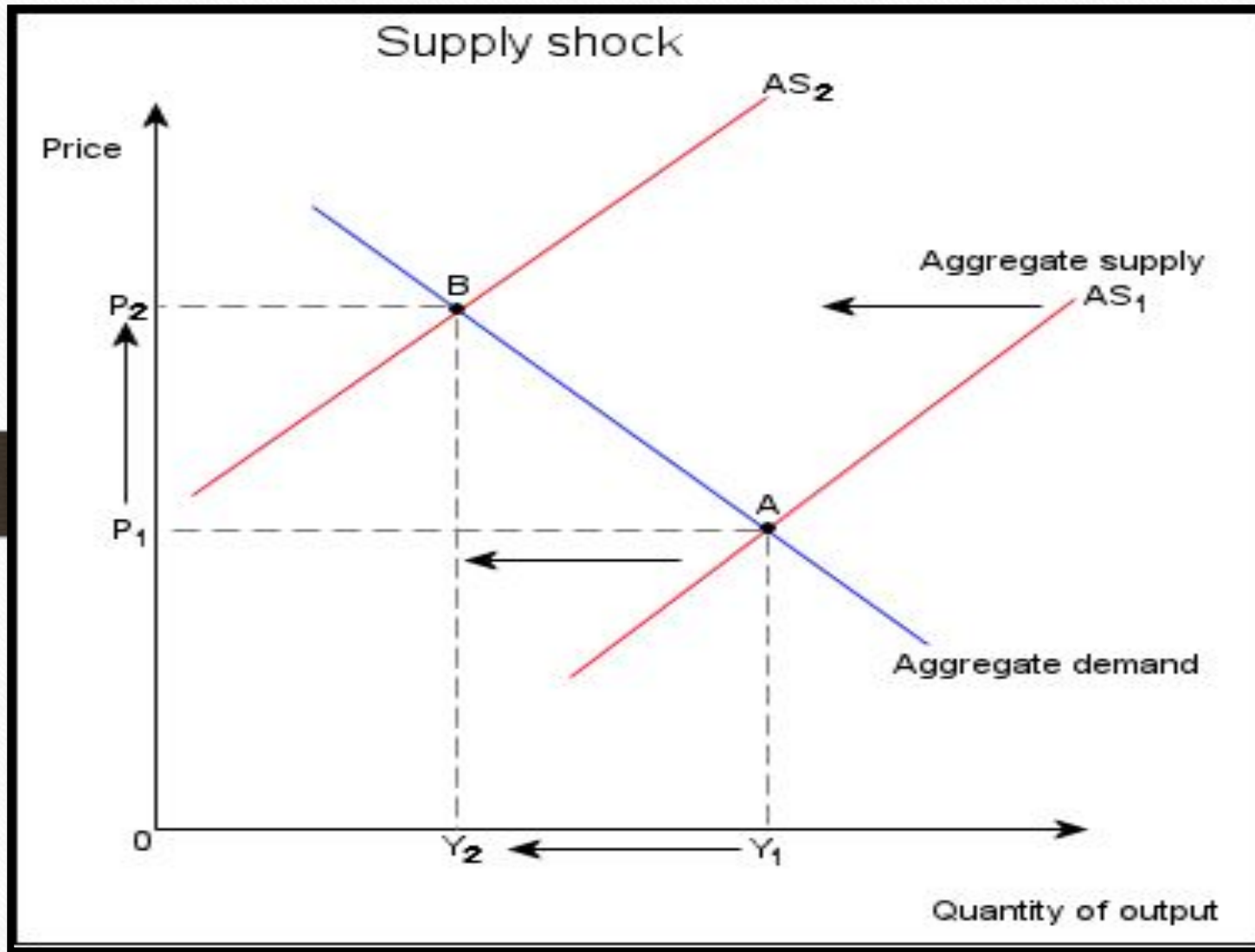
- Demand for many commodities are related to the price of other commodities- Important to estimate cross elasticity of demand
- Degree of responsiveness of demand for one good in response to the change in price of another good represents cross elasticity of demand.

Exy- % change in quantity demanded of X/% change in price of Y

- For complementary- Bread & Butter- Rise in price of one will lead to decrease in demand for another- **Cross elasticity will be negative**
- For substitutes cross elasticity of demand is positive as when price of one **increases**, demand for the other commodity also **increases**

APPLICATIONS OF ELASTICITY





- Determination of price and quantity through demand and supply.
- Equilibrium price & and quantity- Determined by the markets without external intervention
- **If supply reduces, supply curve shifts leftwards**
- **This results in an increase in price and quantity**

B. RICH - HEDGEYE



NOW, TRY
SAYING,
"LET THE
MARKETS
WORK,"
WITH A
STRAIGHT
FACE.

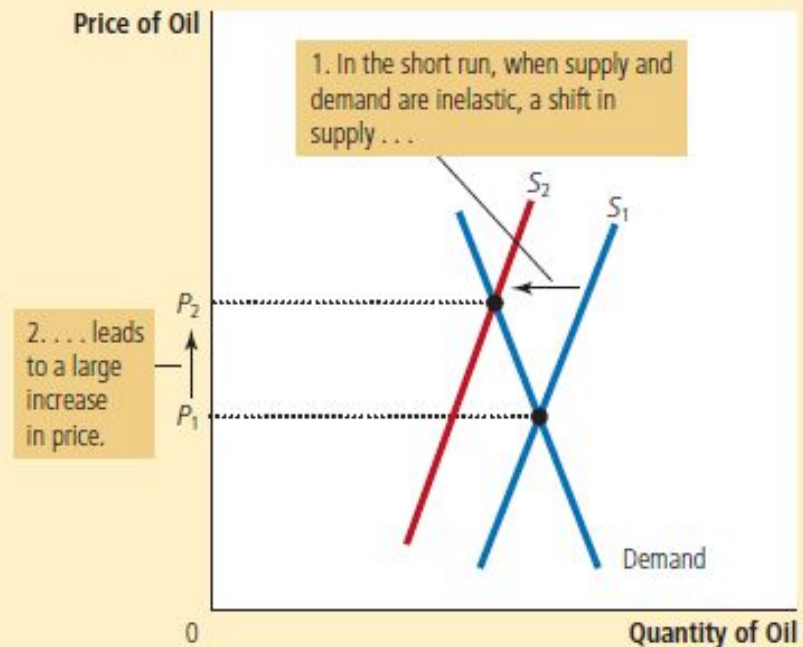
WHY DID OPEC FAIL TO KEEP THE PRICE HIGH ?

When the supply of oil falls, the response depends on the time horizon. In the short run, supply and demand are relatively inelastic, as in panel (a). Thus, when the supply curve shifts from S_1 to S_2 , the price rises substantially. By contrast, in the long run, supply and demand are relatively elastic, as in panel (b). In this case, the same size shift in the supply curve (S_1 to S_2) causes a smaller increase in the price.

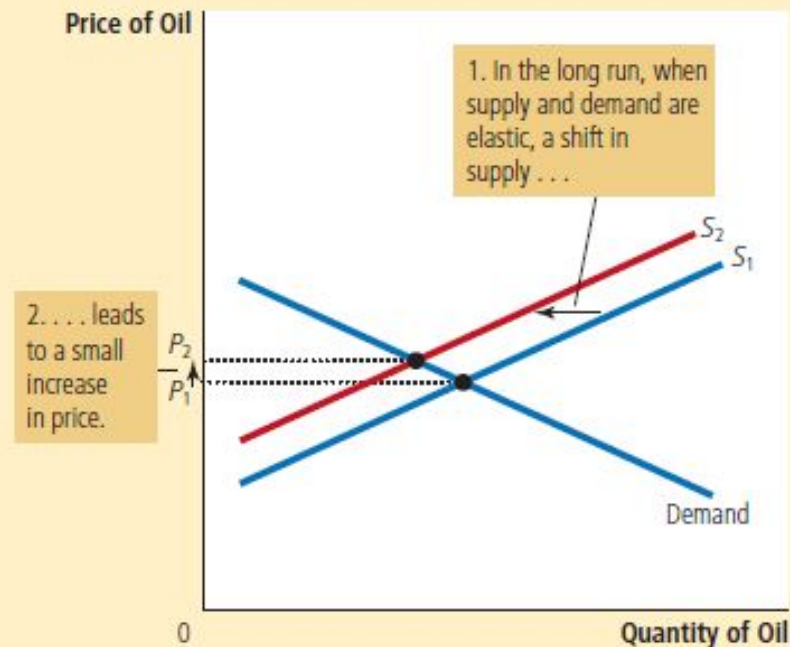
FIGURE 8

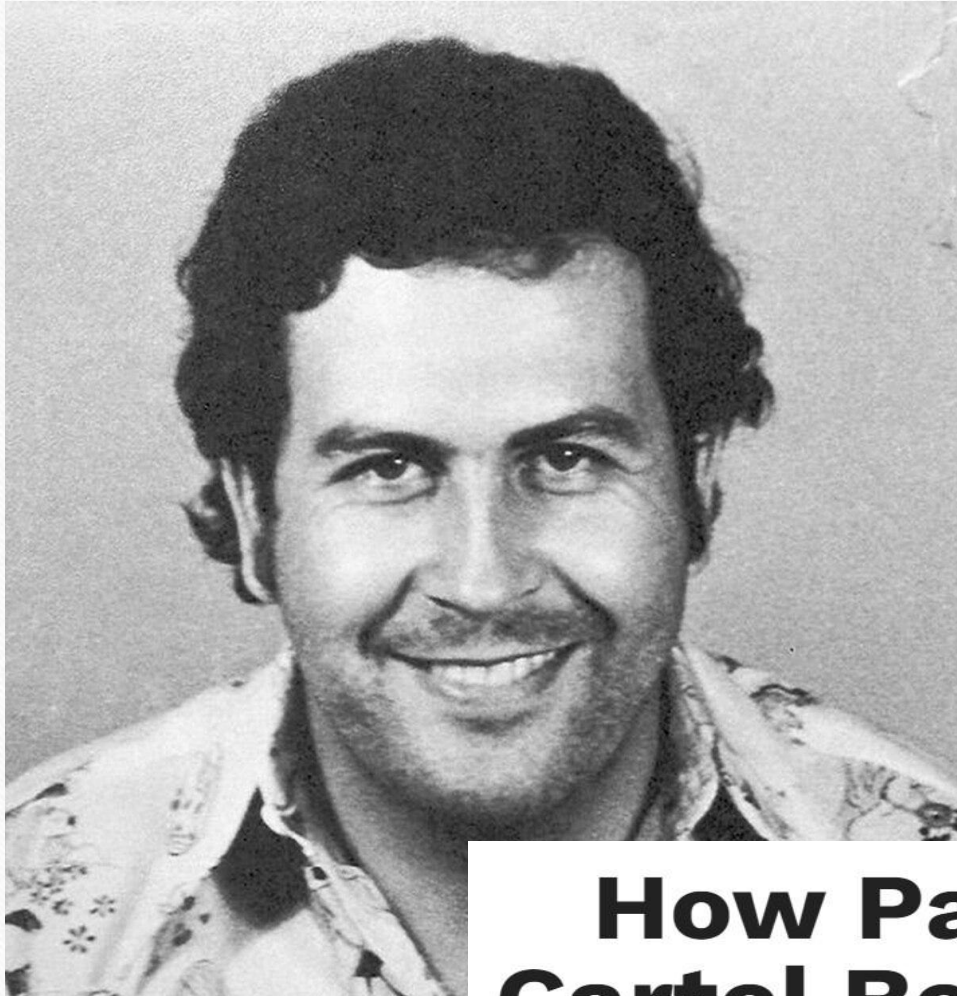
A Reduction in Supply in the World Market for Oil

(a) The Oil Market in the Short Run



(b) The Oil Market in the Long Run





HOW TO REDUCE DRUG CONSUMPTION

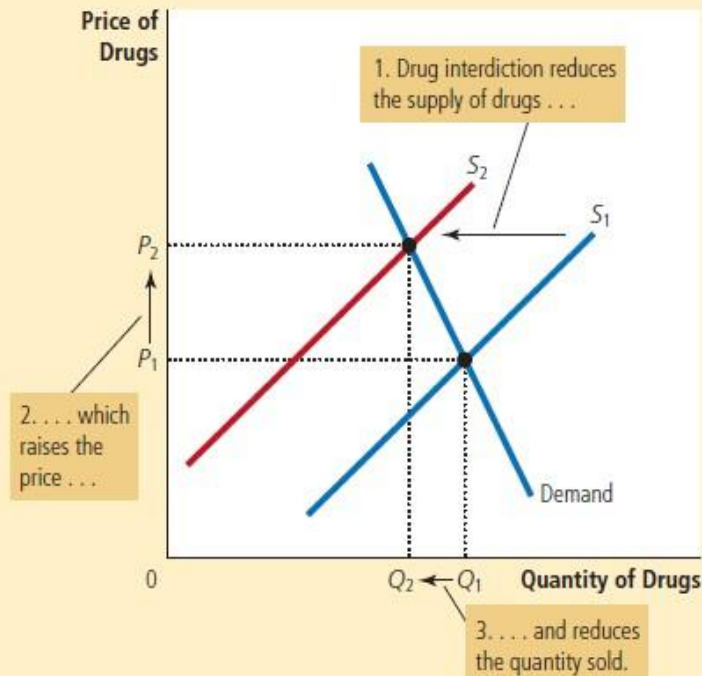
**How Pablo Escobar's Medellín
Cartel Became The Most Ruthless
In History**

FIGURE 9

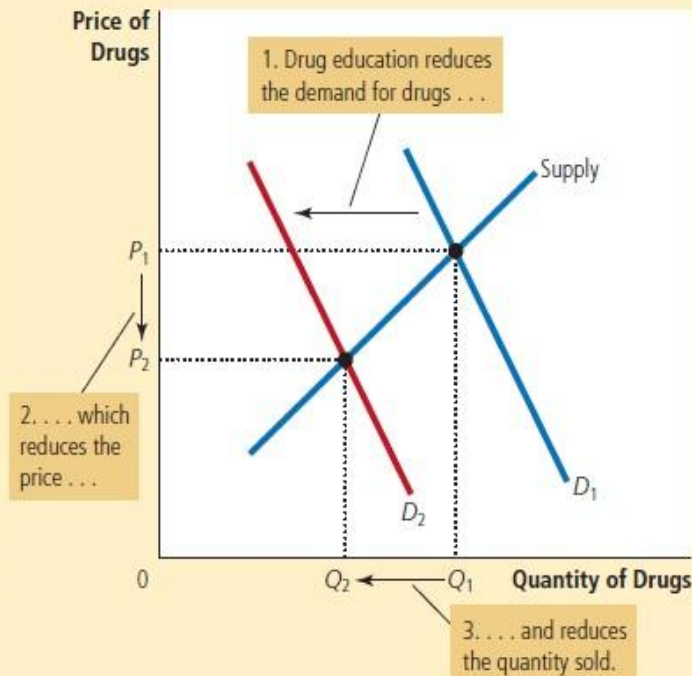
Policies to Reduce the Use of Illegal Drugs

Drug interdiction reduces the supply of drugs from S_1 to S_2 , as in panel (a). If the demand for drugs is inelastic, then the total amount paid by drug users rises, even as the amount of drug use falls. By contrast, drug education reduces the demand for drugs from D_1 to D_2 , as in panel (b). Because both price and quantity fall, the amount paid by drug users falls.

(a) Drug Interdiction



(b) Drug Education



Is the demand for drugs inelastic?

Policy intervention is needed to reduce consumption.

Farmers dump tomatoes, onions on highways as supply overtakes demand

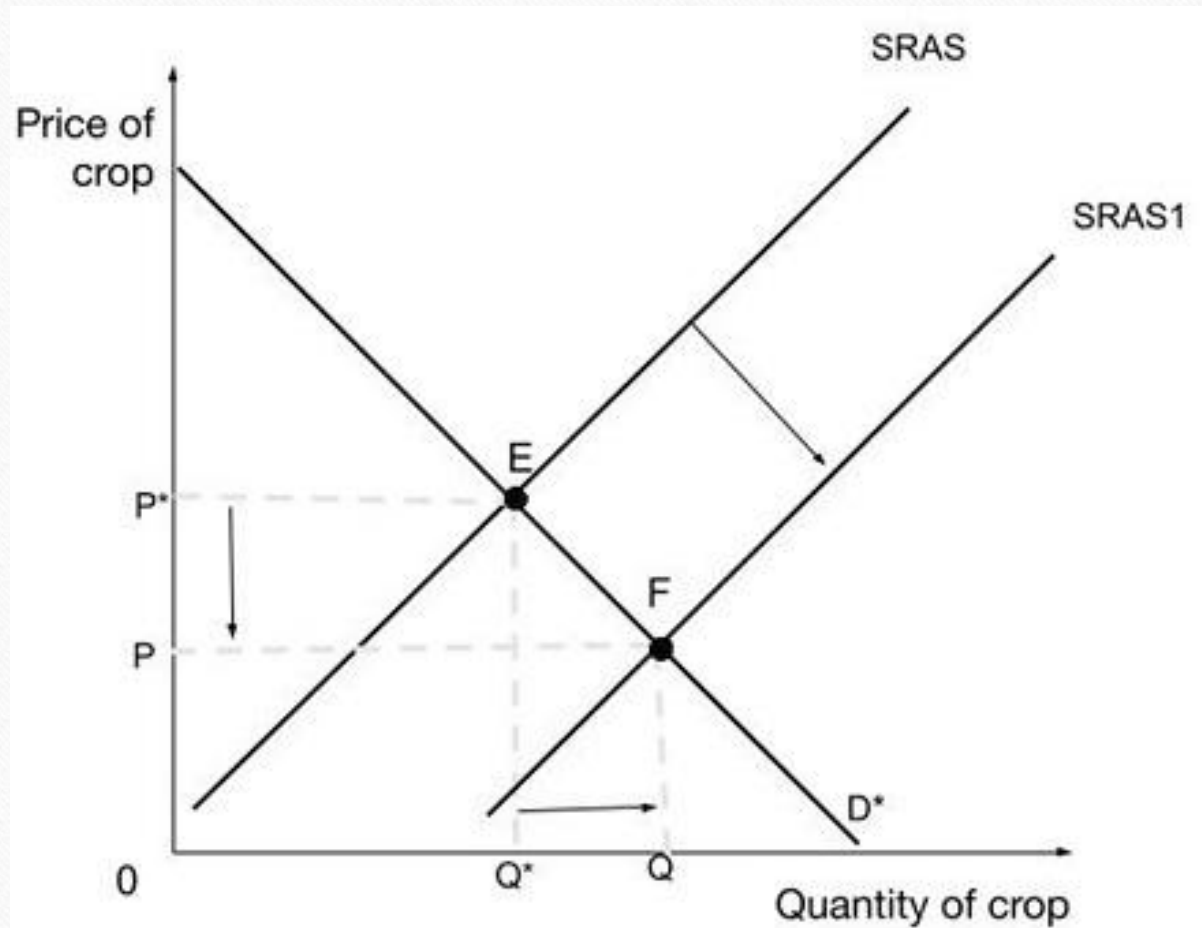
In India's largest wholesale market, prices crash even as consumers pay ten times more in retail; farmers demand compensation from govt

News / India News / Tomatoes at ₹ 2/kg, farmers dump stock

Tomatoes at ₹2/kg, farmers dump stock

ARE MARKETS REALLY EFFICIENT?

BUMPER HARVEST- EXAMPLE



SHOULD SOMETHING BE DONE ABOUT THIS?

- Due to bumper harvest, supply increase
- This leads to a rightward shift in supply curve
- Price Falls as demand does not rise much.

Many times, due to this input cost is also not recovered.

PRICE CEILING AND PRICE FLOOR

PRICE CEILING

A price ceiling is a type of price control, usually government-mandated, that sets the maximum amount a seller can charge for a good or service.

PRICE FLOOR

A price floor is the lowest legal price that can be paid for a good or service in a market

Governments usually set price floors to ensure that the market price of a commodity doesn't fall below a level that would threaten the financial existence of producers

MSP