Advait
Center For Professional Studies

CA - Foundation CA - Intermediate CA - Final

CA-FOUNDATION

CRASH COURSE MATERIAL

Business Economics

Chapter 3 – Theory of Production & Cost.

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Unit 2- Theory of Cost

All those monitory expenses incurred by a manufacturer is called as Cost.

There are 8 important types of cost

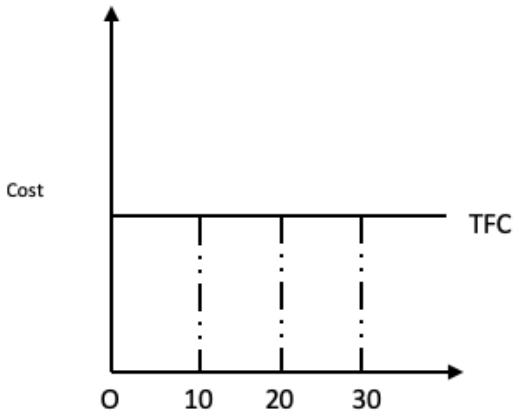
1. Fixed Cost
2. Variable cost
3. Total cost
4. Average Cost
5. Marginal Cost
6. Opportunity & Sunk cost
7. Accounting & Economic Cost
8. Incremental Cost

Example to understand the above different types of cost.
Mr. A is a Furniture manufacturer who has purchased a working space for Rs.10000/- per month as rent, he is in need of wood as a primary raw material which costs Rs.100/- for every 2kg of food, to produce every single furniture he need 2kg's of wood.

Mr. A use to work in a furniture factory for a pay scale of Rs.3,00,00/- p.a & presently with his own factory he is earning Rs.2,50,000/-

FIXED COST
All those monitory expenses which are un-avoidable in nature or remains unchanged irrespective of output.

Output	Fixed Cost
0	10000
10	10000
20	10000
30	10000



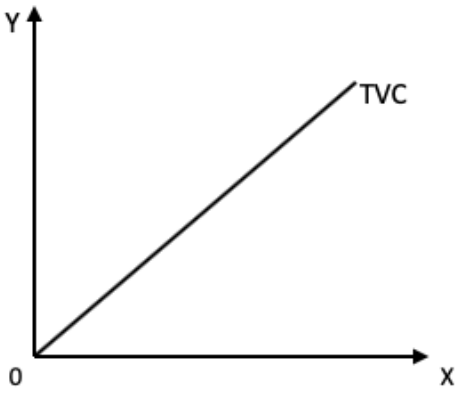
VARIABLE COST
All those monitory expenses which changes due to change in output.

Output ↑ TVC ↑
Output ↓ TVC ↓

a. When Proportionate change is VC is equal

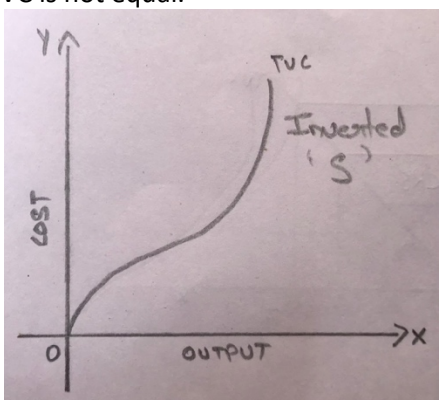
If proportionate change is equal

Output	TVC
0	0
1	100
2	200
3	300
4	400
5	500



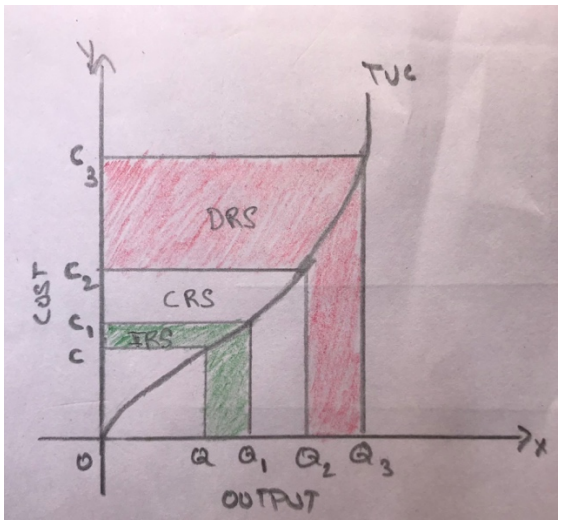
b. When proportionate change is VC is not equal.

Output	TVC
0	0
1	100
2	220
3	380
4	550
5	750

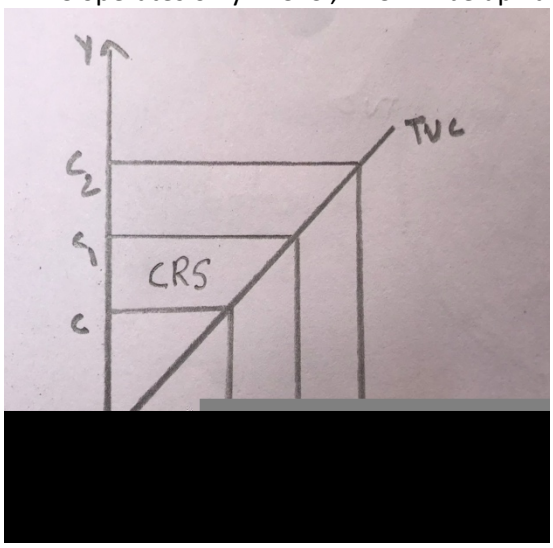


Why TVC is inverted 'S' in shape?
Because of LRS- LAW OF RETURNS TO SCALE i.e. production function under long run.

There are 3 stages in LRS
Stage 1- Where output increases more proportionate then input.
Stage 2- Where output increases in same proportionate of input.
Stage 3- Where output increases less proportionate then input..

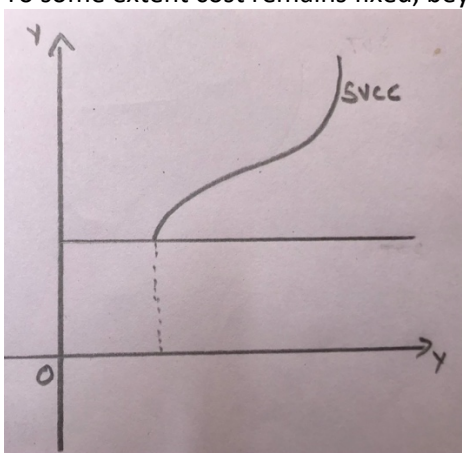


If TVC operates only in CRS , TVC will be upwards straight line curve

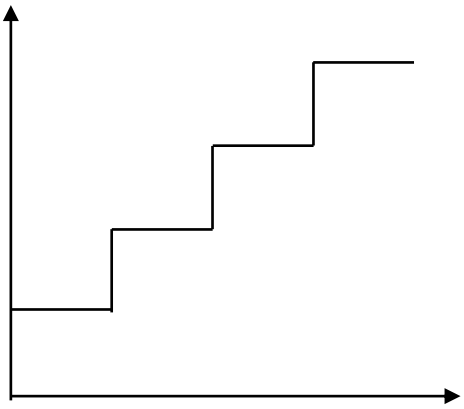


Types of TVC

1. **Semi variable cost**
   To some extent cost remains fixed, beyond which cost varies depending upon output/usage.



2. Stair step variable cost
   Every additional expenses is going to be uniform.

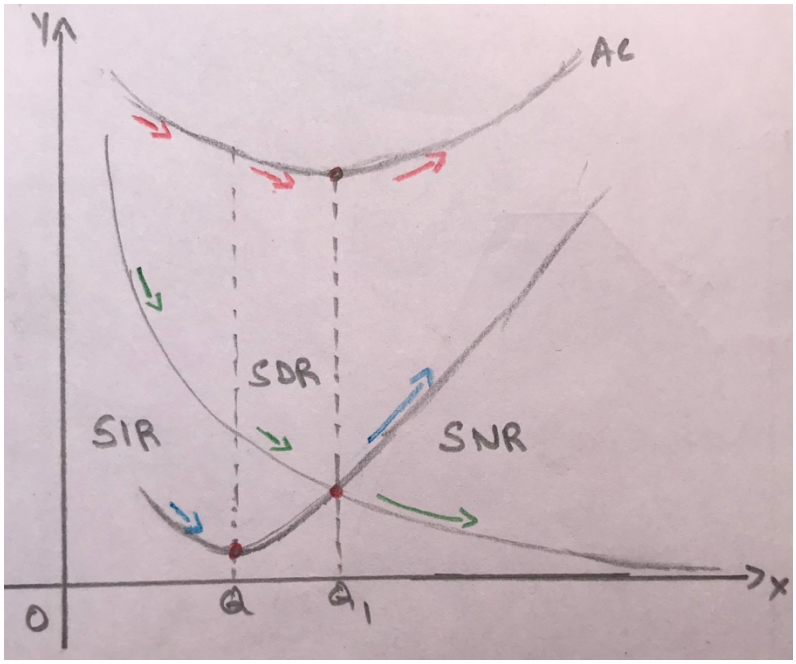


Average variable cost initially decreases until it reaches minimum & later starts to increase.
Ex: We appointed labours to work in our factory based on variable wage, every hour worked we pay Rs.100/- for a labour.

Labour	Output	Wages (TVC)	AVC
1	10	100	10
2	25	200	8
3	33	300	9.09

Why AVC IS 'J' in shape?
Because of LVP- LAW OF VARIABLE PROPORTION i.e. Production function under short run.

There are 3 stages in LVP.
Stage 1- Stage of Increasing returns (SIR)
Where output increases more proportionate then input
Stage 2- Stage of Diminishing returns (SDR)
Where output increases but less proportionate then input
Stage 3- Stage of Negative returns (SNR)
After a certain point output only decreases irrespective of input



Why AC is 'U' in shape ?
AC is a summation of AFC & AVC

If manufacturer decides to produce on OQ level of output i.e. Stage 1 (SIR)
AFC & AVC both are decreasing hence AC also decreases.

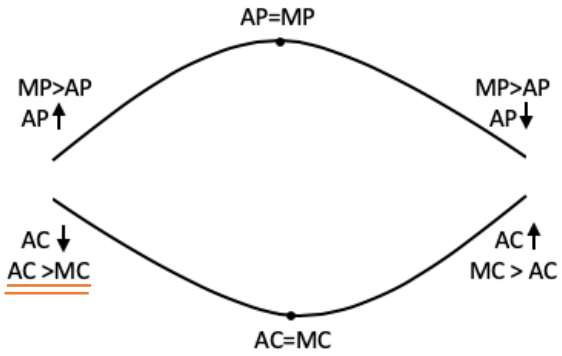
If manufacturer decides to produce from OQ to OQ_1 i.e. Stage 2 (SDR)
AFC continues to fall in greater proportion but AVC starts to increase in lesser proportion hence AC continues to decrease until it reaches minimum.

- Any producer will prefer to operate in stage two i.e. SDR as AC reaches minimum at a same level AFC & AVC both are equal.

If manufacturer decides to produce from OQ_1 & beyond i.e. Stage 3 (SNR)
AFC continues to fall but at a lesser rate & AVC starts to increases at higher rate due to which AC starts increasing.

Note :

1. SAC – Short run Average cost curve is called as PLANT Curve
2. LAC – Long run Average cost curve is called as PLANNING Curve
   Least cost combination curve
   Envelop curve
3. Relationship between AC & MC
   Relationship between AP & MP

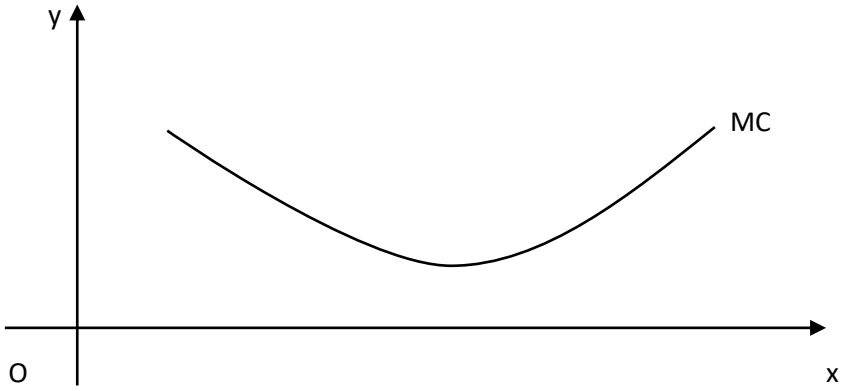


When,
AP↑, The rate of Increase in MP>AP
AP is Max, AP=MP
AP↓, The rate of decrease in MP>AP

When,
AC↓, The rate of decrease in AC>MC
AC is Max, AC=MC
AC↑, The rate of increase in MC> AC

MARGINAL COST

It is a cost incurred by a manufacturer to produce One extra unit / One additional unit of output.
$MC = TC_n - TC_{n-1}$ (If output is continues)
$MC = \Delta TC / \Delta Q$ (If output is not continues)



SUNK COST
It as a cost once incurred & which cannot be recovered back.

OPPORTUNITY COST
It is the cost of next best opportunity forgone, which cannot be shown in books of accounts.
Opportunity cost = opportunity selected – opportunity rejected.

Opportunity cost concept arises because of the fundamental premise of economics i.e. Resources are scares & can be put into multiple usages.

ACCOUNTING COST & ECONOMIC COST
Accounting Cost –
All those expenses which can be recorded in books off accounts, it is from accountant point of view
It is also called as Direct cost / Explicit cost

Economic cost –
All those expenses which can be & which cannot be recorded in books off accounts, it is from economist point of view.
It is also called as In-direct cost / Implicit cost

Economic cost= Accounting cost + opportunity cost
Economic cost = Implicit + explicit cost

INCREMENTAL COST
It is an extension of marginal cost
It is a cost incurred to produce one additional batch of output.

Formulas
TC= TFC+TVC
TVC = TC – TFC
TFC = TC – TVC
AC= TC /Q
AFC = TFC/Q (or) AFC= AC – AVC
AVC= TVC/Q (or) AVC= AC –AFC
MC= $TC_n - TC_{n-1}$ (If output is continues)
MC= $\Delta TC / \Delta Q$ (If output is not continues)
Opportunity cost = opportunity selected – opportunity rejected.

Units	TC	TVC	TFC	AC	AFC	AVC	MC
0	1500						
20	1700						
50	2000						
100	2400						
200	3000						
500	8000						
1000	16500						

Units	TC	TVC	TFC	AC	AFC	AVC	MC
0	240						
1	330						
2	410						
3	480						
4	540						
5	610						
6	690						
7	772						
8	880						
9	1050						

Unit 1- Theory of production

Human wants : All desires taste & motives of human being is called human wants.

Kinds of Human wants:

1. Necessary :
   - Basic necessary – Essentials of life like food, clothing & shelter
   - Necessaries of efficiency- In order to satisfy human wants we need money , in order to earn money we need to work , In order to perform the work more effectively & efficiently there are lot of tools & equipment which is considered as efficiency.
   - Social necessary- for the sake of society.

2. Comforts – all those G & S which provides better level of satisfaction.
3. Luxury – all those extravagant spending of a human
   - Harmful Luxury – Are those G&S which increase social status but effects on human health.
   - Harmless luxury - Are those G&S which increase social status but does not effects on human health
   - Defence luxury – which can be readily converted into liquid cash.

Characteristics of Human wants

1. Wants are unlimited
2. All wants cannot be satisfied
3. Wants are competitive & complementary
4. Wants are recurring in nature
5. Wants very with Time, Place & Person
6. Wants become habits & Customs
7. Wants are effective because of advertisement.

PRODUCTION

It is the process of adding **UTILITY** to a subject matter in order to satisfy human wants by converting input into an output by using human efforts.
Inputs refers to Factors of production - FOP (i.e. Land, labor, capital & Organization)
UTILITY- It is a want satisfying capacity of a commodity.

(Or)

It as an Economic activity which converts input into an output which are capable of satisfying human wants.

Creation/ Addition of Utility can be done in four different alternatives.

1. **Form utility:** By changing a shape from one form to another form
   Ex: Stitching of cloth
2. **Place Utility**: By shifting a commodity from one place to another & making it useful
   Ex: Agricultural output
3. **Time utility**: By storing a commodity and making it more useful at appropriate time.
   Ex: Rain water in Dam & reservoirs
4. **Ownership / positional utility** : By shifting a ownership or position from one perso to anoth person to use a commodity.

FACTORS OF PRODUCTION

A. Land
B. Labour
C. Capital
D. Organisation

LAND

All free gift of nature is known as land.

- Perfectly In-elastic
- In-destructible
- Im-mobile
- Differs in quality
- Differs in Value
- Primary & Passive factors of production

LABOUR

All kind of human efforts i.e. either physical or Intellectual which ever results in production & for which Monetary rewards are paid.

- Labour & labourer are in-separable
- Sells only this labour
- Perishable
- Human in nature
- Differs in efficiency
- Less Mobile
- Labour has less bargaining power
- Labour is in-elastic

CAPTIAL

All man made goods which can be used for further production, except free gift of nature.

Capital Formation (CMU)

- Creation
- Mobilisation
- Utilisation

ORGANISATION

Organiser is a person who brings other 3 FOP into one common place, without him other 3 FOP cannot be hired

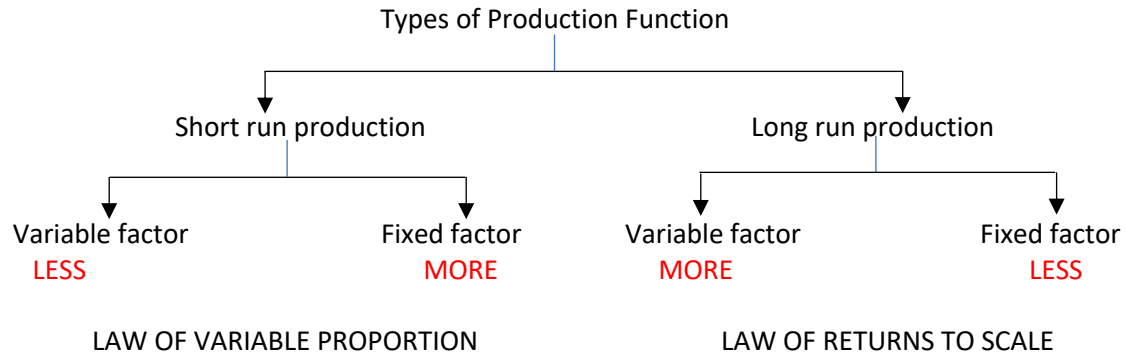
- Initiating business enterprise
- Risk & uncertainties
- Invention & innovation

PRODUCTION FUNCTION

It is a relationship between input & output of an organization, which can be expressed in a mathematical equation Q=f(L, l, k, o)

Q= Rate of Output
L, l, k, o = Land, labor, capital & Org

Input are scares resources by use of which we try to achieve maximum level of output.



LAW OF VARIABLE PROPORTION

Impact on output is due to change in some factors of production, It is knows as production function under short run.

Assumptions

1. We assume there are only three FOP i.e. Land, labor & capital
2. Land & Capital is a fixed factor
3. Labor is the only variable factor
4. Technology remains constant
5. No perfect substitutes for fixed factors

Stages of LVP

Stage 1 - Stage of Increasing returns (SIR)

Proportion of Fixed factor will be more then Variable factor, hence output increases more proportionate then input

Stage 2 - Stage of Diminishing returns (SDR)

Proportion of Fixed factor will become equal to Variable factor, hence output increase but less proportionate then input.

Stage 3 - Stage of Negative returns (SNR)

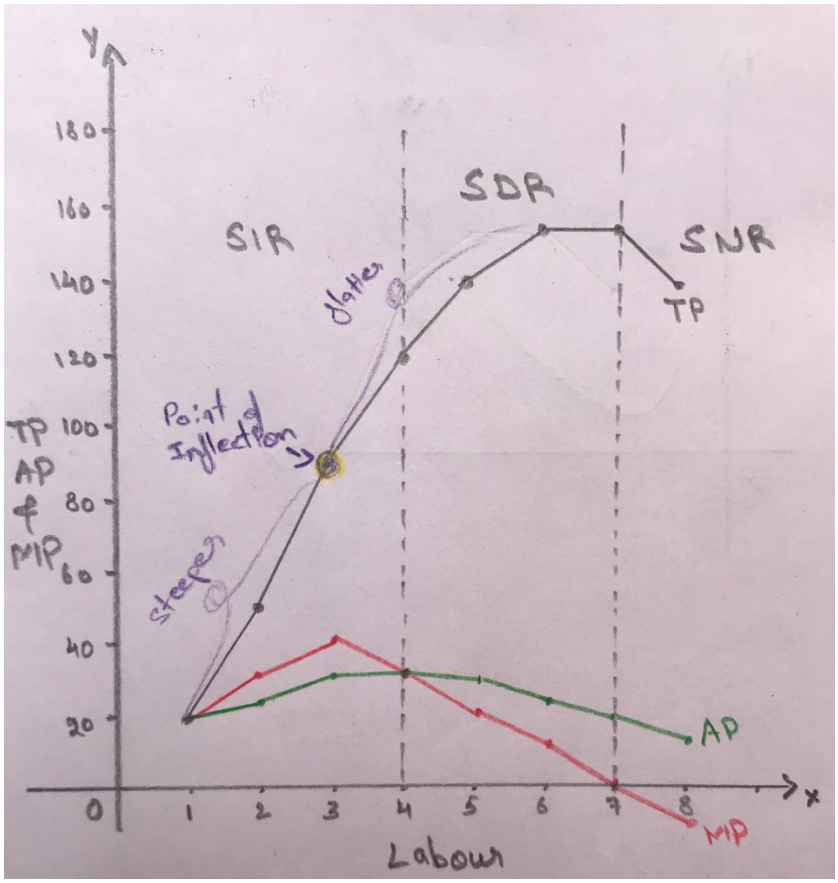
Proportion of Variable factor is more than Fixed factor, hence after certain point output starts decrease irrespective of input.

Units of Labour	Total Product	Average Product	Marginal Product	Stages
1	20	20	20	Stage of Increasing returns (SIR)
2	50	25	30	
3	90	30	40	
4	120	30	30	
5	140	28	20	Stage of Diminishing returns (SDR)
6	150	25	10	
7	150	21.42	0	
8	140	17.5	-10	Stage of Negative returns (SNR)

Point of Inflexion

It is a situation where MP will be maximum & TP increases faster (Steeper) till it reaches point of inflexion,

Later no doubt TP Increases but at a lesser rate, due to decrease in MP.

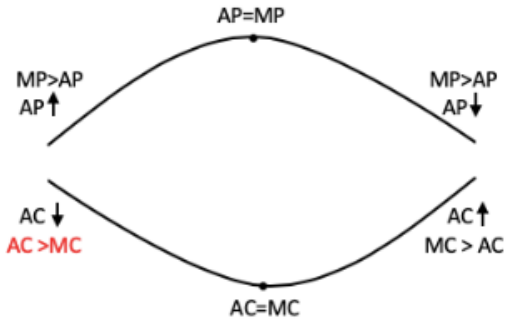


Stage 1 – Stage of increasing returns (SIR) ends when AP & MP are equal.
Stage 2 – Stage if diminishing return ends when TP is Max & MP is 'Zero'
Stage 3 – When MP is Negative

Conclusion:
Hence, Any Manufacturer will prefer to operate at Stage 2- Stage of diminishing returns, where output will be maximum & resources are utilized optimum extent.

TP = Max & MP= 0

Units of Labour	Total Product	Average Product	Marginal Product
1	20	20	20
2	50	25	30
3	90	30	40
4	120	30	30
5	140	28	20
6	150	25	10
7	150	21.45	0
8	140	17.5	-10



LAW OF RETURNS TO SCALE

Impact on output is due to change in more factors of production, it is known as production function under long run.

Assumptions

1. We assume there are only three FOP i.e. Land, labor & capital
2. Land is a fixed factor
3. Capital & Labor is the only variable factor
4. Technology remains constant
5. No perfect substitutes for fixed factors

Stages of LRS

Stage 1- Increasing returns to scale

Output increase more proportionate then input

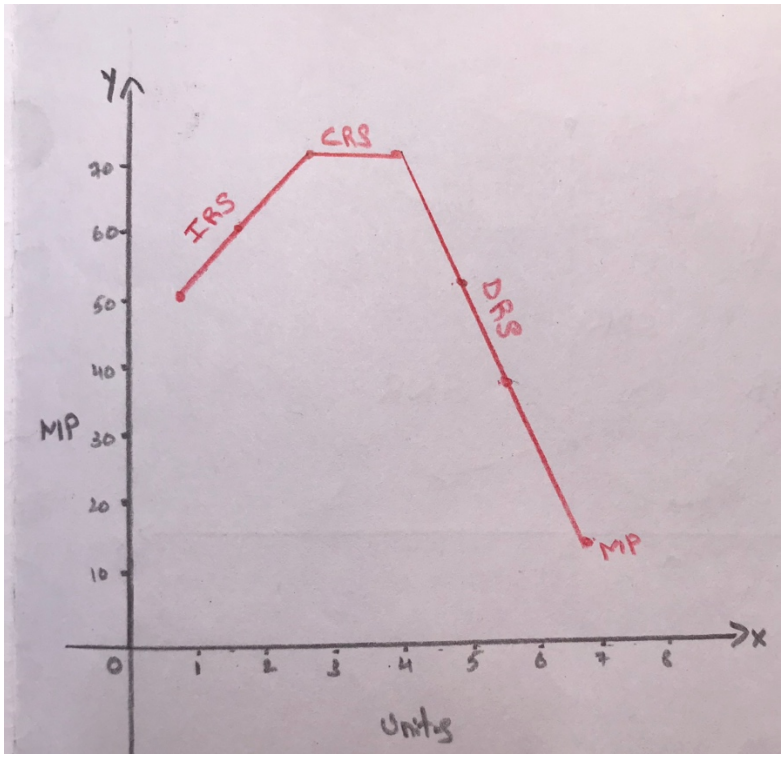
Stage 2- Constant returns to scale

Output increases in same proportion of input

Stage 3- Decreasing returns to scale

Output increases but less proportionate then input

Units C+L	Total Product	Marginal product
1 [1C + 2L]	50	50
2 [2 + 4]	110	60
3 [3 + 6]	180	70
4 [4 + 8]	250	70
5 [5 + 10]	300	50
6 [6 + 12]	335	35
7 [7 + 14]	350	15



ISO-QUANT & ISO-COST CURVE

ISO-QUANT CURVE – Any combination of 2 factor inputs which results in same level of output, connected in a form of a curve is called as Iso-quant curve.

It is similar to Indifference curve concept of consumer behaviour.

Difference between Iso-Quant & Indifference curve

Indifference curve	Iso-Quant
Consumer point of view	Producer point of view
Satisfaction is important	Production/output is important
2 commodity	2 factor inputs

ISO-COST CURVE- All those combination which makes the manufactures to spend equal amount of money, connected in the form of curve is called as Iso-Cost curve.

It is similar to Budget line concept of consumer behaviour

Internal & External Economies of scale

Internal Economies of scale are available to firm which are not affected by any of the external factors but by its own operations on which the firm has control

1. Technical Economy
   - Superior technology
   - Linked process (backward <raw material> & forward intergradation <marketing >)
   - Use of product
   - Dimensional economy <Bus & Double ducker>
2. Managerial
3. Financial
4. Marketing
5. R&D

External Economies of scale

1. Locational economy
2. Info & research development
3. Trade Association
4. Dis-Intergradation

Internal & External Dis-economies of scale

Internal Dis-economies of scale

They are those demerits which are internal to the firm & burden of firm when it over expands its operations.

1. Managerial dis-economies
   - Information gets twisted
   - As Span of control Increases, Management ability decreases
   - Top level will be over burdened
   - Management looses personal touch

External Dis-economies of scale

- Increase in Input price
- Pressure of available infrastructure
- Exhaustibility of Natural resources