Demand & Supply

- Basic decision making units

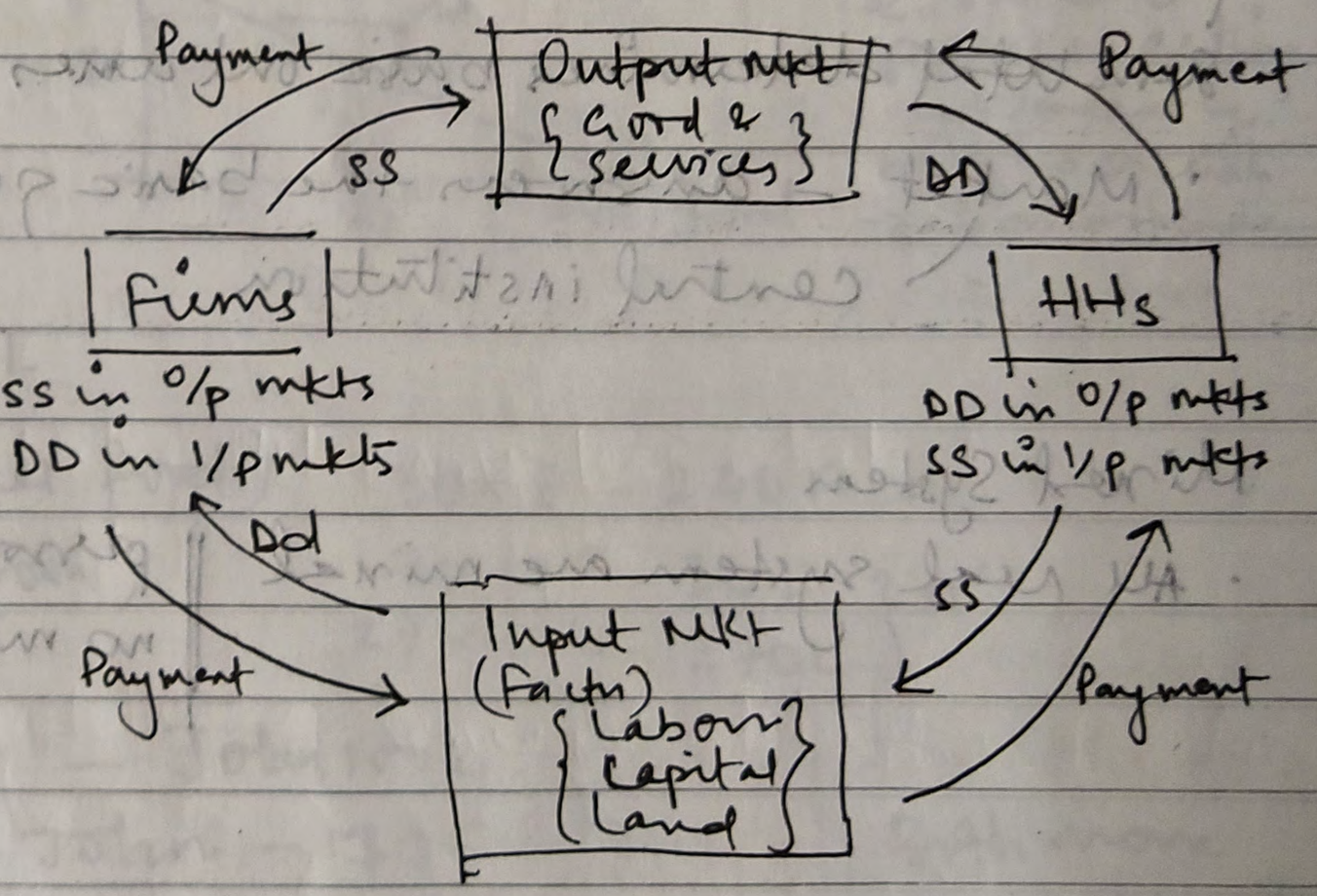
Firm - An organization that transforms resources (inputs) into products (outputs). Primary producing units in a mkt economy. Assumption that firms make decision in to maximize profits

Entrepreneur - One who organises, manages and assumes risks of a firm

Household - The consuming units in an economy. Have limited incomes & must pay for what they consume. Have some control over their income but also constrained by different factors.

- Circular Flow

Goods & services used by HHs are exchanged in output mkts. Firm SS & HHs DD



To produce output, firms must use/buy inputs i.e Input / Factrs MKTs (Firm DD & HHs SS Land, L & K)

HHs income depends on amt. of Input it decides to Supply.

- Demand

Though HHs make many decisions we focus on amount of a single product that some HHs decides to consume within some given pd. of time

- HHs decision of particular qty of output to demand depends on:
(i) price of the product, (ii) Income available to HH, (iii) HHs accumulated amount of wealth, (iv) prices of other products (v) HHs tastes & preferences & (vi) HHs expectations abt future prices, income & wealth.

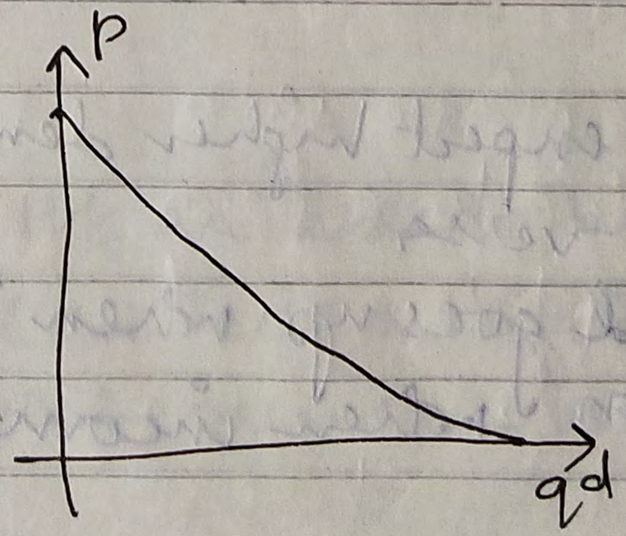
- Quantity demanded q^d
It is the amount of a product that a HH would buy in a given pd if it could buy all it wanted at the current mkt price.

allows that q^s & q^d are unequal || final purchase depends on actual availability.

Most imp. relationship - between q^d & mkt price p
Analyze likely response of HHs to change in price using ceteris paribus
Attempt to derive a relationship between q^d of a good per time pd & p of that good holding other var. constant.

change in other factors change the entire relationship between p & q^d
change in price of the product affect q^d per period.
change in any other facts affect demand

- Demand Schedule
Demand curve



p	q^d
0	30
0.5	25
3.5	7
7	3
10	1
15	0

$q^d = f(p)$
But we plot $p = f^{-1}(q^d)$

- Law of demand - inverse relationship
not an exact law but social law, we don't draw tables/graphs but helps us analyze behaviour of HHs faced with high/low price

Reasons for downward sloping dd curve:
(1) Substitution
(2) Law of diminishing MU

Other Properties: intersects both price & qty axis

limited Y & wealth that some p, $q^d > 0$

q^d in a give pd. of time is limited if only by time at zero price & dMU

Other determinants of HH dd

- Income & Wealth

Income - sum of all wages & salaries, profits, interest payments, rents and other form of earnings recieved by a HH in a given pd. of time. (Flow variable)

HH can spend/consume more n less than income in a given pd.
must borrow n draw on savings — save

Wealth - total value of what a HH owns less what it owes (net-worth) (Stock variable)

In general we would expect higher demand at higher levels of income/wealth & vice-versa

Goods for which demand goes up when income is higher & for which dd goes down when income is lower are called Normal goods.

Goods for which dd tends to fall when income rises are called inferior goods.

- Prices of Other goods & services

HHs do not buy only one commodity. So they have to decide how to apportion their incomes over different goods & s.

Price of any good can & does affect the demand for other goods

When an ↑se in the price of one good causes ↑ dd for another good to ↑se we say that goods are substitutes (positive relationship so when p↑ dd for other good ↑)

Substitutes are goods that can serve as a replacement for one another.

Identical products are called perfect substitutes.

Sometimes goods "go together" — i.e they complement each other cars & gasoline, cameras & film - Complementary Goods.

When two goods are complements, a decrease in the price of one results in the ↑se in dd for the other & vice-versa

Because any one good may have many potential substitutes & complements at the same time, a single price change may affect a HH's dd for many goods simultaneously.

- Taste and Preferences

Above factors - what HHs are able to buy (constraints)

Change in preferences can & do manifest themselves in mkt behaviour

eg: less marathon runner - less dd for running shoes
fitness bands

So within constraints preferences shape dd curve.

But difficult to generalize, because

- they are volatile, idiosyncratic
  - model of behaviour/thought peculiar to an individual

- Expectation

current purchases depend on current prices, income & wealth
HHs may have expectations about future prices & income
i.e how they may change

Medical Student stipend 10,000 pm vs Labour earning 10,000 pm

Shift of demand vs Movement along a dd curve

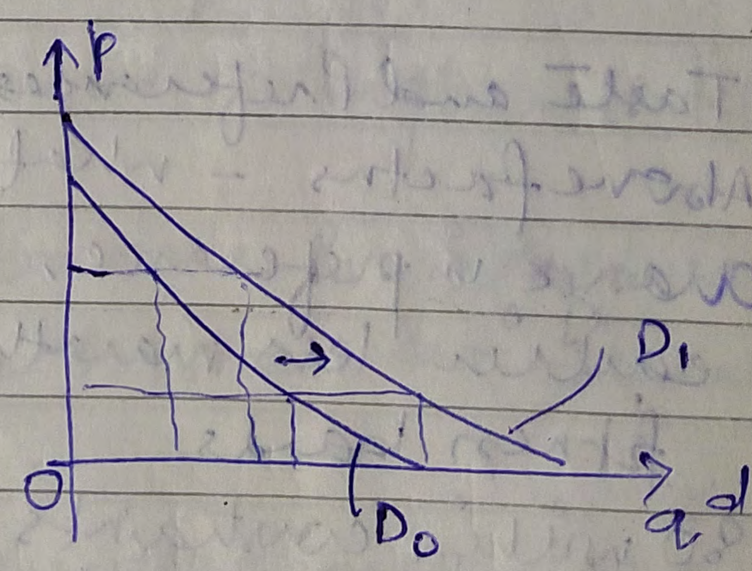
Dd curves (relation betn q^d & p) are derived with ceteris paribus assumption.
If it were relaxed, we would have to derive a new relationship between p & q^d

with higher income q^d ↑ ses i.e at same price more is demanded
q^d ↑ses and income ↑ses - Normal Good

conditions when we derived Do have changed, there is now a new relationship - shift of the dd curve

The change that takes place in a dd curve corresponding to a new relationship betn q^d of a good and price of that good.
shift is brought about by change in the original conditions.

p	q^d_0 Income = 300	q^d_1 Income = 600
0	30	35
0·5	25	33
3·5	7	18
7	3	12
10	1	7
15	0	2
20	0	0

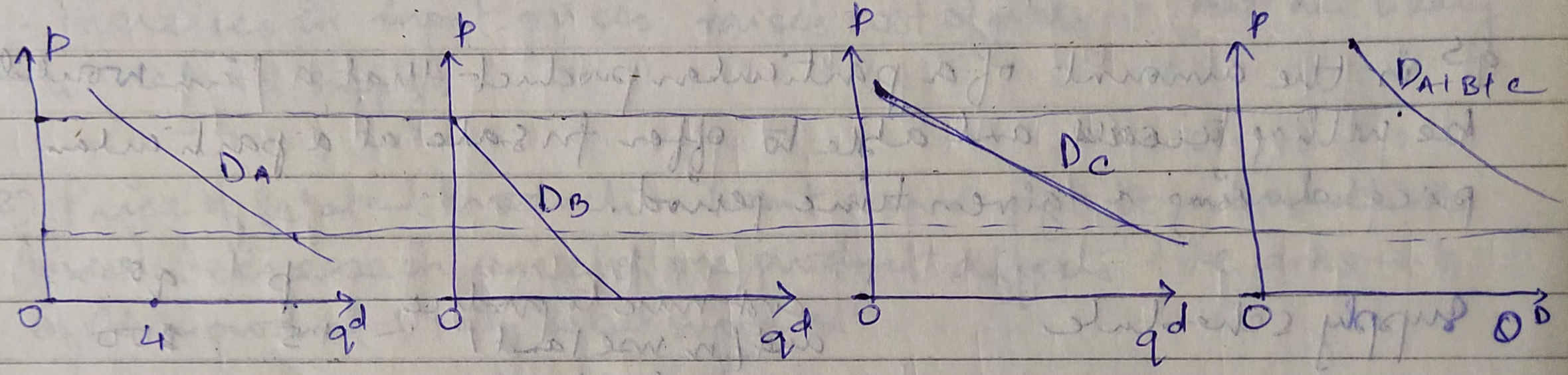


Conversely, if price changes, S^d will change
— movement along the dd curve
(Eliminate the diff.)
& other cases

Market Demand

Sum of all the quantities of a good n services demanded per period by all the HHs buying in the mkt for that good n service.

P	q^d by A	B	C	Q^D
3·5	4	0	4	8
1·5	8	3	9	20



Supply

Eco theory also deals with behaviour of firms - ss in output mkts & dd in input mkts.

Supply decisions can be expected to depend on profit potential.

Profit depends on R & C so supply likely to react to changes in revenue & production costs.

- depends on mkt price and qty sold P, q
- kind of input needed
- amount of each input reqd
- price of inputs

Supply decision - one of many that firms make to maximize profit

Usually, no. of ways to produce any given product, so firms must choose production technique which is most appropriate to their product & projected level of production.

Best method - minimizes cost thus maximize profit

(define)

Best production technique depends on prices of inputs.
Cheap L - L intensive Cheap K - capital intensive

So chosen technique ultimately chooses input requirements
So, by ~~vs~~ choosing an output as target & most appropriate tech firm determine which inputs to determine.

Price & Quantity Supplied q^s

- Assuming ceteris paribus

q^s is the amount of a particular product that a firm would be willing ~~to sell~~ and able to offer for sale at a particular price during a given time period.

- Supply schedule

	p	q^s
cost more to produce and/or use land/inputs for other purpose	1·5	25
	1·75	30
higher price inputs can be shifted from other use to this product and/or intensity of production may rise	2·25	20
	3	30
	4	45
	5	45

- Increase in mkt price to lead to an rise in q^s, ceteris paribus
+ve relationship - law of supply

- Graphically supply curve

In the long run such constraints can change ||

often scale of operating capacity in short run availability of inputs reduce ability to expand output when price rises

Other determinants of SS

(1) Cost of Production - Regardless of price of product, revenue must exceed cost for profit.
Supply decision likely to change in response to change in cost.
Cost of production depends on no. of factors (available technologies, prices & quantities of inputs needed)

- When technological advances lower cost of production, output is likely to ↑se
- Increases in input prices raises cost of produc^{n} and are likely to reduce supply.

(2) Price of Related Products - Input can be put to alternative uses. Increase in price of one product affects the amount of other product likely to be supplied

Shift in SS vs Movement along a SS curve

- When price of product changes, a change in q^s follows, ceteris paribus
  - movement along the supply curve
- New relationship bet^{n} p & q^s when factors other than price change
  - change in SS (shift of the ss curve)
    - right - better technology, lower cost of production, decrease in p of related goods

Market supply

- The sum of all that is supplied each pd by all the producers of a single product.
- Position & shape of mkt ss curve depend on positions & shapes of indiv firms supply curves (from which it is derived)
- Also depends on no. of firms that produce in the mkt. Higher

profits attract new firms in the mkt – & vice-versa

supply curve shifts right

supply curve shifts left

p	A q_s	B q_s	C q_s	Q (Total q^s)
1.75	10	5	10	25
3	30	10	25	65

Market Equilibrium

At any point in the every mkt one of the 3 conditions prevail:

i) q^d exceeds q^s at the current price – excess demand

ii) q^s exceeds q^d " – excess supply

iii) $q^s = q^d$ – equilibrium (no tendency for price to change)

Excess Demand / Shortage

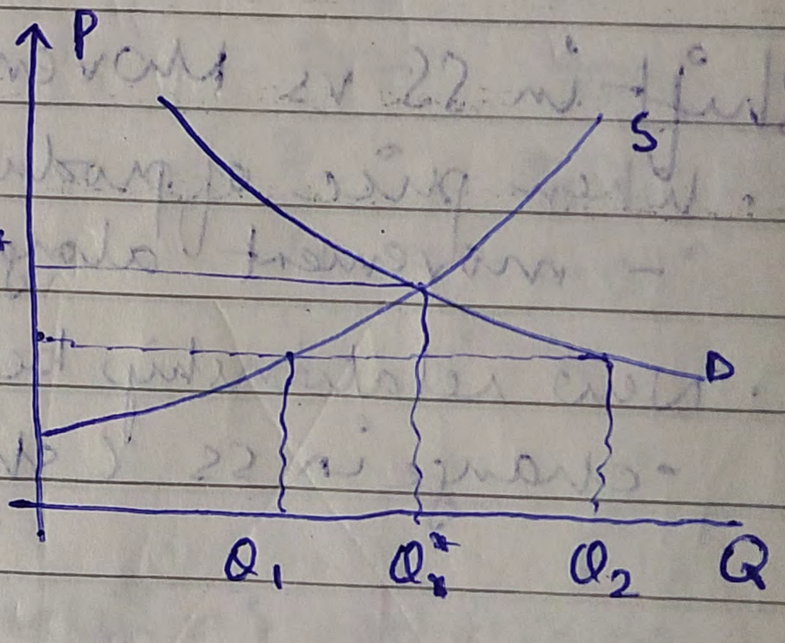
occurs when $q^d > q^s$ at current price.

There is shortage so people who can pay more will offer higher price.

As price rise 2 things happen:

i) $q^d \downarrow$ as some buyers drop out of the mkt

ii) $q^s \uparrow$ as higher price induces firms to supply more



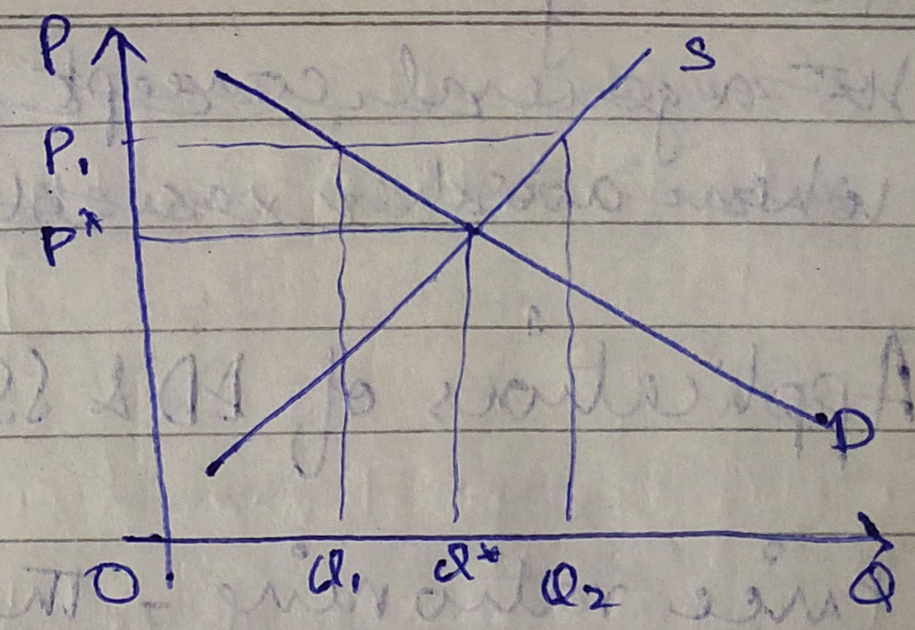
Process continues till shortage is eliminated i.e $q^d = q^s$ and no natural tendency for further adjustment

Excess Supply / Surplus

occurs when $q^s > q^d$ at current prices

Surplus with sellers & they (they to) reduces the price, offer discounts, even buyers offer to buy at less price

At lower price (i) more consumers enter the mkt & (ii) leads to decline in q^s as sellers do not find it worthwhile to sell at that price (may shift inputs to producing other products)



This happens till equilibrium is reached

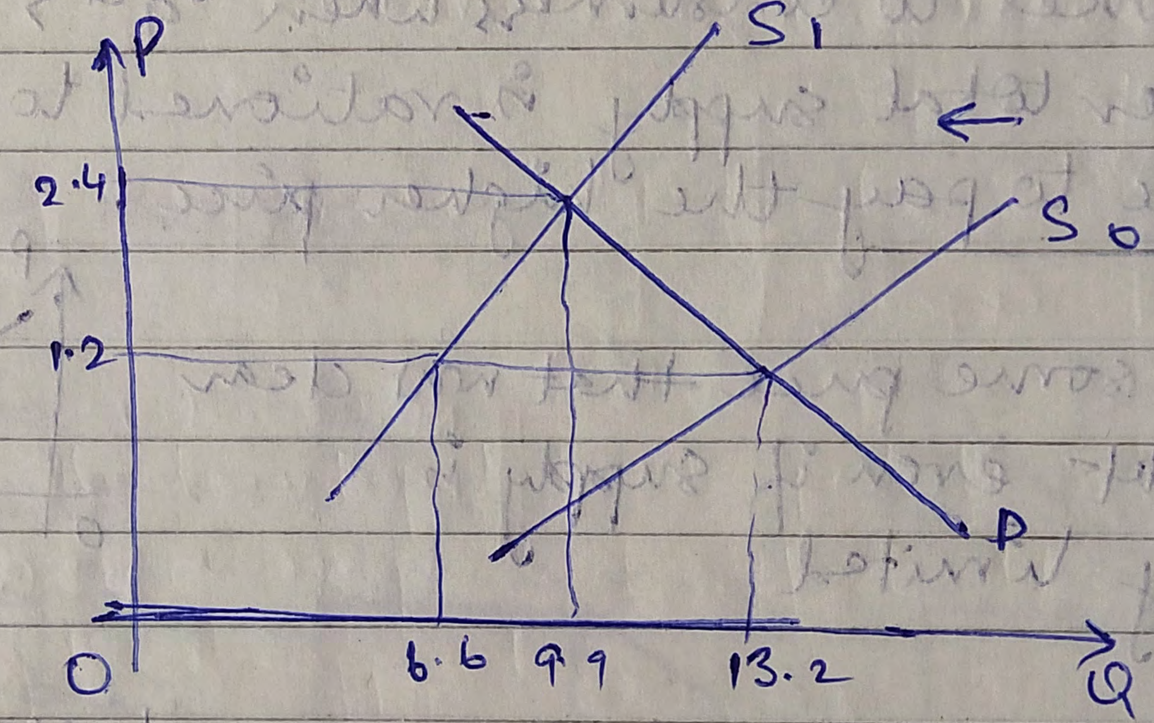
Changes in Equilibrium

coffee example

2 things : q_d ↓

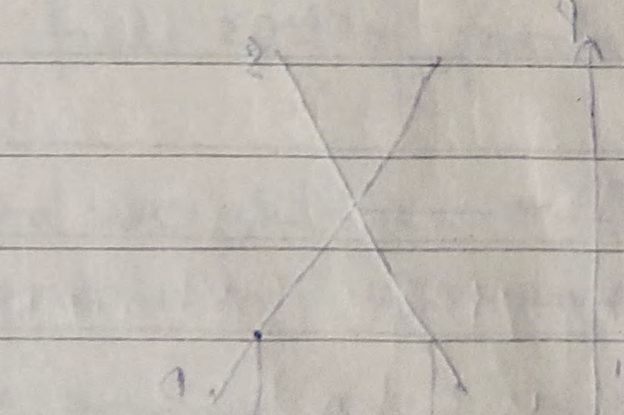
q_s ↑ (within limits)

(other countries profitable) :



Other changes in equilibrium

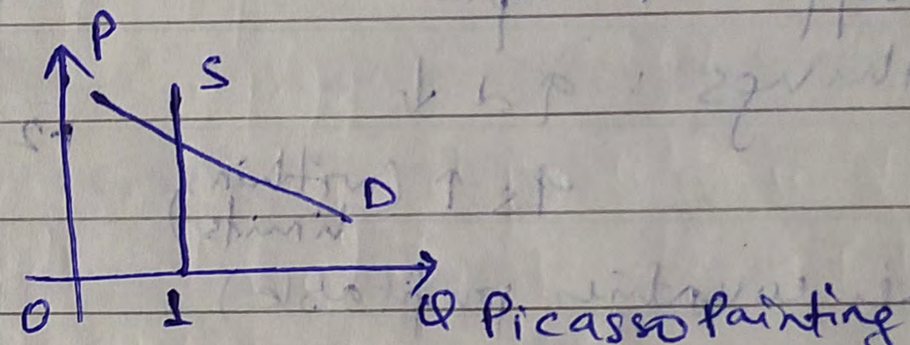
DD shifts & SS shifts



~~elasticity~~
~~Its a general concept to quantify the response in one variable when another variable changes~~

Applications of DD & SS

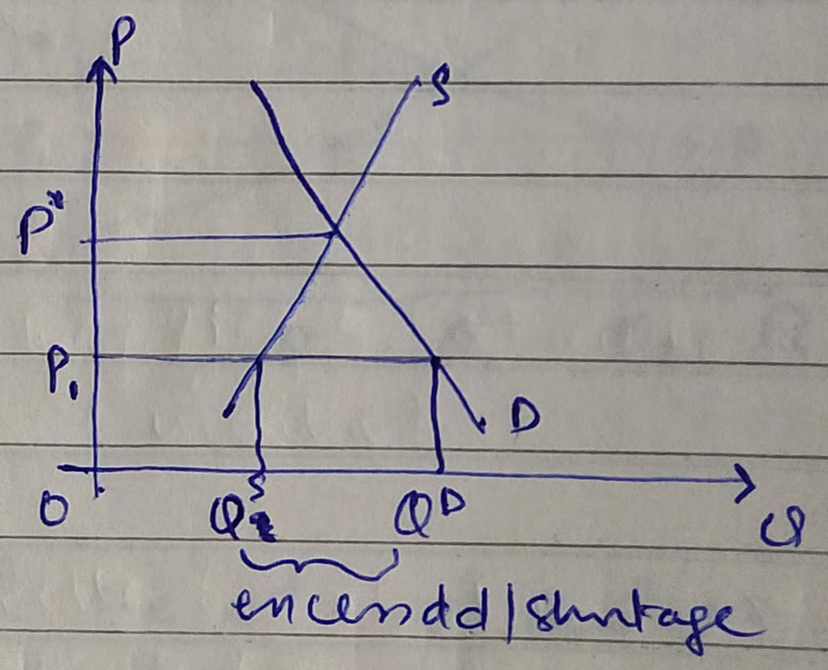
Price rationing - The process by which mkt allocates goods and services to consumers when $q^d > q^s$.
The lower total supply is rationed to those who are willing and able to pay the higher price!



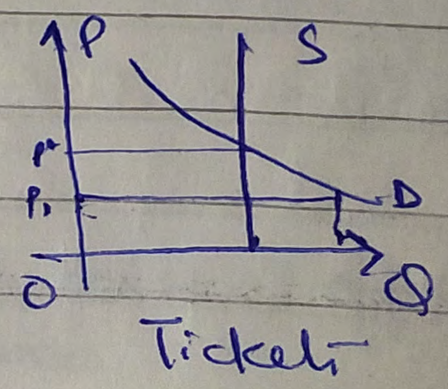
There is some price that will clear any mkt even if supply is strictly limited

Arguments against price-rationing: — not necessarily going to rich so prices are prevented from going to the equilibrium price. // Ppl have to sacrifice more of other goods.

Price Ceiling - A maximum price that sellers may charge, usually set by the govt. ~~(excessively low price)~~
Alternative system of rationing develops: queing, favouritism (higher than P_1 charged) ration coupons - Black Mkt



Price is set below the equilibrium price - else won't work
Even happens when no govt intervention done like tickets to matches/movies

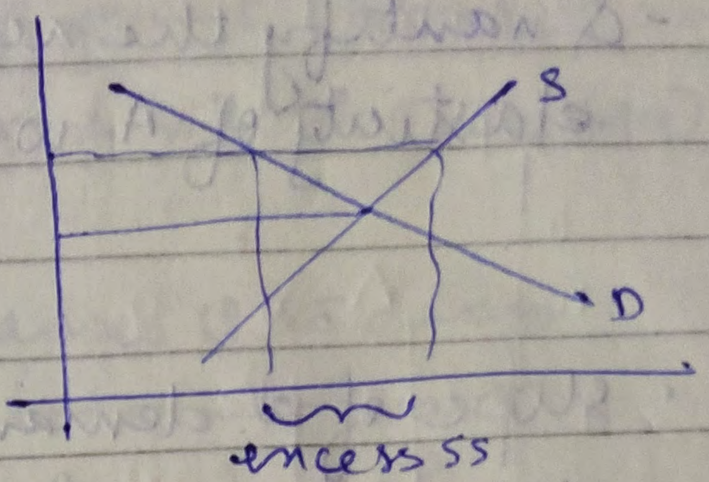


Price Floor

A minimum price below which exchange is not permitted.

Generally set above the equilibrium price leading to excess supply

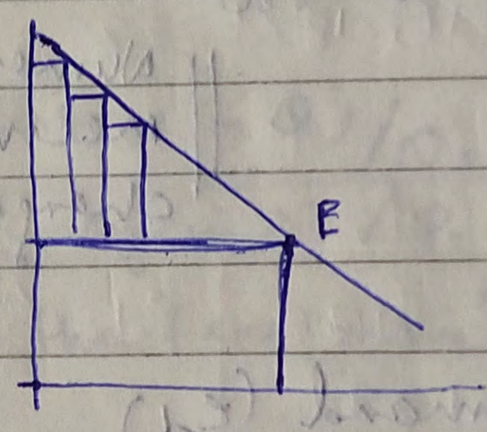
Minimum Wage & MSP

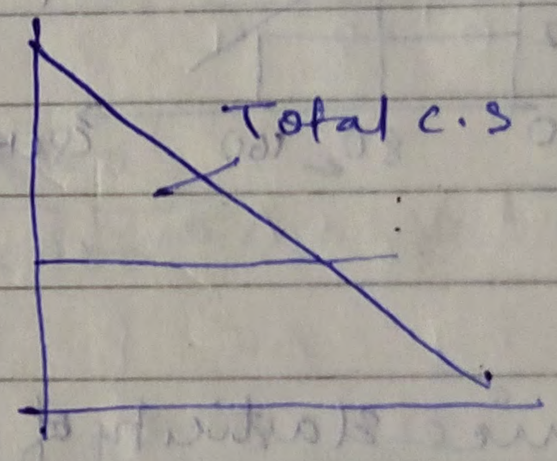


else won't work

Supply & Demand And Mkt Efficiency

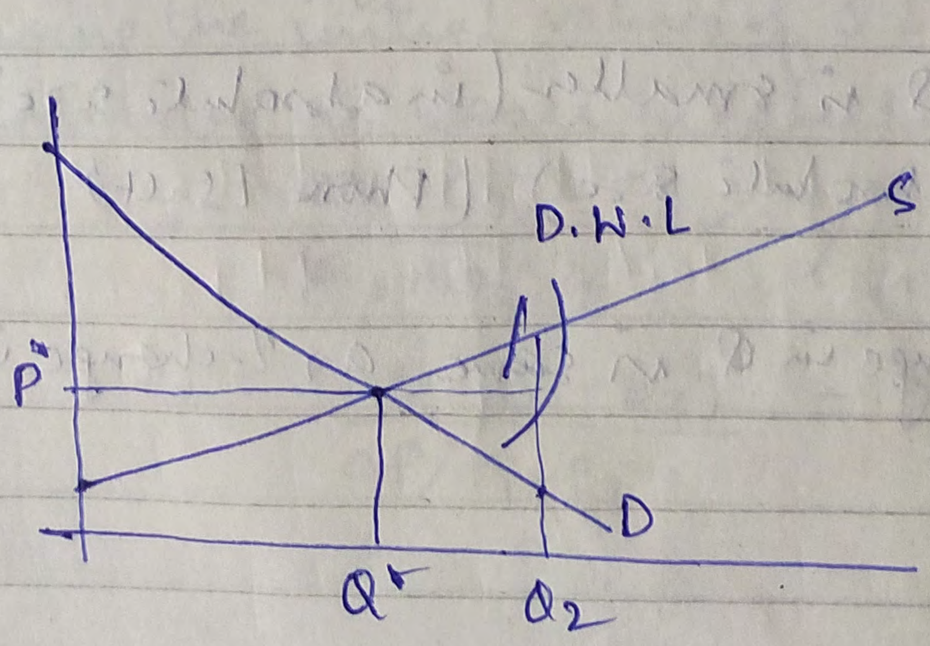
- Consumer Surplus - The difference bet^n the max^m a person is willing to pay fr a good & its current mkt price.

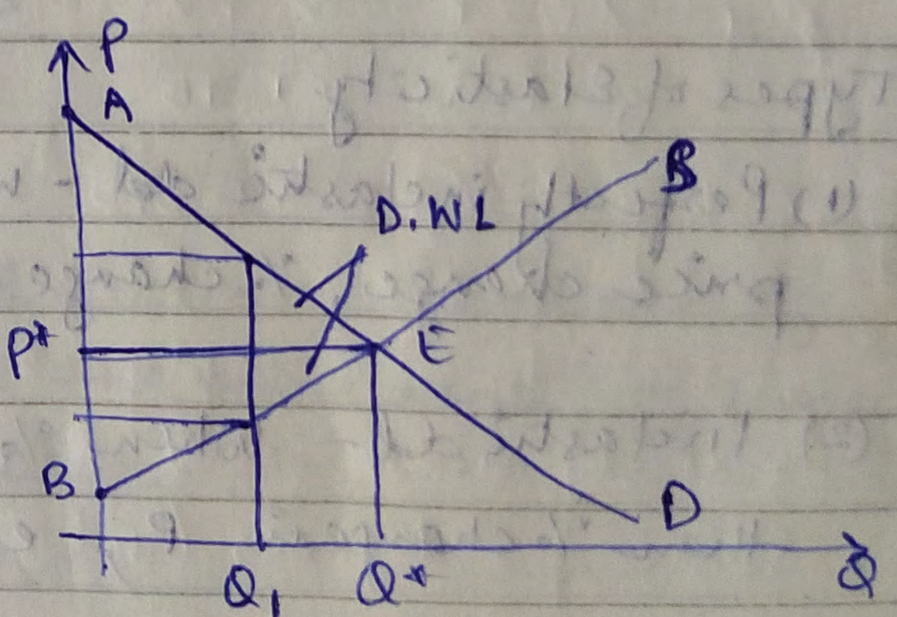




- Producer surplus - The difference bet^n current mkt price and the full cost of production fr the firm

- Dead weight loss - The net loss of producer & consumer surplus from under / over production.





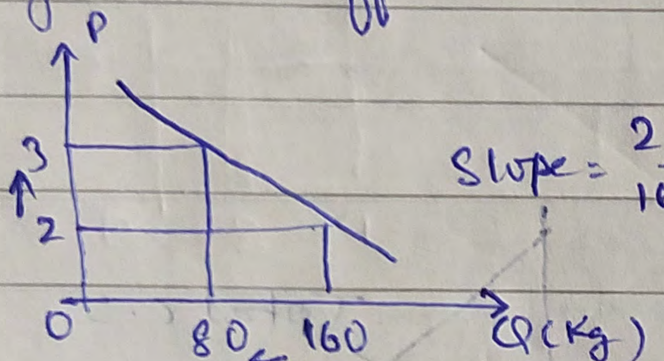
Beyond Q* consumers are willing to pay less than cost of production

Elasticity

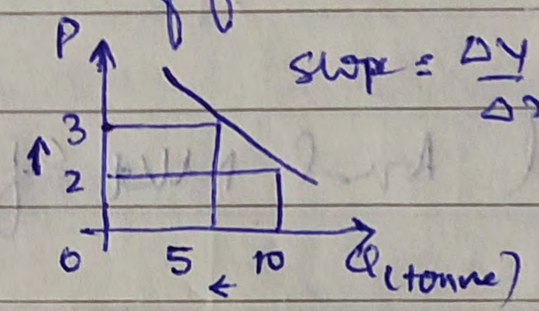
- Quantify the response in one var when another var. changes

elasticity of A w.r.t B $= \frac{\% \Delta A}{\% \Delta B}$

- slope of a demand curve may give rough idea about responsiveness of Q_d to P changes. But slope can be misleading. Fn 2 identical dd curves but different units on the X-axis gives different value of slope



$\text{Slope} = \frac{2-3}{160-80} = \frac{-1}{80}$



$\text{slope} = \frac{\Delta Y}{\Delta X} = \frac{P_2 - P_1}{X_2 - X_1} = \frac{2-3}{10-5} = -\frac{1}{5}$

‖ Numerical value of slope depends on units of measurement, so we must convert the changes in P & Q into percentages

- Price Elasticity of demand (e_d)

Ratio of %tage change in Q_d to %tage change in Price

$e_d = \frac{\% \text{ change in } Q}{\% \text{ change in } P}$ ‖ Most often sign is negative

- Types of Elasticity

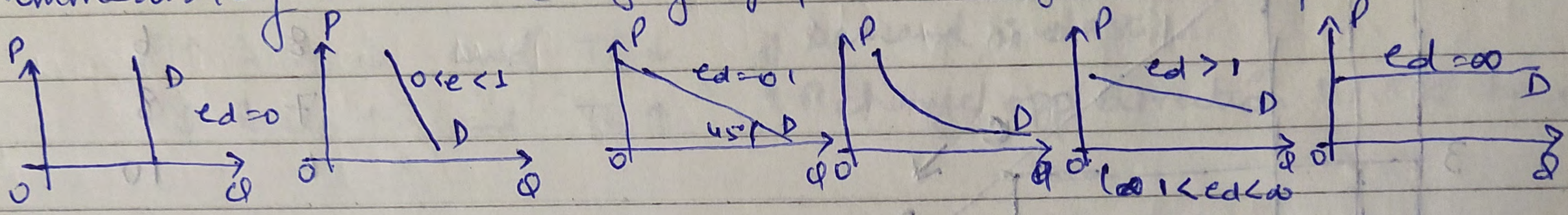
(1) Perfectly inelastic dd - when Q does not change/respond at all to a price change, % change in Q = 0 & $e_d = 0$ (insulin)

(2) Inelastic dd - When % change in Q is smaller (in absolute size) than % change in P, $e_d < 1$ (in absolute size) (Phone / Salt)

(3) Unitary elastic dd - When % change in Q is same as % change in P (in absolute value), $e = 1$ ($e_d = -1$)

(4) Elastic dd- When % change in Q is larger than % change in P (absolute size)
The absolute value of elasticity exceeds 1 (goods with lots of substitutes)

(5) Perfectly elastic dd- If a small ↑se in P causes Q to drop immediately to zero. (largely agr. products being sold at mkt prices)



- Calculating Price Elasticity

$$ed = \frac{\%\text{ change in } Q}{\%\text{ change in price}} = \frac{(\text{change in } Q)/Q_1 \times 100}{(\text{change in } P)/P_1 \times 100}$$

(either calculate separately & then take ratio)

$$ed = \frac{Q_2 - Q_1}{Q_1} \times 100 \Big/ \frac{P_2 - P_1}{P_1} \times 100$$

$$ed = \frac{\Delta Q/Q_1}{\Delta P/P_1} = \frac{\Delta Q/Q}{\Delta P/P} = \frac{\Delta Q}{\Delta P} \cdot \frac{P}{Q}$$

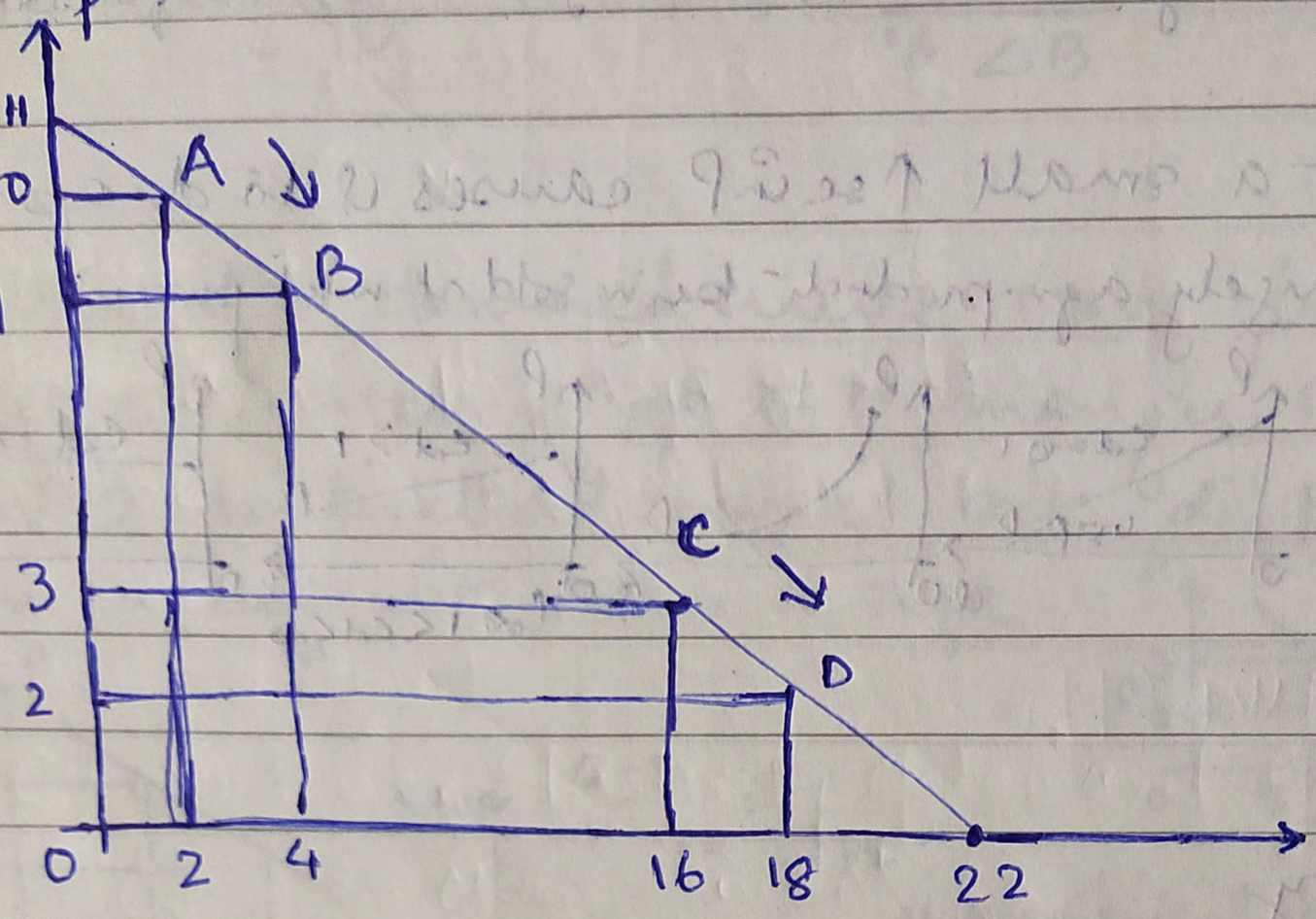
- The Mid-Point-

Direction of change affects the value of elasticity. So instead of using the initial values of Q & P we use the mid-points of these variables as bases for calculating percentages.

$$ed = \frac{(Q_2 - Q_1)}{(Q_1 + Q_2)/2} \times 100 \Big/ \frac{(P_2 - P_1)}{(P_1 + P_2)/2} \times 100$$

$$ed = \frac{\Delta Q/(Q_1 + Q_2)}{\Delta P/(P_1 + P_2)} = \frac{\Delta Q}{\Delta P} \cdot \frac{(P_1 + P_2)}{(Q_1 + Q_2)}$$

- Elasticity changes along a straight line DD curve



P	Q
11	0
10	2
9	4
8	6
7	8
6	10
5	12
4	14
3	16
2	18
1	20
0	22

Between A and B

$e_d = \frac{\Delta Q}{\Delta P} \cdot \frac{P}{Q} = \frac{2}{-1} \cdot \frac{10}{2}$

$e_d = -10$

$e_d = \frac{\Delta Q}{\Delta P} \cdot \left(\frac{P_1 + P_2}{Q_1 + Q_2}\right)$

$e_d = \frac{2}{-1} \cdot \frac{19}{6} = -6.3$

Between C and D

$e_d = \frac{\Delta Q}{\Delta P} \cdot \frac{P}{Q} = \frac{2}{-1} \cdot \frac{3}{16}$

$e_d = -3/8 = -0.375$

$e_d = \frac{\Delta Q}{\Delta P} \left(\frac{P_1 + P}{Q_1 + Q_2}\right)$

$e_d = \frac{2}{-1} \cdot \frac{5}{34} = -0.294$

Elasticity and Total Revenue

- Some producers (oil) succeed in mkt with P↑ while others (banana) don't i.e dd oil more inelastic than dd bananas
- Formally,
  Total Revenue (TR) = P × Q

- In most commodities as $P\uparrow$ $Q_D\downarrow$ & $P\downarrow$ $Q_D\uparrow$

- If $P\uparrow$ and $Q_D\downarrow$ and TR ↑ // Demand is inelastic
  $P\downarrow$ and $Q_D\uparrow$ and TR ↓ // P change ~~opp~~ TR change same direction to

$P\uparrow$ & $Q_D\downarrow$ and TR ↓ // Demand is elastic
$P\downarrow$ & $Q_D\uparrow$ and TR ↑ // P change opp. direction to TR change

$P\uparrow$ & $Q_D\downarrow$ and TR ↔ // Unitary Elastic Dd
$P\downarrow$ & $Q_D\uparrow$ and TR ↔ // show with dd curves

Limited concept by Marshall /

- Determinants of Demand Elasticity
  ed - way of measuring responsiveness of consumer' dd to change in P.
  so can be applied to indiv or HHs in mkt
  But one behaviour true for an indiv (inelastic dd curve) may not be true for the mkt
  ↳ different from other indiv
  no two indiv preferences are same exactly

So, generalization risky but few principles hold:
(1) Availability of Substitutes - will make the dd curve more elastic

(2) The importance of being Unimportant - when an item is small part of the budget - demand likely to be inelastic.

(3) Time dimension - ed in SR different from ed LR
less elastic/inelastic ↳ more elastic