ECO401 - ECONOMICS

FALL2021 FINALTERM MERGED HANDOUTS & PPT

(Syllabus Fall 2021 - Lecture # 16-22, 24-38)

(Total 18 lectures)

Prepared By:

VU GLBOAL STUDY GROUP

AARISH ALI & TEAM (+96569002641)

Join our esteemed network for group study

ECO401

https://chat.whatsapp.com/CDYTdotGYyZ6M9VwxEUwpW

VU GLOBAL

https://chat.whatsapp.com/FXMQ8xZCnMC5ogsAMdGZSv

Final Term Syllabus

Lecture # 16-22, 24-38

Efforts By

AARISH ALI (+96569002641)

Contact us to join our esteemed group

"VU GLOBAL STUDY GROUP"

Join our esteemed network for group study

ECO401

https://chat.whatsapp.com/CDYTdotGYyZ6M9VwxEUwpW

VU GLOBAL

https://chat.whatsapp.com/FXMQ8xZCnMC5ogsAMdGZSv

Final Term Syllabus

Lecture # 16-22, 24-38

Efforts By

AARISH ALI (+96569002641)

Contact us to join our esteemed group

"VU GLOBAL STUDY GROUP"

Join our esteemed network for group study

ECO401

https://chat.whatsapp.com/CDYTdotGYyZ6M9VwxEUwpW

VU GLOBAL

https://chat.whatsapp.com/FXMQ8xZCnMC5ogsAMdGZSv

HANDOUTS
Lecture # 16-22, 24-38
FINAL TERM FALL2021

VU GLOBAL BY AARISH ALI (+96569002641)

Lesson 16

PRODUCER BEHAVIOR: COST ANALYSIS

Economists argue that sunk cost should not be included in a rational person's decision-making process while opportunity cost should be included.

VARIABLE COST (VC)

Costs, which vary with the level of activity (or output), are called variable costs. Variable cost is a cost of labor, material or overhead that changes according to the change in the volume of production units. Combined with fixed costs, variable costs make up the total cost of production. While the total variable cost changes with increased production, the total fixed cost stays the same.

Fixed Cost (FC)

Costs, which do not vary with the level of activity or output, are called fixed costs. In long run, there are no fixed costs. Fixed cost does not vary depending on production or sales levels, such as rent, property tax, insurance, or interest expense.

Total Cost (TC)

Total cost (TC) is the sum of all fixed and variable costs. It plot as a vertical summation of the horizontal line total fixed cost (TFC) curve and the upward sloping total variable cost (TVC) curve.

$$TC = FC + VC$$

Average Cost or Average total cost (AC or ATC)

Total cost per unit of output, found by dividing total cost by the quantity of output. Average total cost, usually abbreviated ATC, can be found in two ways. Because average total cost is total cost per unit of output, it can be found by dividing total cost by the quantity of output. Alternatively, because total cost is the sum of total variable cost and total fixed cost, average total cost can be derived by summing average variable cost and average fixed cost. Average cost (AC) is the vertical summation of the AFC & AVC. Average variable cost plus average fixed cost equals average total cost.

$$\mathbf{AVC + AFC = ATC \text{ or } AC}$$

Average variable cost (AVC)

AVC is an economics term to describe the total cost a firm can vary (labor, etc.) divided by the total units of output.

$$\mathbf{AVC = TVC/Q}$$

Average fixed cost (AFC)

AFC is total; fixed cost divided by the total units of output.

$$\mathbf{AFC = TFC/Q}$$

AC = AFC + AVC, where average fixed cost (AFC) is a downward sloping line as you are dividing a fixed number by an increasing number of output units. By contrast, average variable cost (AVC) first falls as output increases and then rises.

Study of AC is necessary for firms to be able to set the price or (average revenue) at which they will sell. Also they will be interested in knowing how AC is broken down into AFC & AVC.

MARGINAL COST (MC)

The change in total cost (or total variable cost) resulting from a change in the quantity of output produced by a firm in the short run. Marginal cost indicates how much total cost changes for a given change in the quantity of output. Because changes in total cost are matched by changes in total variable cost in the short run (remember total fixed cost is fixed), marginal cost is the change in either total cost or total variable cost. Marginal cost, usually abbreviated MC, is found by dividing the change in total cost (or total variable cost) by the change in output.

Marginal cost is the addition to TC caused by a unit increase in output. More generally:

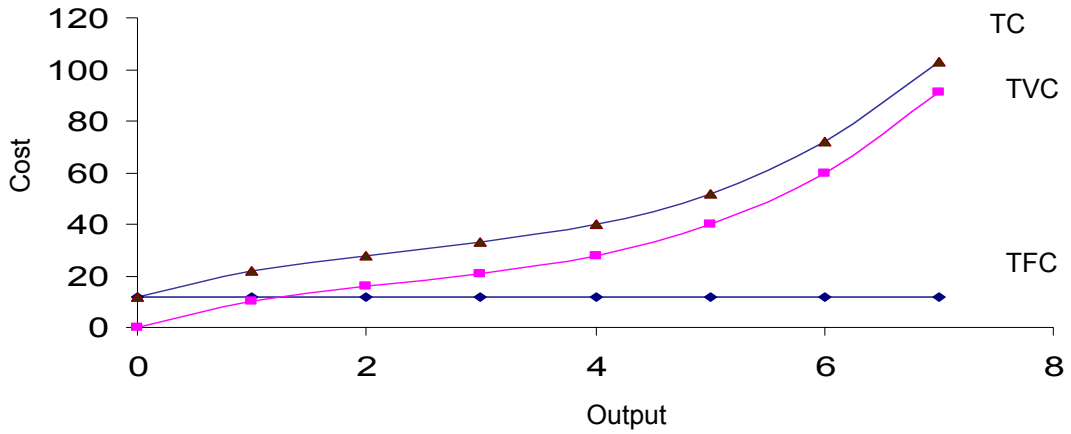
$$\mathbf{MC = \Delta TC/\Delta Q}$$

The secret of the shape of the MC curve lies in the law of diminishing marginal returns. The relationship between MC and AC is a reflection of the relationship between MPP & APP. That is: both MC and AC fall in the beginning, then MC starts to rise, cutting AC from below at the latter's turning point (minima).

© Copyright Virtual University of Pakistan

In the long run, the law of diminishing marginal returns does not apply to the extent that it does in short run.

TC = TVC + TFC			
Output (Q)	**TFC**	**TVC**	**TC**
0	12	0	12
1	12	10	22
2	12	16	28
3	12	21	33
4	12	28	40
5	12	40	52
6	12	60	72
7	12	91	103



RELATIONSHIP BETWEEN AC AND AVC

Initially, AC falls more rapidly than AVC because AC is a summation of AFC & AVC and since both are falling the effect of two falling curves is greater than the effect of one falling curve. After the turning point in AVC, both AC and AVC rise but the gap between them narrows because of same reasoning as given above.

There is an **inverse** relationship between costs and productivity, i.e. as productivity rises, costs fall and vice versa.

The equivalent of constant, increasing and decreasing returns to scale in terms of costs are economies of scale, diseconomies of scale and constant costs (or constant returns to scale).

i. In the case of economies of scale, long run total cost (LRTC) is an upward sloping curve but with falling slope. Note that the slope can never become zero or negative, though.
ii. In diseconomies of scale, LRTC is an upward sloping curve with an increasing slope.
iii. In constant costs, LRTC is a positively sloped straight line.

THE LONG-RUN AVERAGE COST CURVE (LRAC)

The long-run average cost (LRAC) curve for a typical firm is U shaped.

i. As a firm expands, it initially experiences economies of scale (due to productive efficiency, better utilization of resources etc.); in other words, it faces a downward sloping LRAC curve.
ii. After the scale of operation is increased further, however, the firm achieve constant costs i.e., LRAC become flat.
iii. If the firm further increases its scale of operation, diseconomies of scale set in (due to problems with managing a very large organization etc.) and the LRAC assumes a positive slope.

© Copyright Virtual University of Pakistan

The following assumptions are made while deriving LRAC curves:
Price of factors are constant, technology is fixed, firms choose that combination of factors at which the MPP of the last dollar spent on each input is equal.

Long-run marginal cost (LRMC):
In case a firm is enjoying economies of scale, each incremental unit will cost less than the preceding one i.e., LRMC will be falling. The opposite will be true for diseconomies of scale. In case of constant costs, each incremental unit will cost the same, i.e., the LRMC will be constant.

Relation between SRAC and LRAC curves:
The LRAC curve for a firm is actually derived from its SRAC curves. The exact shape of the LRAC is a wave connecting the least cost parts of the SRAC curves. In practice however, LRAC is shown as a smooth U-shaped curve drawn tangent to the SRAC. This is also called an envelope curve.

© Copyright Virtual University of Pakistan

Lesson 17

REVENUE & PROFIT MAXIMIZATION ANALYSIS

REVENUES

Revenues are the sale proceeds that accrue to a firm when it sells the goods it produces; in other words, they are the cash inflows that the firm received by way of selling its products.

Total Revenue (TR), Average Revenue (AR) and Marginal Revenue (MR):

Total revenue (TR), average revenue (AR) and marginal revenue (MR) concepts apply in the same way as they did to TC, AC and MC.

i. **TR = P x Q.**
ii. **AR = TR/Q;** AR is usually equal to price unless the firm is engaged in price discrimination.
iii. **MR = ΔTR/ΔQ.**

PRICE-TAKING FIRM

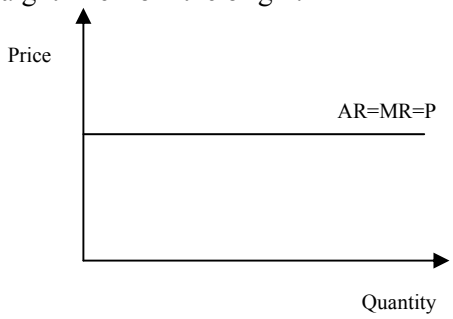
A firm that does not have the ability to influence market price is a price-taker. In perfect competition, the firm is price taker. There are large number of buyers and sellers and firm can not influence on the market price. Price is set by the forces of demand and supply.

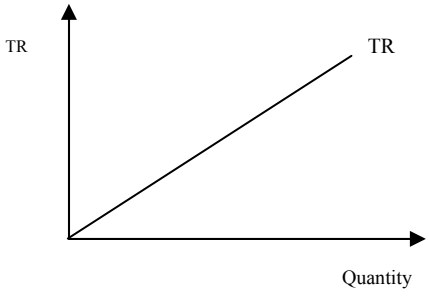
PRICE-MAKING FIRM

A firm that influences the market price by how much it produces can be called a price-maker or price-setter. In Monopoly, firm is price maker. A monopoly or a firm within monopolistic competition has the power to influence the price it charges as the good it produces does not have perfect substitutes. A monopoly is a price maker as it holds a large amount of power over the price it charges.

DERIVING A FIRM'S AR & MR CURVES FOR PRICE TAKING FIRM

For a price taker, **AR=MR=P**. In this case, the demand (or AR) curve the firm faces is a horizontal line. TR for a price-taking firm is a straight line from the origin.

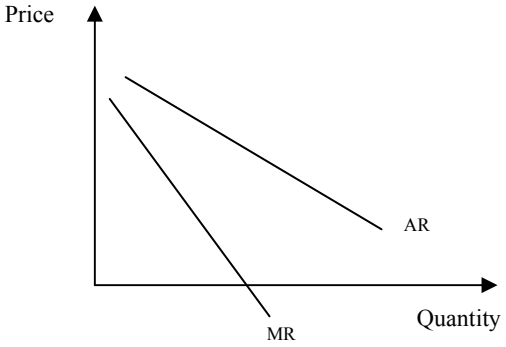


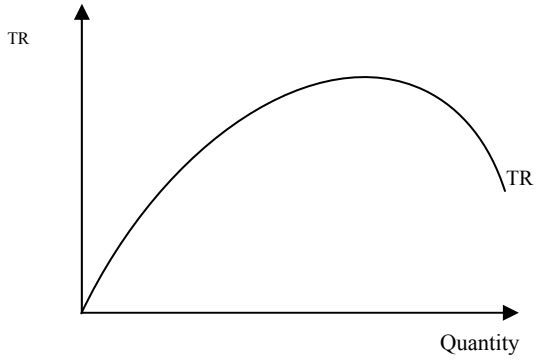


DERIVING A FIRM'S AR & MR CURVES FOR PRICE MAKING FIRM

Q (ships)	P = AR Rs. Crores	TR= P×Q Rs. Crores	MR
1	8	8	
2	7	14	6
3	6	18	4
4	5	20	2
5	4	20	0
6	3	18	-2
7	2	14	-4

A price maker faces a downward sloping demand (or AR) curve i.e., it cannot sell more without reducing price. But this means lowering the price for all units, not just the extra units it hopes to sell. The demand faced by a price maker is elastic, when MR is positive and therefore TR increases due to a decrease in price. Demand is inelastic when MR is negative, and therefore TR falls due to a decrease in price.





PROFIT MAXIMIZATION

Firms are interested in profit maximization. Profit is the difference between total revenue & total cost. Higher the difference, higher is the level of profit. Economists say that when firms earn zero accounting profits, they actually earn normal economic profits because TC already includes the normal profits that owners of the firms need for themselves to stay in the business. Positive profits are, for this reason, called supernormal profits as they are over and above what the owners normally require as a return for their entrepreneurship.

$$\text{Profit} = TR - TC$$

APPROACHES OF PROFIT MAXIMIZATION

Profit maximization can be studied using the TR-TC approach and the MR-MC approach.

i. In the TR-TC approach, it is assumed that firm is price maker and firm is operating in short run. Total profit is the vertical distance between TR and TC.

ii. In the MR-MC approach, two steps are followed to identify maximum profit. First: the profit-maximizing output is identified – this is the point where MR cuts MC. Second: the size of maximum profit is calculated using AC and AR curves.

Assumptions:

1. Demand curve is downward sloping
2. Firm is operating in the short run

TR & TC APPROACH

According to this approach, profit is maximized at that point where the difference between total revenue & total cost is maximum. In this table, profit is maximized at quantity of 3, where profit is at its maximum of 4.

Q(units)	TR	TC	T π
0	0	6	-6
1	8	10	-2
2	14	12	2
3	**18**	**14**	**4**
4	20	18	2
5	20	25	-5
6	18	36	-18
7	14	56	-42

MR & MC APPROACH

According to this approach, profit is maximized at the point where MC=MR. In this table, profit is maximized at quantity of 4 where MR=MC=2

Q	P=AR	TR	MR	TC	AC	MC	T π	A π
0	9	0	-----	6	----	----	-6	----
1	8	8	8	10	10	4	-2	-2
2	7	14	6	12	6	2	2	1
3	6	18	4	14	4 2/3	2	4	1 1/3
4	**5**	**20**	**2**	**18**	**4 1/2**	**4**	**2**	**1/2**
5	4	20	0	25	5	7	-5	-1
6	3	18	-2	36	?	11	-18	-3
7	2	14	-4	56	8	20	-42	-6

If MR & AR remain same over the long run, then the profit maximizing output will be obtained where MR intersects LRMC.

If AC is always above AR, then firms will never be able to make a profit. In this case, the point where MR=MC, represents the loss-minimizing point.

When MC and MR intersect at two points, not one, then Firms should produce at that point of intersection of MR and MC beyond which, MC exceeds MR.

If a firm's AR is below its AVC, it will shut down since it is not covering any part of its fixed costs.

Note: Graphical illustration of these two approaches is discussed in detail in the video lectures.

© Copyright Virtual University of Pakistan

EXERCISES

How will the length of the short run for a shipping company depend on the state of the shipbuilding industry?

If the shipbuilding industry is in recession, the short run (and the long run) may be shorter. It will take less time to acquire a new ship if there is no waiting list, or if there are already ships available to purchase (with perhaps only minimal modifications necessary).

Up to roughly how long is the short run in the following cases?

(a) A mobile ice-cream firm. (b) A small grocery. (c) Electricity power generation.

a) 2-3 days: the time necessary to acquire new bicycles, equipment and workers.
b) Several weeks: the time taken to acquire additional premises.
c) 3-5 years: the time taken to plan and build a new power station.

How would you advise the naanwaala (bread-maker) next door as to whether he should (a) employ an extra assistant on a Sunday (which is a high demand day); (b) extend his shop, thereby allowing more customers to be served on a Sunday?

a) If maximizing profit is the sole aim, then he should employ an additional assistant if the extra revenue from the extra customers that the assistant can serve is greater than the costs of employing the assistant.
b) Only if the extra revenue from the extra customers will more than cover the costs of the extension plus the extra staffing.

Given that there is a fixed supply of land in the world, what implications can you draw from about the effects of an increase in world population for food output per head?

Other things being equal, diminishing returns would cause food output per head to decline (a declining MPP and APP of labour). This, however, would be offset (partly, completely or more than completely) by improvements in agricultural technology and by increased amounts of capital devoted to agriculture: this would have the effect of shifting the APP curve upwards.

The following are some costs incurred by a shoe manufacturer. Decide whether each one is a fixed cost or a variable cost or has some element of both.

(a) The cost of leather. (b) The fee paid to an advertising agency. (c) Wear and tear on machinery. (d) Business rates on the factory. (e) Electricity for heating and lighting. (f) Electricity for running the machines. (g) Basic minimum wages agreed with the union. (h) Overtime pay. (i) Depreciation of machines as a result purely of their age (irrespective of their condition).

(a) Variable. (b) Fixed (unless the fee negotiated depends on the success of the campaign). (c) Variable (the more that is produced, the more the wear and tear). (d) Fixed. (e) Fixed if the factory will be heated and lit to the same extent irrespective of output, but variable if the amount of heating and lighting depends on the amount of the factory in operation, which in turn depends on output. (f) Variable. (g) Variable (although the basic wage is fixed per worker, the cost will still be variable because the total cost will increase with output if the number of workers is increased). (h) Variable. (i) Fixed (because it does not depend on output).

Assume that a firm has 5 identical machines, each operating independently. Assume that with all 5 machines operating normally, 100 units of output are produced each day. Below what level of output will AVC and MC rise?

20 units. Below this level, the one remaining machine left in operation will begin to operate at a level below its optimum. (Note that with 5 machines producing 100 units of output, minimum AVC could be achieved at 100, 80, 60, 40 and 20 units of output, but between these levels some machines may be working at less than their optimum and some at more than their optimum. Thus if the optimum level for a machine is critical, then the AVC curve may look 'wavy' rather than a smooth line.

Why is the minimum point of the AVC curve (y) at a lower level of output than the minimum point of the AC curve (z)?

Because between points y and z marginal cost is above AVC (and thus AVC must be past the minimum point) but below AC (and thus AC cannot yet have reached the minimum point). Even though AVC is rising beyond point y, the fall in AFC initially more than offsets the rise in AVC and thus AC still falls.

What economies of scale is a large department store likely to experience?

© Copyright Virtual University of Pakistan

Specialized staff for each department (saving on training costs and providing a more efficient service for customers); being able to reallocate space as demand shifts from one product to another and thereby reducing the overall amount of space required; full use of large delivery lorries which would be able to carry a range of different products; bulk purchasing discounts; reduced administrative overheads as a proportion of total costs.

Why are firms likely to experience economies of scale up to a certain size and then diseconomies of scale after some point beyond that?

Because economies of scale, given that most arise from increasing returns to scale, will be fully realized after a certain level of output, whereas diseconomies of scale, given that they largely arise from the managerial problems of running large organizations, are only likely to set in beyond a certain level of output.

How is the opening up of trade and investment between, say eastern and western Europe, likely to affect the location of industries within Europe that have (a) substantial economies of scale; (b) little or no economies of scale?

a) Given that production will take place in only one or two plants, new plants will tend to be located near to the centre of the new enlarged European market.
b) Plants will still tend to be scattered round Europe, given that the customers are scattered.

These effects will be the result of attempts to minimize transport costs and thus will be more significant the higher are transport costs per kilometer.

Name some industries where external economies of scale are gained. What are the specific external economies in each case?

Two examples are:

- Financial services: pool of qualified and experienced labour, access to specialist software, one firm providing specialist services to another.
- Various parts of the engineering industry: pool of qualified and experienced labour, access to specialist suppliers, possible joint research, specialized banking services.

Would you expect external economies to be associated with the concentration of an industry in a particular region?

Yes. There may be a common transport and communications infrastructure that can be used; there is likely to be a pool of trained and experienced labour in the area; joint demand may be high enough to allow economies of scale to be experienced in the supply of some locally extracted raw material.

If factor X costs twice as much as factor Y (Px/Py = 2), what can be said about the relationship between the MPPs of the two factors if the optimum combination of factors is used?

MPPx/MPPy = 2. The reason is that if MPPx/Px = MPPy/Py, then, by rearranging the terms of the equation, MPPx/MPPy must equal Px/Py (= 2).

Could isoquants ever cross?

Not for a given state of technology, otherwise it would mean that at one side of the intersection the higher output isoquant would be 'south-west' of the lower output isoquant. This would mean that a higher output could be achieved by using less of both factors of production!

Could they ever slope upward to the right?

Yes. It would mean that one of the two factors had a negative marginal productivity that was greater than the positive marginal productivity of the other: i.e. that MPPa/MPPb (or MPPb/MPPa) was negative (a negative marginal rate of factor substitution).

This situation will occur when so much is used of one factor that diminishing returns have become so great as to produce substantial negative marginal productivity: isoquants will bend back on themselves beyond the points where they become vertical or horizontal. The firm, however, will not produce along this portion of an isoquant, because the price ratio (Pa/Pb) will (virtually) never be negative.

What will happen to an isocost if the prices of both factors rise by the same percentage?

It will shift inwards parallel to the old isocost.

Why do the prices of cattle and sheep prices fall so drastically "on", or just "after" the first day of Eid-ul-Azha?

The supply curve for cattle and sheep is fixed in the short-run, i.e. a vertical supply curve, therefore price will be determined by demand. Since demand for "cattle for sacrifice" falls drastically after or on the first day of Eid-ul-Azha, the price has to come down drastically as well for the market to clear.

© Copyright Virtual University of Pakistan

Explain the shape of the LRMC curve for a firm with a typical U-shaped LRAC curve.

At first economies of scale cause the LRMC to fall. Then because of (marginal) diseconomies of scale, additional units of production begin to cost more to produce than previous units: the LRMC begins to slope upwards. But the LRAC is still falling because the LRMC is below it pulling it down. It is not until the LRMC crosses the LRAC that the firm will experience a rising LRAC and hence average diseconomies of scale.

Will the "envelope curve" be tangential to the bottom of each of the short-run average cost curves? Explain why it should or should not be.

No. At the tangency points the two curves must have the same slope. Thus the slope at the tangency point is not zero (the slope at the turning point or minima of the SRAC curves).

What would the isoquant map look like if there were (a) continuously increasing returns to scale; (b) continuously decreasing returns to scale?

a) The isoquants would get progressively closer and closer together.
b) The isoquants would get progressively further and further apart.

What can we say about the slope of the TR and TC curves at the maximum profit point? What does this tell us about marginal revenue and marginal cost?

The slopes are the same. But given that the slope of the total curve gives the respective marginal, this means that marginal revenue will be equal to marginal cost.

Fill in the missing figures in the table below.

Q	*P = AR*	*TR*	*MR*	*TC*	*AC*	*MC*	*Tπ*	*Aπ*
0	9			6				
1	8			10				
2	7			12				
3	6			14				
4	5			18				
5	4			25				
6	3			36				
7	2			56				

Q	*P = AR*	*TR*	*MR*	*TC*	*AC*	*MC*	*Tπ*	*Aπ*
0	9	0		6	–		–6	–
			8			4		
1	8	8		10	10		–2	–2
			6			2		
2	7	14		12	6		2	1
			4			2		
3	6	18		14	4.3		4	1.3
			2			4		

© Copyright Virtual University of Pakistan

4	5	20		18	4.5		2	0.5
			0			6		
5	4	20		25	5		–5	–1
			–2			9		
6	3	18		36	6		–18	–3
			–4			16		
7	2	14		56	8		–42	–6

Why should the figures for MR and MC be entered in the spaces between the lines?

Because marginal revenue (or cost) is the extra revenue (or cost) from moving from one quantity to another.

You are given the following information for a firm.

Q	0	1	2	3	4	5	6	7
P	12	11	10	9	8	7	6	5
TC	2	6	9	12	16	21	28	38

Construct a detailed table like the one you constructed in the earlier question with TR, AC, MR, TC, AC, MC, TΠ and AΠ. Use your table to draw "two" diagrams (one with the marginal revenue and cost curves, and one with the total (or average) revenue and cost curves) and use them to show the "profit-maximizing output" and the "level of maximum profit", respectively. Confirm your findings by reference to the table you construct.

Q	***P = AR***	***TR***	***MR***	***TC***	***AC***	***MC***	***Tπ***	***Aπ***
0	12	0		2	–		–2	–
			11			4		
1	11	11		6	6		5	5
			9			3		
2	10	20		9	4.5		11	5.5
			7			3		
3	9	27		12	4		15	5
			5			4		
4	8	32		16	4		16	4
			3			5		
5	7	35		21	4.2		14	2.8
			1			7		
6	6	36		28	4.7		8	1.3
			–1			10		
7	5	35		38	5.4		–3	–0.4

The curves will be a similar shape to those discussed in the lecture, and included in the slides handout. The peak of the TΠ curve will be at Q = 4. This will be the output where MR and MC intersect.

Will the size of normal 'profit' vary with the general state of the economy?

Yes. Normal profit is the rate of profit that can be earned elsewhere (in industries involving similar level of risk). When the economy is booming, profits will normally be higher than when the economy is in recession. Thus the 'normal' profit that must be earned in any one industry must be higher to prevent capital being attracted to other industries.

Given the following equations:

$$\mathbf{TR = 72Q - 2Q^2;\ TC = 10 + 12Q + 4Q^2}$$

Calculate the maximum profit output and the amount of profit at that output using both methods.

(a) $T\Pi = 72Q - 2Q^2 - 10 - 12Q - 4Q$

$= -10 + 60Q - 6Q^2$ (1)

$\therefore d\Pi/dQ = 60 - 12Q$

Setting this equal to zero gives:

$60 - 12Q = 0$

$\therefore 12Q = 60$

$\therefore$ **Q = 5**

(b) $MR = dTR/dQ = 72 - 4Q$

$MC = dTC/dQ = 12 + 8Q$

Setting MR equal to MC gives:

$72 - 4Q = 12 + 8Q$

$\therefore 12Q = 60$

$\therefore$ **Q = 5**

To find the level of maximum profit, we must substitute Q = 5 into equation (1). This gives:

$\Pi = -10 + (60 \times 5) - (6 \times 5^2)$

$= -10 + 300 - 150$

= Rs. 140

Lesson 18

PROFIT MAXIMIZATION ANALYSIS (CONTINUED) & MARKET STRUCTURES

PROFIT MAXIMIZATION USING CALCULUS

If total revenue (TR) and total cost equation are given as follows:

$$\mathbf{TR = 48q - q^2}$$

$$\mathbf{TC = 12 + 16q + 3Q^2}$$

Q	TR	TC	Tπ = TR –TC
0	0	12	-12
1	47	31	16
2	92	56	36
3	135	87	48
4	176	124	52
5	215	167	48
6	252	216	36
7	287	271	16

Profit is maximized at the point where:

$$\mathbf{MC = MR}$$

MC function can be found by taking derivative of total cost function. i.e.:

$$MC = d\,TC / dQ$$

$$MC = 16 + 6Q$$

MR function can be found by taking derivative of total revenue (TR) function i.e.:

$$MR = d\,TR / dQ$$

$$= 48 - 2Q$$

As profit is maximized at the point where MR = MC, so by equating values of MC and MR function, we get,

$$\mathbf{MR = MC}$$

$$16 + 6Q = 48 - 2Q$$

$$6Q + 2Q = 48 - 16$$

$$8Q = 32$$

$$\underline{\mathbf{Q = 4}}$$

The equation for total profit is,

$$\mathbf{T\pi = TR - TC}$$

$$= 48Q - Q^2 - (12 + 16Q + 3Q^2)$$

$$= 48Q - Q^2 - 12 - 16Q - 3Q^2$$

$$= -4Q^2 + 32Q - 12$$

Putting Q = 4, we get,

$$T\pi = -4(4)^2 + 32(4) - 12$$

$$= -64 + 128 - 12$$

$$\underline{\mathbf{T\pi = 52}}$$

So profit is maximized where output is 4 and the maximum profit is 52.

We can also calculate AR from this information:

$$\mathbf{TR = 48Q - Q2}$$

$$AR = TR/Q = 48Q/Q - Q2/Q$$

$$= 48 - Q$$

$$= 48 - 4$$

$$\underline{\mathbf{AR = 44}}$$

Slope of MR curve is twice as the slope of AR curve:

Slope of AR is obtained by differentiating AR function with respect to Q.

$$\textbf{Slope of AR} = \frac{dAR}{dQ} = \frac{d}{dQ}(48-Q) = -1$$

Slope of MR is obtained by differentiating MR function with respect to Q.

$$\textbf{Slope of MR} = \frac{dMR}{dQ} = \frac{d}{dQ}(48-2Q) = -2$$

MARKET STRUCTURES

Economists have identified four broad market structures:

- Perfect competition
- Monopoly
- Monopolistic competition
- Oligopoly

Type of market	Number of firms	Freedom of entry	Nature of product	Examples	Implication for demand curve of firm
Perfect competition	Very many	Unrestricted	Homogenous (undifferentiated)	Grains (wheat) or vegetables	Horizontal; firm is a price taker
Monopolistic competition	Many / Several	Unrestricted	Differentiated	Plumbers, restaurants	Downward sloping but relatively elastic; firm has some control over prices.
Oligopoly or Cartel	Few	Restricted	1. Undifferentiated or 2. Differentiated	Cement, cars, electrical appliance, oil.	Downward sloping relatively inelastic but depends on reactions of rivals to a price change
Monopoly	One	Restricted or completely blocked	Unique	WAPDA, or KESC	Downward sloping more inelastic than oligopoly; firm has considerable control over price

Market structure refers to how an industry (broadly called market) that a firm is operating in is structured or organized.

The key ingredients of any market structure are:

- Number of firms in the market/industry
- Extent of barriers to entry
- Nature of product
- Degree of control over price

Knowledge about market structure can help answer four questions:

ii. How much profit a firm will make (normal or supernormal)
iii. How much quantity it will produce at its profit-maximization point (i.e. whether it will be a large level of output or a small one relative to the market)
iv. Whether or not a higher level of output would increase the cost or productive efficiency of the firm or allocative efficiency for society (see the summary on monopoly for details)
v. Are the prices set too high, too low, or just right?

PERFECT COMPETITION

The main assumptions of perfect competition are:

i. Large number of buyers and sellers, therefore firms price-takers.
ii. No barriers to entry (also implies free mobility of factors of production).
iii. Identical/homogeneous products
iv. Perfect information/knowledge

The word **perfect** in perfect competition is not used in its normative sense. Rather it means that competition in the industry is of an extreme nature. It is used as a benchmark with which to compare other types of market structures.

© Copyright Virtual University of Pakistan

Perfect competition can be thought of as an **extreme form of capitalism**, i.e. all the firms are fully subject to the market forces of demand and supply.
Concentration ratio is used to assess the level of competition in an industry. It is simply the percentage of total industry output that is produced by the five largest firms in the industry.

PROFIT MAXIMIZATION UNDER PERFECT COMPETITION IN THE SHORT RUN
The short run is the period where at least one factor of production is fixed. In perfect competition, it also means that no new firms can enter the market. Equilibrium analysis can help us answer questions about the market-clearing price and quantity; where the profits are maximized and how much are these profits; how individual firms make their short run supply decisions and how these translate into the long-run industry supply curve.
In the short run, a perfectly competitive firm can settle at equilibrium where it is making super normal profits, normal profits, loss, or where it decides to shut down.
In the short run, the firm's supply curve is identical to the positive part of MC. The short run industry supply curve is simply the horizontal summation of the supply curves of individual firms.

The demand (or AR) curve for the industry is downward sloping but for any individual perfectly competitive firm, is horizontal. Thus, the firm can sell as much at the given market price. For this reason, the AR and MR curves align under perfect competition.

© Copyright Virtual University of Pakistan

Lesson 19

MARKET STRUCTURES (CONTINUED)

PROFIT MAXIMIZATION UNDER PERFECT COMPETITION IN THE LONG RUN

In the long run, all the factors of production are variable. In the long run, any firm can enter or leave the industry. If there are supernormal profits in the short run, more firms will be attracted to the market and the increase in supply will push prices down to eliminate supernormal profit possibilities in the long run. By contrast, if firms are making losses in the short run, they will leave the industry in the long run causing supply to fall, prices to rise and normal profitability to be restored. In the long run, therefore, perfectly competitive firms can only earn normal profits.

ALLOCATIVE EFFICIENCY AND PRODUCTIVE EFFICIENCY

Public interest is concerned with both allocative efficiency and productive efficiency.

a. **Allocative efficiency:** The optimal point of production for any individual firm is where MR=MC. The optimal point of production for any society is where price is equal to marginal cost. This is called the point of maximum allocative efficiency and is achieved in perfect competition (because MR=MC, and MR=AR=P for a perfectly competitive price taking firm, therefore P=MC).
b. **Productive efficiency:** This is attained when firms produce at the bottom of their AC curves, that is, goods are produced in the most cost efficient manner. Perfectly competitive firms also achieve this in the long run because they produce at P=MC and this intersection point also happens to be the point of tangency with the lowest part of the AC curve. Thus P= AC minimum.

MONOPOLY

Monopoly defines the other pole or extreme of the market structure spectrum. Usually refers to a situation where there is a single producer in the market. However, it actually depends upon how narrowly you define the industry.

MONOPOLY POWER

Economists are often interested in how much monopoly power any firm (not necessarily a monopoly) has. Here monopoly stands for the extent to which the firm can raise prices without driving away all it customers. In other words, monopoly power and price elasticity of demand are inversely related.

Firms whose customers are more have more monopoly power. A monopolistic firm faces inelastic demand of the product & its demand curve is negatively sloped. While in perfect competition, demand curve has infinitely elasticity.

PROFIT MAXIMIZATION UNDER MONOPOLY

In monopoly, firm earns profit when MC=MR and MC curve cuts the MR curve from below. MC curve is not the supply curve of the firm as it was in the perfect competition. This is also the major difference between monopoly & perfect competition.

i. The profit maximizing or best level of output is given where MR=MC. Price is then read off the demand curve which is downward sloping. Note however, the difference with perfect competition, where the firm's demand curve was horizontal and not downward sloping like the industry. In a monopoly, however, the firm "is" the industry and therefore faces the same demand curve as the industry (a downward sloping one).
ii. Depending upon the level of AC at the point where MR=MC, the monopolist might be earn supernormal profits, breaking even or minimizing short run losses.
iii. Price is greater than MR in equilibrium. Therefore, price is not equal to MC. As such, therefore, the supply curve for the firm is not the rising part of the MC curve.

A monopolist can make supernormal profits even in long run because there is no easy entry for other firms as in the case of perfect competition. Therefore, a monopolist can maintain high price even in the long run.

HOW CAN A MONOPOLIST RETAIN ITS MONOPOLY?

i. These can be due to "natural" reasons or "active policies" pursued by the monopolist.
ii. Large initial fixed costs may be involved, which makes it prohibitive for others to enter.

© Copyright Virtual University of Pakistan

iii. Natural monopoly experiences economies of scale as its operation becomes bigger and bigger and therefore it is cost-effective for only one single firm producing for the entire economy, rather than two or more firms.
iv. Product differentiation or brand loyalty.
v. Active pricing strategies (limit pricing: charging a price below a potential entrant's AC to drive him out or discourage him from entering).
vi. The "threat of takeover" by the monopolist sometimes prevents other firms from entering.
vii. The monopolist controls the supply of key factors of production.
viii. The monopolist produces a product, which no one else can imitate, i.e. is protected by patents or copyrights.

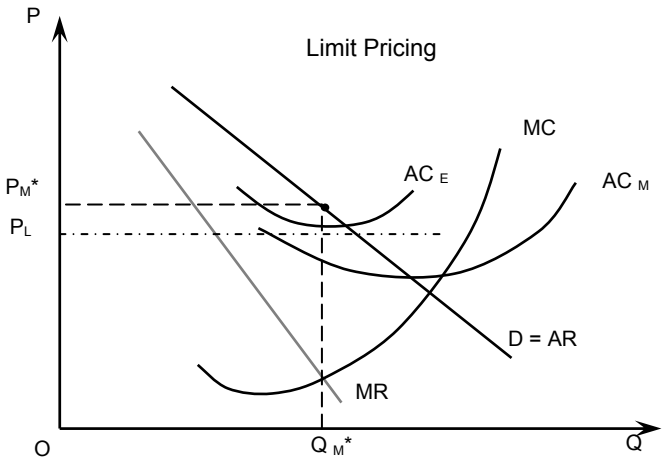
© Copyright Virtual University of Pakistan

Lesson 20

MARKET STRUCTURES (CONTINUED)

LIMIT PRICING

If a firm is already established in the market, it got gradually the business tricks of how to run the business. A new entrant firm in the market has to face high costs. A monopolist firm knows about this fact very well that his costs are lower than the new entrant firm so he can take advantage of this situation.



In this figure,
AC_E = Average cost curve for new entrant firm
AC_M = Average cost curve for monopolist firm
New entrant firm should charge the same or lower price than the monopolist other wise people will not purchase from new entrant firm. Now if monopolist wants to maximize his profits he would produce the output where MC=MR at Q_M*. At this output level, monopolist will charge the price of P_M*. This is the price that monopolist should charge if he wants to maximize his profits. But in order to ensure that the new entrant will not enter the market, he can charge the price lower than P_M*.

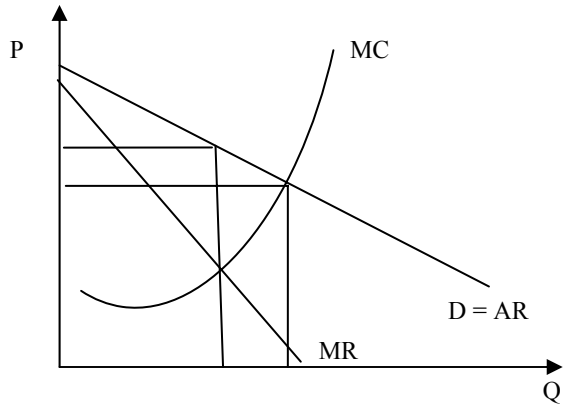
MONOPOLIES AND THE PUBLIC INTEREST

Disadvantages of monopolies:

i. Monopolists produce lower quantities at higher prices compared to perfectly competitive firms. This is because monopolists do not produce where P=MC (the point of allocative efficiency) nor at P= AC minimum (the point of cost efficiency).
ii. Monopolists earn supernormal profits compared to perfectly competitive firms
iii. Most of the "surplus" (producer + consumer surplus) accrues to monopolists.
iv. Monopolists do not pay sufficient attention to increasing efficiency in their production processes.

© Copyright Virtual University of Pakistan

Equilibrium of the industry under perfect competition and monopoly: with the same MC

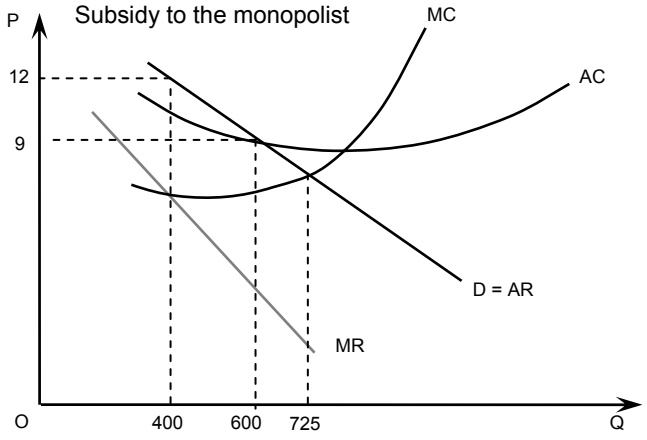


Advantages of monopolies:

i. Natural Monopolies are beneficial and efficient for society.
ii. Supernormal or monopoly profits can be invested in R&D, development of new innovative products and to sustain a price war when breaking into new foreign markets.

GOVERNMENT REGULATION

The government can regulate monopolies to ensure that they set a price where the AR curve intersects the MC curve. This will ensure allocative efficiency. It might not be possible to ensure that productive efficiency is attained as well because it is not necessary for the AR curve to intersect MC at the AC minimum. Also, in setting AR (or P) = MC, the economist might make a loss in which case the government would have to provide a subsidy. If the monopolist makes a profit then a tax is warranted. Due to difficulties with implementing subsidies, governments sometimes regulate monopolies at the point where the AR curve intersects the AC curve. This often takes the monopolist reasonably close to the allocative and productive efficiency points without necessitating a tax or a subsidy.



Lesson 21

MARKET STRUCTURES (CONTINUED)

PRICE DISCRIMINATION (PD) happens when a producer charges different prices for the same product to different customers. A seller with a degree of monopoly power has the ability to price discriminate. This means being able to charge a different price to different customers.

TYPES OF PRICE DISCRIMINATION

PD can be of three types:

i. 1st degree PD
ii. 2nd degree PD
iii. 3rd degree PD

1ST DEGREE PD

In this type, everyone charged according to what he can pay. Seller can charge the highest price of any product from customers. First-degree price discrimination occurs when identical goods are sold at different prices to each individual consumer. Obviously, the seller is not always going to be able to identify who is willing to pay more for certain items, but when he or she can, his profit increases.

For example, this type of price discrimination can be observed in the sale of both new and used cars. People will pay different prices for cars with identical features, and the salesperson must attempt to estimate the maximum price at which the car can be sold. This type of price discrimination often includes a bargaining aspect, where the consumer attempts to negotiate a lower price.

2ND DEGREE PD

In this type, different prices charged to customers who purchase different quantities.

Examples of this can often be found in the hotel and airline industries where spare rooms and seats are sold on a last minute standby basis. In these types of industry, the fixed costs of production are high. At the same time the marginal or variable costs are small and predictable. If there are unsold airline tickets or hotel rooms, it is often in the businesses best interest to offload any spare capacity at a discount prices, always providing that the cheaper price that adds to revenue at least covers the marginal cost of each unit.

In retail stores, second-degree price discrimination also exists. A reduced price may be offered if you buy two t-shirts instead of just one. This form helps to get rid of merchandise and generate more revenue for a company.

3RD DEGREE PD

In this type, seller charge different prices to different customers in different markets.

For example, exporters may charge a higher price in overseas markets if demand is estimated to be more inelastic than it is in home markets. In Pakistan, there is food chain like Mc Donald's, pizza hut, KFC etc. They sell their products at different prices in different countries. Moreover, senior citizens are considered a group, and are often offered discounts at movie theaters, for transportation, in restaurants, and even in retail stores where seniors may have a "senior day" each week that allows them to take a discount on merchandise. "Students" are another segmented group that may be offered lower prices. Both seniors and students have a higher elasticity of demand and can generally afford to pay less than the average worker.

Consequences of PD:

PD can allow firms making losses to make profits, firms to increase their supernormal profits if make supernormal profits; allow goods to be produced that would otherwise not be produced.

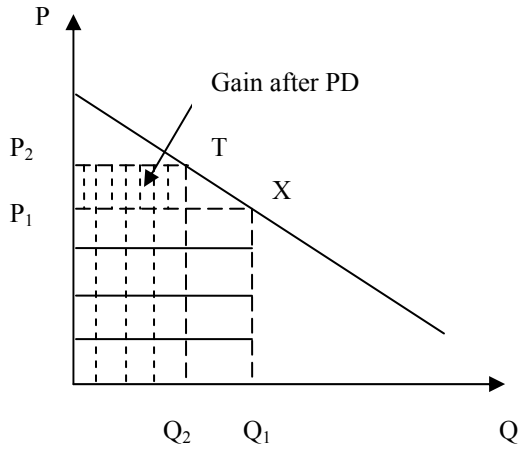
PRE-REQUISITES / CONDITIONS OF PRICE DISCRIMINATION

i. That markets should be independent (it should not be possible for the different customers to arbitrage the price differences in the market).
ii. Firms should have the flexibility to price discriminate (i.e. should have some control over prices, so perfect competition ruled out).
iii. Price elasticity of demand for different customers should be different.

© Copyright Virtual University of Pakistan

BENEFITS OF PRICE DISCRIMINATION

Price discrimination can be both, **beneficial or harmful** for public interest depending on a number of factors (equity or fairness concerns, the production of goods otherwise not produced, the use to which price-discriminating firms put their supernormal profits to, etc.).



MONOPOLISTIC COMPETITION

Monopolistic competition is also characterized by a large number of buyers and sellers and absence of entry barriers. In these two respects it is like perfect competition. Firms are price-takers but not in the extreme sense of perfect competition. Products are differentiated and in this respect, it is different from perfect competition.

Thus the characteristics of a monopolistically competitive market are almost the same as in perfect competition, with the exception of heterogeneous products, and that monopolistic competition involves a great deal of non-price competition (based on subtle product differentiation). A firm making profits in the short run will break even in the long run because demand will decrease and average total cost will increase. This means in the long run, a monopolistically competitive firm will make zero economic profit. This gives the company a certain amount of influence over the market; because of brand loyalty, it can raise its prices without losing all of its customers. This means that an individual firm's demand curve is downward sloping, in contrast to perfect competition, which has a perfectly elastic demand schedule.

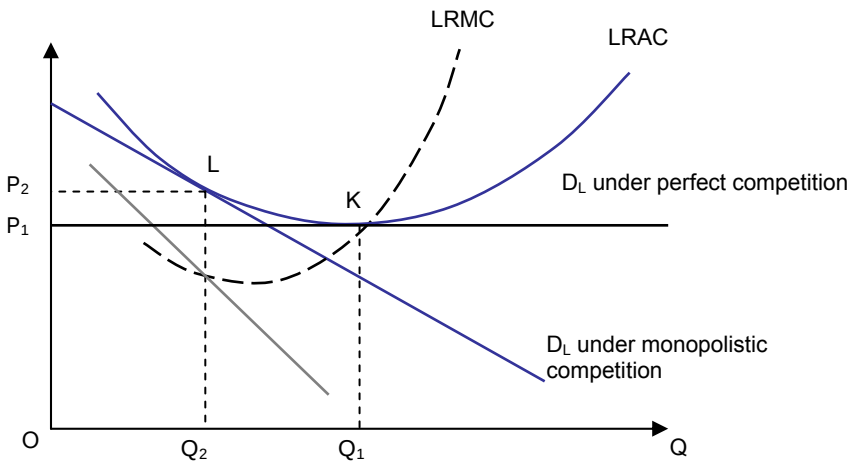
SHORT RUN AND LONG RUN UNDER MONOPOLISTIC COMPETITION:

In the short run, super normal profits are possible, but, in long run only normal profits can be earned. Equilibrium obtains where the AR curve becomes tangent to the AC curve. Public interest depends upon the position of AC at the point of tangency. If the AR curve is steep then the point of tangency will produce an output that will be well to the left of right the point where P= MC or P=AC $_{\text{minimum}}$.

Since products are differentiated, there is room and rationale for advertising and product promotion.

© Copyright Virtual University of Pakistan

Monopolistic competition & public interest



Lesson 22

MARKET STRUCTURES (CONTINUED)

OLIGOPOLY

Similar to monopoly in the sense that there are a small number of firms (about 2-20) in the market and, as such, barriers to entry exist. It is similar to perfect competition in the sense that firms compete with each other, often feverishly, which may result in prices very similar to those that would obtain under perfect competition. It is similar to monopolistic competition since there is a possibility of having differentiated products.

DIFFERENCE OF OLIGOPOLY WITH OTHER MARKET STRUCTURES

An oligopoly is a market form in which a market or industry is dominated by a small number of sellers (oligopolists). The word is derived from the Greek for few sellers.

- Because there are few participants in this type of market, each oligopolist is aware of the actions of the others. The decisions of one firm influence, and are influenced by the decisions of other firms. Strategic planning by oligopolists always involves taking into account the likely responses of the other market participants. This causes oligopolistic markets and industries to be at the highest risk for collusion.
- It is not possible to identify any single equilibrium in oligopoly. Theory of firm is not clearly discussed & established as the theory of firm in the other three market structures. Reason for that is the firms are interdependent.

COLLUSION

Collusion occurs when two or more firms decide to cooperate with each other in the setting of prices and/or quantities. Firms collude in order to maximize the profits of the industry as a whole by behaving like a single firm. In doing so, they try to increase their individual profits. In the study of economics and market competition, collusion takes place within an industry when rival companies cooperate for their mutual benefit. Collusion most often takes place within the market form of oligopoly, where the decision of a few firms to collude can significantly impact the market as a whole. Cartels are a special case of explicit collusion. Collusion which is not overt, on the other hand, is known as tacit collusion.

At one time, all the firms sit together and combine their decisions in order to maximize profits & behave like monopoly. But at the same time, since all these firms have separate identity, they have the desire also to maximize their own individual profits as well. They might behave like single firm but they can also try to maximize their individual profits. This opposing situation creates tension. This tension can lead to collusion to break down.

TWO POSSIBLE SCENARIOS OF OLIGOPOLY

This tension between collusion & competition give rise to two possible scenarios that the oligopolist firms can have:

1. Collusive oligopoly
2. Non-collusive oligopoly

1- COLLUSIVE OLIGOPOLY (CARTEL)

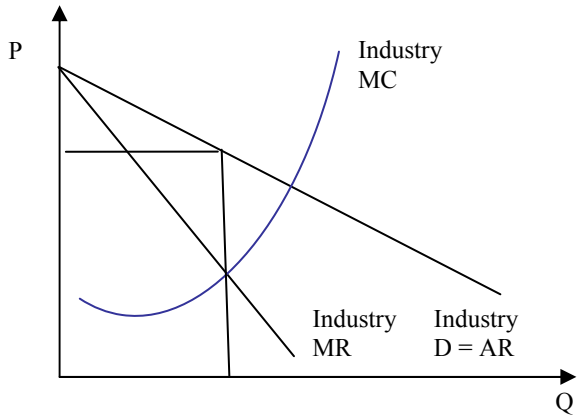
A collusive oligopoly (or cartel) can be formed by deciding upon market shares, advertising expenses, prices to be charged (identical or different) or production quotas, such as OPEC, are collusive oligopolies. A firm can collude in many different ways. For example, they can collude on the market share in total profits. Collusion can also be done in terms of how much advertising expenditures each firm would have to put. They can also set the prices and quotas. If firms are not of equal size, then quotas can be allocated according to the MC of each firm. Cost of the cartel firm is minimized if the MC of each of the firm is equal. But the problem with this quota system is that firms which have higher MC will get lower quotas and the firms which have lower MC will get higher quotas.

Cartel

A cartel is a formal (explicit) agreement among firms. Cartels usually occur in an oligopolistic industry, where there are a small number of sellers and usually involve homogeneous products.

A cartel is most likely to survive when the number of firms is small, there is openness among firms regarding their production processes; the product is homogeneous; there is a large firm which acts as price leader; industry is stable; government's strictness in implementing anti-trust (or anti-collusion) laws. Govt regulations are helpless against internationally operational cartels or when collusion is tacit (or hidden) not explicit.

Profit maximizing cartel



2- NON- COLLUSIVE OLIGOPOLY

If different firms in the oligopolistic structures do not cooperate with each other is known as non collusive oligopoly. In this case, collusion breaks down because the incentive to cheat is very high. This can arise, for instance, in a situation where there is a lure of very high profits so that individual firms cheat on their quota and try to increase output and profits. But this causes everyone else to do the same and therefore supply soars and prices tumble producing in effect a non-collusive oligopoly.

The incentive to collude becomes strong for members of a non-collusive oligopoly when firms are not making good profits. Thus oligopolies usually oscillate between collusive and non-collusive equilibria.

COLLUSION & GAME THEORY

The Prisoner's Dilemma Situation

Consider about the two prisoners who have committed a crime together. Both have been arrested by the police and kept in separate cells. They have been interrogated separately about their crime. The dilemma is this if both confess to a crime they each have to face the punishment of 5 years in jail. If they do not confess then police has no evidence to keep them and police will let them go free. Their punishment will be very minor or might be zero in this case.

If one testifies for the prosecution against the other and the other remains silent, the betrayer goes free and the silent accomplice receives the full 10-year sentence. If both remain silent, both prisoners are sentenced to only six months in jail for a minor charge. If each betrays the other, each receives a five-year sentence. Each prisoner must make the choice of whether to betray the other or to remain silent. However, neither prisoner knows for sure what choice the other prisoner will make. So this dilemma poses the question: How should the prisoners act?

The dilemma arises when one assumes that both prisoners only care about minimizing their own jail terms. Each prisoner has two and only two options: either to co-operate with his accomplice and stay quiet, or to defect from their implied pact and betray his accomplice in return for a lighter sentence. The outcome of each choice depends on the choice of the accomplice, but each prisoner must choose without knowing what his accomplice has chosen.

In deciding what to do in strategic situations, it is normally important to predict what others will do. This is not the case here. If one prisoner knew the other prisoner would stay silent, his best move is to betray as he then walk free instead of receiving the minor sentence. If he knew the other prisoner would betray, his best move is still to betray, as he receive a lesser sentence than by silence. Betraying is a dominant strategy. The other prisoner reasons similarly, and therefore also chooses to betray. Yet by

© Copyright Virtual University of Pakistan

both defecting they get a lower payoff than they would get by staying silent. So rational, self-interested play results in each prisoner being worse off than if they had stayed silent.
A prisoner's dilemma situation for oligopolistic firms arises when 2 or more firms by attempting independently to choose the best strategy anticipation of whatever the others are likely to do, all end up in a worse position than if they had cooperated in the first place.

Payoff of a matrix for firm X& Y
(profit in Rs: at different prices)

		X's price	
Y's price		**Rs.2**	**Rs.1.80**
	Rs.2	**A.** 10m each	**B.** 5m for Y 12m for X
	Rs.1.80	**C.** 12m for Y 5m for X	**D.** 8m each

There are four points to be noted in this table:

- If both X & Y firms charge same price of Rs.2 then they get same profit of Rs.10 million as shown by option A.
- If both firm independently thought about reducing the price to Rs.1.8 then they have to take into account the decision of other firm. They have to think about what their rival will do? Their rival can do two things either to lower the price or kept the same price level. Now if X kept his price at Rs.2 the worst thing for X would be that its rival Y cuts its price to Rs.1.8. X's profit will now fall to Rs.5 million and Y's profit will increase to Rs.12 million due to lower price. This is shown in option C.
- If however, X cuts its price to Rs.1.8 the worst outcome still would be Y to cut its price too to Rs.1.8. but this time X's profit will only fall to Rs.8 million and Y's profit will also fall to Rs.8 million. This is shown in option D.
- However if X think optimistically and cuts its price to Rs.1.8 with his optimistic assumption that Y will leave with its price at Rs.2. if X is right in his assumption then he will earn the maximum profit of Rs.12 million and Y will earn Rs.5 million. This option is shown in option B.

Maximin strategy
Maximin strategy is a cautious (pessimistic) approach in which firms try to maximize the worst payoff they can make. It is the policy of adopting the safer side. It means the firm is trying to maximize the minimum profit that it will make.

Maximax strategy
A Maximax strategy involves choosing the strategy which maximizes the maximum payoff (optimistic). This policy arises from the optimistic approach that your rival will react most favorable to you. It means firm is going for the maximum possible profit.

Dominant strategy game:
Both these strategies leads towards the same strategy that is cutting down of price to Rs.1.8. this type of game is called the dominant strategy game. Given that both X & Y are tempted to lower price, they both end up tempting the lower profit i-e Rs.8 million each. If they collude and charge the same price, they will get profit of Rs.10 million each. Thus collusion rather than price war would be beneficial for both.

© Copyright Virtual University of Pakistan

EXERCISES

Give two examples of markets which fall into each of the following g categories.
Perfect competition: grains; foreign exchange.
Monopolistic competition: taxis; van hire, restaurants.
Oligopoly: (homogeneous) white sugar; (differentiated) soap; banks.
Monopoly: WAPDA (electricity transmission); local bus company on specific routes.
Would you expect general building contractors and restaurant owners to have the same degree of control over price?
Other things being equal, restaurant owners are likely to produce a more differentiated product/service than general builders (as opposed to specialist builders), and are thus likely to face a less elastic demand. This gives them more control over price. Note, however, that the control over price depends on the degree of competition a firm faces. If, therefore, there were only a few builders in a given town, but many restaurants, the above arguments may not hold.
It is sometimes claimed that the market for the stocks/ shares of a company is perfectly competitive, or nearly so. Go through the four main perfect competition assumptions you have been taught about (large no. of price taking firms, no entry barriers, homogenous product, and perfect information) and see if they apply to HUBCO shares.

- **a.** Most aspects of the four assumptions of perfect competition apply.
- **b.** There is a very large number of shareholders (although there are some large institutional shareholders.)
- **c.** People are free to buy HUBCO shares (though, in reality, this depends on how liquid, i.e. accessible/available for sale the HUBCO shares are).
- **d.** All HUBCO shares are the same.
- **e.** Buyers and sellers know the current HUBCO share price, but they have imperfect knowledge of future share prices.

Is the market for gold perfectly competitive?
It is almost similar to the market for HUBCO shares. There are many buyers and sellers of gold, who are thus price takers, but who have imperfect knowledge of future gold prices. Also, countries with large gold stocks (e.g. the USA) could influence the price by large-scale selling (or buying). [Note also that the 'price' would have to refer to a weighted average of the price in all major currencies to take account of exchange rate fluctuations.]
What are the advantages and disadvantages of using a 5-firm "concentration ratio" rather than a 10-firm, 3-firm or even a 1-firm ratio?
The fewer the number of firms used in the ratio, the more useful it is for seeing just how powerful the largest firms are. The problem with only including one or two firms in the ratio, however, is that it will not pick up the significance of the medium-to-large firms. For example, if we look at the 3-firm ratio for two industries, and if in both cases the three largest firms have a 50 per cent market share, but in one industry the next largest three firms have 45 per cent of the market (a highly concentrated industry), but in the other industry the next three largest firms have only 5 per cent of the market (an industry with many competing firms), the 3-firm ratio will not pick up this difference. Clearly, this problem is more acute when using a 2-firm or a 1-firm ratio.
The more the firms used in the ratio, the more useful it is for seeing whether the industry is moderately competitive or very competitive. It will not, however, show whether the industry is dominated by just one or two firms. For example, the 10-firm ratio for two industries may be 90 per cent. But if in one case there are 10 firms of roughly equal size, all with a market share of approximately 9 per cent, then this will be a much more competitive industry than the other one, if that other one is dominated by one large firm which has an 85 per cent market share.
A more complete picture would be given of an industry if more than one ratio were used: perhaps a 1-firm, a 2-firm, a 5-firm and a 10-firm ratio.
Why do economists treat normal profit as a cost of production?
Because it is part of the opportunity cost of production. It is the profit sacrificed by not using the capital in some alternative use.

© Copyright Virtual University of Pakistan

What determines (a) the level and (b) the rate of normal profit for a particular firm?
It is easier to answer this in the reverse order.

a. The level of normal profit depends on the total amount of capital employed.
b. The rate of normal profit is the rate of profit on capital that could be earned by the owner in some alternative industry (involving the same level of risks).

Will the industry supply be zero when the price of a firm A falls below P1 , where P1 < AVC for the firm?
Once the price dips below a firm's AVC curve, it will stop production. But only if "all" firms have the same AVC curve will the "entire industry" stop production. If some firms have a lower AVC curve than firm A, then industry supply will not be zero at P1.

Why is perfect competition so rare?

- Information on revenue and costs, especially future revenue and costs, is imperfect.
- Producers usually produce differentiated products.
- There are frequently barriers to entry for new firms.

Why does the market for fresh vegetables approximate to perfect competition, whereas that for aircraft does not?
There are limited economies of scale in the production of fresh vegetables and therefore there are many producers. There are such substantial economies of scale in aircraft production, however, that the market is only large enough for a very limited number of producers, each of which, therefore, will have considerable market power.

What advantages might a large established retailer have over a new e-commerce rival to suggest that the new e-commerce business will face difficulties establishing a market for internet shopping?

- Customers are familiar with the retailer's products and services and may trust their quality.
- Consumers may prefer to be able to ask advice from a sales assistant, something they can't do when buying over the internet.
- The retailer may have sufficient market strength to match any lower prices offered by the e-commerce firm.
- The retailer may have sufficient market strength to force down prices from its suppliers.
- Consumers may prefer to see and/or touch the products on display to assess their quality.
- Consumers may prefer the 'retail experience' of going shopping.

As an illustration of the difficulty in identifying monopolies, try to decide which of the following are monopolies: Pakistan Telecommunications Corporation Limited PTCL); your local morning newspaper; the village post office; ice cream seller inside the cinema hall; food sold in a university cafeteria; the board game 'Monopoly'.
In some cases there is more obvious competition than in others. For example, with the growth of mobile phones supplying phone services too, PTCL has lost some of its monopoly status for a section of the population. In other cases, such as ice creams in the cinema, village post offices and university cafeterias, there is likely to be a local monopoly. In all cases, the closeness of substitutes will very much depend on consumers' perceptions.

A monopoly would be expected to face an inelastic demand. And yet, if it produces where MR = MC, MR must be positive, demand must therefore be elastic. Therefore the monopolist must face an elastic demand! Can you solve this puzzle?
Demand is elastic at the point where MR = MC. The reason is that MC must be positive and therefore MR must also be positive. But if MR is positive, demand must be elastic. Nevertheless, at any given price a monopoly will face a less elastic demand curve than a firm producing the same good under monopolistic competition or oligopoly. This enables it to raise price further before demand becomes elastic (and before the point is reached where MR = MC).

If the shares in a monopoly (such as a water supply company in a European country) were very widely distributed among the population, would the shareholders necessarily want the firm to use its monopoly power to make larger profits?
If the water company raised its charges and thereby made a larger profit, shareholders would gain from larger dividends, but as consumers of water would lose from having to pay the higher charges. Except in the case of shareholders with only a few water shares, however, the gain is likely to outweigh the loss. Nevertheless, with shares very widely distributed, the average net gain would be only very small, and the

wider the distribution, the more shareholders there would be who would suffer a net loss from the higher charges.

In what respects might the behaviour of Microsoft, increasingly becoming a monopoly in the software and operating systems market, be deemed to be: (a) against the public interest; (b) in the public interest?

a) Prices are likely to be higher, given the lack of competition; there may be less product development, because potential competitors fear Microsoft's power to block their entry to the market, or drive them from it if they do succeed in entering; less choice for consumers.

b) By developing products that are in general use round the world, it is more convenient for businesses and their employees, who do not have to learn different sets of programmes or have problems with incompatibility of programmes and operating systems; monopoly profits can lead to high levels of investment and product development, which can help to reduce prices over the longer term.

In which of the following industries are exit costs likely to be low: (a) steel production; (b) market gardening; (c) nuclear power generation; (d) specialist financial advisory services; (e) production of a new medicine. Are these exit costs dependent on how narrowly the industry is defined?

a) High. The plant cannot be used for other purposes.

b) Relatively low. The industry is not very capital intensive, and the various tools and equipment could be sold or transferred to producing other crops.

c) Very high. The plant cannot be used for other purposes and decommissioning costs are very high.

d) Low. The capital costs are low and offices can be sold.

e) Low to moderate. It is likely that a pharmaceutical company can relatively easily switch to producing alternative drugs. Substantial exit costs are only likely to arise if the company is committed to a long-term research and development programme or if equipment is not transferable to producing alternative drugs.

Give some other examples of monopolistic competition.

Examples include: taxis, car hire, hotels and restaurants, insurance agents, estate agents, office equipment suppliers, antique dealers, computer systems.

Why may a food shop charge higher prices than wholesale markets (or supermarkets) for 'essential items' and yet very similar prices for "delicacy" items?

Because the demand for such essential items from a local food shop is likely to be less price-elastic than the demand for the delicacy items: if people run out of basic items, they will want to obtain them straight away from the nearest shop rather than waiting until they visit the supermarket. Also the supermarkets may obtain bulk discount from their suppliers on basic items, but not on delicacy items, where the sales turnover is much lower.

Which of these two items is a PSO or Shell petrol station more likely to sell at a discount: (a) petrol; (b) sweets? Why?

Petrol. The reason is that demand is more price elastic. People will be tempted to buy now, rather than waiting, if they see a reasonable discount. In the case of sweets, these are often an impulse buy and the price is very low anyway relative to the amount already spent on petrol. A penny or two price reductions will probably make very little difference to sales.

In monopolistic competition, why does the LRMC curve cross the MRL curve directly below the tangency point of the LRAC and ARL curves?

One way of answering the question is to note that long-run profits are maximized where long-run MR equals long-run MC (let's call it QL). But at QL, long-run AR equals long-run AC, whilst at any other output long-run AR is below long-run AC. Thus profits must be maximized at QL.

Assuming that supernormal profits can be made in the short run in a monopolistically competitive industry; will there be any difference in the long-run and short-run elasticity of demand? Explain.

Yes. The entry of new firms, attracted by the supernormal profits, will make the long-run demand for the firm more elastic: there are now more alternatives for consumers to choose from.

Why would you expect additional advertising dollars spent by a firm to cause smaller and smaller increases in sales? In other words why should advertising suffer from "diminishing returns"?

Because fewer and fewer additional people will see each extra advertisement (i.e. many of the people will have seen the adverts already and thus there will be little additional effect on their demand).

© Copyright Virtual University of Pakistan

Which would you rather have: five restaurants to choose from, each with very different menus and each having spare tables so that you could always guarantee getting one; or just two restaurants, charging a bit less but with less choice and where you have to book quite a long time in advance?
Many people would choose the first, but clearly it is a question of personal preference.
How will advertising affect a cartel's MC and AR curves? How will this affect the profit-maximizing output?
If advertising increases total cartel sales, the cartel's AR curve will shift to the right and possibly become less elastic. The MC curve will only shift if the advertising varies with output. Given that the amount that member firms will advertise might not be known and, even if it were, the exact effects of any amount of advertising on AR are impossible to identify and compute, it would become difficult for the cartel to identify the profit-maximizing price with any degree of precision.
You have been taught about the conditions that facilitate the formation of a cartel? Which of these conditions were to found in the oil market in (a) the early 1970s; (b) the mid-1980s; (c) 2000?

- There are relatively few oil producing countries (but more in the 1980s than in the 1970s).
- The OPEC members meet openly to discuss pricing and quotas (in all three periods)
- Production methods are relatively similar, although costs vary according to the accessibility of the oil.
- The (final) product is very similar and there is an international price for each type of crude.
- Saudi Arabia is the dominant member of OPEC: its dominance over the world market, however, waned from the mid-1980s as non-OPEC production increased and there was a world glut of oil. With a growing world economy in the late 1990s, Saudi Arabia's influence grew again.
- Entry barriers, however, have "not" been significant. This has allowed several non-OPEC members (e.g. Mexico, Norway and the UK) to break into the market.
- The market is relatively stable in the short run (given the price and income inelasticity of demand). There has been a problem, however, of a decline in demand over the longer term.
- Governments round the world have been relatively powerless to curb OPEC's collusion, although from time to time (e.g. during the Gulf War) the USA has released oil from its huge stock piles to prevent excessive price increases.

Could OPEC have done anything to prevent the long-term decline in real oil prices since 1981?
Very little, given that the supply of substitutes (both oil and non-oil) for OPEC oil has increased substantially. Perhaps, with hindsight, if OPEC had not raised prices so much in 1973/74 and 1979 there would have been less incentive to develop substitutes and to break the power of the cartel.
Many oil analysts are predicting a rapid decline in world oil output in 10 to 20 years as world reserves are depleted. What effect is this likely to have on OPEC's behaviour?
The fall in output will drive up prices. Provided that OPEC can prevent its members from pumping oil more rapidly to take advantage of the rising price, OPEC's power could increase. It could demonstrate to its members the rising trend in oil prices and attempt to persuade them of the benefit of reducing production even further. It could 'sell' this policy to the world as one of being prudent with dwindling oil stocks.
In which of the following industries is collusion likely to occur: bricks, margarine, cement, crisps, washing powder, blank audio or video cassettes, and carpets?
In all cases collusion is quite likely: check out the factors favouring collusion discussed in the lecture and also above. In some cases it is more likely than others: for example, in the case of cement, where there is little product differentiation and a limited number of producers, collusion is more likely than in the case of carpets, where there is much more product differentiation.
Assume that there are two major oil companies operating filling stations in an area. The first promises to match the other's prices. The other promises that it will always sell at Re.1 per liter cheaper than the first. Describe the likely sequence of events in this 'game' and the likely eventual outcome. Could the promise of the second company be seen as credible (i.e. you will believe)?
Prices would be driven down, and hence profits reduced, until one of the companies could no longer stick to its promise – either the first accepting that its price will be Re. 1 above the second, or the second accepting the same price as the first. Alternatively both companies simultaneously may decide to abandon their policy and collude to raise prices. This may involve a secret meeting between them, or simply 'letting it be known' that they would be willing to raise prices, providing that the other company did the same.

© Copyright Virtual University of Pakistan

The promise of the second company could be seen as credible if it had lower costs or greater financial backing than the first company. In such circumstances, the first company may be forced to give up its policy first. If they have similar costs and financial strength, then the threat is not credible.

Consider a train company which charges different prices for first and standard class, for traveling on different days in the week or different times in the day etc. Are these examples of price discrimination?

Price discrimination occurs when the same product or service (with the same marginal cost) is sold at different prices to different customers. Thus, strictly speaking, charging a different price for first and standard class, for travel on different times of day, or on different days of the week, or at different times of the year are not the purest examples of price discrimination, since (a) the service is different and (b) the marginal cost is not the same. On the other hand, charging a different price for children, students, old people, people traveling on single rather than return tickets etc. are examples of price discrimination since they allow travel on the same seat on the same train to different classes of people.

Are these various forms of price discrimination in the traveler's interest?

If the lower-price fares are making travel possible for people who could otherwise not afford it, then clearly they are benefiting. For the people paying the higher-priced fares, then there are advantages and disadvantages. Clearly, they will not like paying more than they would in the absence of price discrimination, but given that at peak times some lines are operating to full capacity, the higher price may be necessary to prevent queuing or grossly overcrowded trains (though note, as explained in the answer to the last question, charging higher prices at peak times to everyone is strictly speaking not a form of price discrimination).

If, over time, consumers are encouraged to switch their use of dial-up internet connections to off-peak periods, what will happen to peak and off-peak prices?

The difference between the prices will narrow.

To what extent is peak-load pricing (i.e. charging the highest price for a product/service when the loan of demand for it is highest; e.g. charging a high rate for dial-up internet connection in the day rather than after midnight) in the interests of consumers?

It may help to keep the average price down, if it spreads the use of fixed factors (like bandwidth or telephone lines) more evenly. It may also help to ease congestion (e.g. on trains) at peak times for those who have no alternative but to use the service at that time. Peak users may prefer a higher priced journey to a more congested journey or having to queue, and possibly running the risk of not getting the service (e.g. not getting on the train or bus because it is full).

Is total consumption likely to be higher or lower with a system of peak and off-peak prices as opposed to a uniform price at all times?

Higher, since some people would only be prepared to buy the product at off-peak prices.

Which type of price discrimination do cinemas pursue when they charge different prices for adults and children? First, second or third degree? Would it be possible for the cinema to pursue either of the other two types?

It is third-degree price discrimination. It groups cinema goers into two types: adults and children.

It could not practice first-degree discrimination: it would not be possible to negotiate a separate ticket price with each customer! It could possibly practice a form of second-degree price discrimination, however, if it gave tokens to people each time they purchased a ticket and then sold tickets at reduced prices to people with tokens.

If all cinema seats could be sold to adults in the evenings at the end of the week, but only a few on Mondays and Tuesdays, what price discrimination policy would you recommend to the cinema in order for it to maximize its weekly revenue?

Offer reduced-price tickets to children in the evenings as well as in the afternoon for the first part of the week, but not for the end of the week.

Would the cinema make more profit if it could charge adults a different price in the afternoon and the evenings?

Possibly. The danger for the cinema, however, is that adults who would have gone to the cinema anyway may now choose to go in the afternoon, thereby losing the cinema revenue. Ideally the cinema would like to discriminate in such a way as to encourage people to go in the afternoon at a reduced price who would

not have gone at all (whether in the afternoon or the evening), like old people for e.g., if they had to pay the higher price.

Why is the Prisoners' Dilemma game discussed in the lecture a dominant strategy 'game'?

Because, whatever assumption is made about the other's behavior, each prisoner is likely to confess.

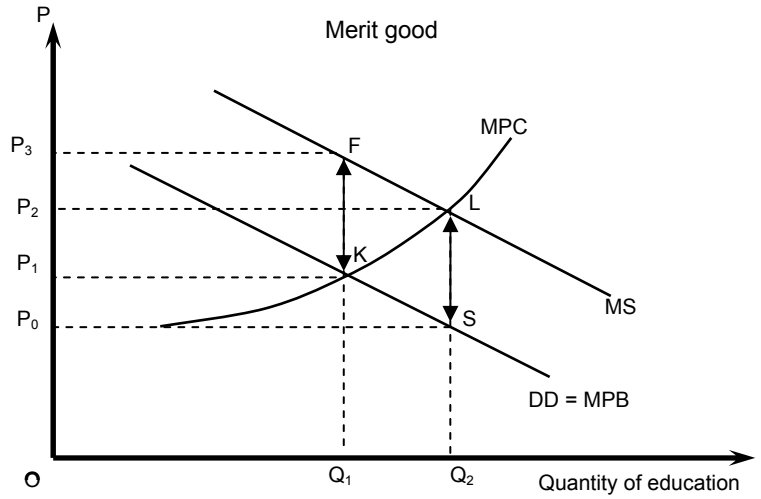
How would each prisoner's strategy change if there were five prisoners (who committed the joint crime) and not two, and if all five all of them had been caught?

The more people there were involved in the crime, the greater would be the likelihood of one of them confessing and therefore the greater the temptation for any individual prisoner to confess.

Can you think of any other non-economic examples of the prisoners' dilemma?

Children in a class agreeing not to do homework, but parents keeping them apart after school so that they can persuade their children to do their homework, telling them, 'The other children will also be doing theirs and you will not want to show up by doing badly compared with them.' What should the children do? Do their homework in the fear that everybody else would do the homework (the equivalent of "confessing" in the fear of the other prisoners confessing) or not do the homework hoping that the others won't do it as well (the equivalent of "not confessing" in the hope that the others won't do it either).

© Copyright Virtual University of Pakistan



PUBLIC GOOD

A public good is one whose benefits are indivisibly spread among the entire community, whether or not particular individuals desire to consume the good or not.

There are two characteristics which give rise to public goods: non-rival ness (one person's use or consumption of the good does not reduce the ability of another to use it; e.g. air) and non-excludability (it is not possible to exclude anyone from the consumption of the good; e.g. national defense).

In economics, a public good is a good that is non-rival and non-excludable. This means that consumption of the good by one individual does not reduce the amount of the good available for consumption by others; and no one can be effectively excluded from using that good. Common examples of public goods include: defense and law enforcement (including the system of property rights), public fireworks, lighthouses, clean air and other environmental goods, and information goods, such as software development, authorship, and invention.

Lesson 24

WELFARE ECONOMICS (CONTINUED)

THE MARKET FOR FACTORS OF PRODUCTION

The circular flow of income and expenditure shows the flow of goods and factors between households and firms. Firms are the demanders of the factors and households are the suppliers of the factors.

The Demand for Factor of Production:

The demand for factors of production (like labor) is a derived demand, because it is "derived" from the goods market. For e.g., the demand of labor increases when the demand for a labor-intensive good rises, and as firms try to produce more of that good by employing more labor.

Leisure:

Leisure is the time not used for working, or earning wages. It is usually the time that a laborer uses for relaxation and all activities other than work or necessary sleep.

The Marginal Disutility of Work (MDU_W):

As the supply of hours of labor increases, wage rate should also be increased. The relationship between hours provided by labor and wage rate is positive. And the curve for labor supply curve is positively sloped. But this curve can also be negatively sloped due to the marginal disutility of working hours. The marginal disutility of work (MDU_W) means the negative impact on the working of laborer for one additional unit of time. The MDU_W curve defines the supply curve for labor.

The Opportunity Cost:

The opportunity cost of working is leisure (and vice versa) that the worker could have enjoyed during that time had he not been working.

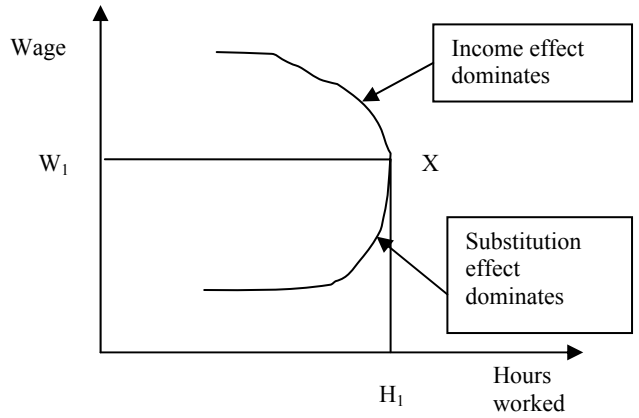
Supply and Demand Curve for Labor:

The labour supply curve may bend backwards above a certain wage rate as the income effect of higher wages dominates the substitution effect of higher wages.

The wage rate is the marginal cost of labour to the firm and is directly proportional to the hours worked.

The demand curve for labour can be derived from the intersection of the wage rate lines (horizontal parallel lines) and the marginal revenue product of labour (a downward sloping concave function) given by $MRP_L = MPP_L \times MR_i$, where subscript "L" stands for labour and subscript "i" stands for the good which the laborer helps produce.

Back ward bending labor supply curve



The Value of Marginal Product of Labor (VMP_L):

The value of marginal productivity of labor can be represented by the following formula:

The value of marginal product of labour (VMP_L) = $MPP_L \times P_i$

It is equal to MRP_L when P = MC (as in perfect competition), but otherwise $VMP_L > MRP_L$.

One important difference between labour and land, capital is that the latter two can be purchased but labour can only be rented.

A **rent** is a periodic payment as a reward for hiring the factor of production for that period, where the purchase price of capital is the "value" of owning that capital for its entire life.

The Net Present Value (NPV) and Discounting:

Decisions about purchasing capital or land are often made on the basis of the net present value (NPV) associated with the decision. The NPV of an asset is the discounted value of the net returns that the asset generates over a period of time plus the discounted value of its disposal value at the end of the period minus the initial purchase cost.
Discounting is the process of converting a stream of future incomes and expenses into a present value. The discount rate is the rate at which the future incomes are discounted.

EXAMPLE:

- **Rate of discount = 10%**
- **The formula for discounting is as follows:**

$$PV = \sum \frac{Xi}{(1+r)^i}$$

Where PV is present value
Xi is earnings from the investment in the year i
r is the rate of discount
Σ is the sum over i, of the discounted earnings.
Present value of machine that generates Rs. 1,000 for four years and then sold as scrap for Rs. 1,000 at the end of year 4?
Year 1+ Year 2 + Year 3 + Year 4
$= 1000/ (1.1)^1 + 1000/ (1.1)^2 + 1000/ (1.1)^3 + 2000/ (1.1)^4$
= 909+ 826+ 751 + 1366
= Rs. 3852
If machine costs less than this then Buy, otherwise don't Buy.
Net present value = PV – Purchase cost

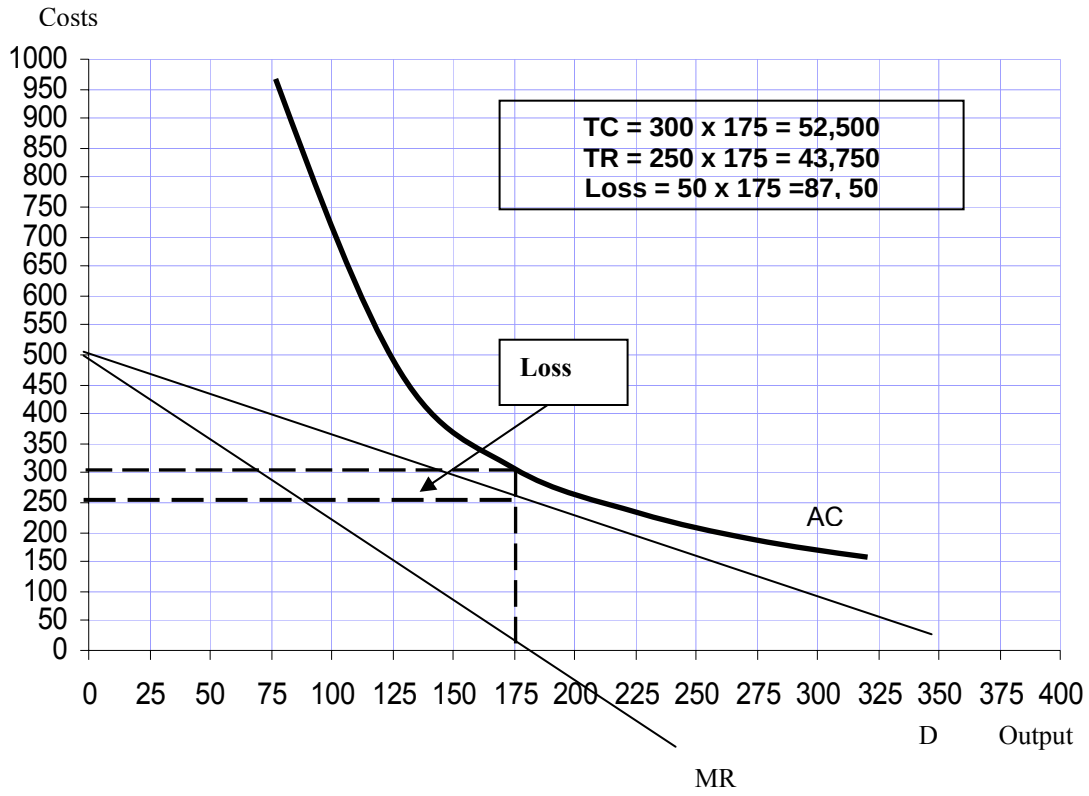
THE ECONOMICS OF INFORMATION PRODUCTS
The economics of information products or (internet products) involves studying how economic principles apply to the production, distribution and consumption of these products. Information economics or the economics of information is a branch of microeconomic theory that studies how information affects an economy and economic decisions.
The internet has reduced the **marginal cost of distributing information** to zero, as once a product is launched on the web, any number of potential customers can access/view it without any additional cost to the producer of the information.
Since the average cost of information product is falling over the entire range of output the market structure most consistent with such a product is (natural) monopoly.
Buying and selling information is not the same as buying and selling most other goods. First of all, information is non-rivalrous, which means that consuming information doesn't mean that someone else cannot also consume it. Obviously this does not apply to normal goods, like food, in which one's consumption precludes another's.
A related characteristic that alters information markets is that information has almost zero marginal cost. This means that once the first copy exists, it cost nothing or almost nothing to make a second copy. This makes it easy to sell over and over. However, it makes classic marginal cost pricing completely infeasible.

Experience goods are goods that people must get a flavor of before they can consider buying them. In economics, an experience good is a product or service where product characteristics such as quality or price are difficult to observe in advance, but these characteristics can be ascertained upon consumption.

A typical information product

Online economics course			
Q	**TC**	**MC**	**AC**
50	50,000		1000
100	50,000	0	500
150	50,000	0	330
200	50,000	0	250
250	50,000	0	200
300	50,000	0	166

A typical information product
Profit or loss



EXERCISES

WELFARE ECONOMICS AND EXTERNALITIES

If monopoly power existed in an industry, would production be above or below the socially efficient level (assuming no externalities)? Which would be greater, MSB or P?

A firm with monopoly power produces where MR = MC. But this is below the socially efficient level of output which obtains where P = MC.

Assuming no externalities, and perfect competition show that social efficiency is achieved in the factor markets, where: $MSB_f = MRP_f = P_f = MDU_f = MSC_f$ (where MRP is the marginal product of a factor, MDU is the marginal disutility of supplying it and f is any factor).

The MRP_f is the marginal benefit to the employer from employing a factor. Profits will be maximised where $MRP = P_f$. The MDU_f is the marginal cost to the factor supplier from supplying a factor. The factor supplier's 'surplus' will be maximised where $P_f = MDU_f$. Under perfect competition, since $MRP_f = P_f$ for each producer, and $P_f = MDU_f$ for each factor supplier, then, since the market price for the factor (P_f) is the same for all firms and factor suppliers, then $MRP_f = MDU_f$ for all firms and factor suppliers. In the absence of externalities in the factor market, $MSB_f = MRP_f$, and $MDU_f = MSC_f$. Thus: $MSB_f = MRP_f = P_f = MDU_f = MSC_f$, i.e. $MSB_f = MSC_f$

Note: The concepts in this question will not be tested in the exam.

Trace through the effects in both factor and goods markets of the following:

a) An increase in the productivity of a particular type of labour.

b) An increase in the supply of a particular factor.

The following charts illustrate the effects:

(a)*1. Labour demand*

MRPl↑ (i.e. *MSBl*↑) → *MRPl* > *W* → employment of labour↑ → *W*↑

2. Labour supply

W↑ → *W* > *MDUl* (i.e. *W* > *MSCl*) → supply of labour↑ → *MDUl*↑ (movement up along *MDUl* and hence *MSCl* curve) .

These adjustments would continue until *MSBl* = *MSCl*.

3. Producer supply

MRPl↑ → *MC*↓ → *P* > *MC* (i.e. *P* > *MSC*) → production↑ → *P*↓

4. Consumer demand

P↓ → *MU* > *P* → consumption↑ → *MU*↓ (movement down along *MU* and hence *MSB* curve)

These adjustments would continue until *MSB* = *MSC* (in goods markets).

(b)*1. Factor supply*

Sf↑ (i.e. *MSCf*↓) → *Sf* > *Df* → *Pf*↓

2. Factor demand

Pf↓ → *MRPf* > *Pf* → employment of factor↑ (movement down along *MRPf* and hence *MSBf* curve)

These adjustments would continue until *MSBf* = *MSCf*.

3. Producer supply

Pf↓ → *MC*↓ → *P* > *MC* (i.e. *P* > *MSC*) → production↑ → *P*↓

4. Consumer demand

P↓ → *MU* > *P* → consumption↑ → *MU*↓ (movement down along *MU* and hence *MSB* curve)

These adjustments would continue until *MSB* = *MSC* (in goods markets).

© Copyright Virtual University of Pakistan

Note: The concepts in this question will not be tested in the exam.

If MU_X/MU_Y were greater than P_X/P_Y, how would consumers behave? What would bring consumption back to equilibrium where $MU_X/MU_Y = P_X/P_Y$?

Consumers would buy relatively more of X and relatively less of Y. But as they did this, MU_X/MU_Y would fall (because of diminishing marginal utility) until $MU_X/MU_Y = P_X/P_Y$.

Note: The concepts in this question will not be tested in the exam.

If MC_X/MC_Y were greater than P_X/P_Y how would firms behave? What would bring production back into equilibrium where $MC_X/MC_Y = P_X/P_Y$?

Firms would produce relatively more of good Y and relatively less of good X. But as they did this, MC_X/MC_Y would fall (because of the law of diminishing returns and hence increasing marginal costs as production increases) until $MC_X/MC_Y = P_X/P_Y$.

What are marginal external costs?

The different between marginal social cost and marginal private costs is marginal external cost. In other words, it is the marginal cost of the externality to society.

Is it likely that the MSB curve will be parallel to the MU curve? Explain your reasoning.

No. It is likely that the marginal external costs of consumption will increase as more is consumed, and thus the curves will get further apart (making the MSB curve steeper than the MU = MB curve). For example, the marginal pollution costs of cars gets progressively greater as more and more cars come onto the roads and the environment becomes less and less able to absorb the additional quantities of pollutants.

Give other examples of each of the four types of externality.

a) External costs of production (MSC > MC): The pollution of rivers and streams by slurry and nitrate run-off from farms; road congestion near a factory.
b) External benefits of production (MSC < MC): Beneficial spin-offs from the development of new products (for example, the various space programmes in the USA, the USSR and Europe have contributed to advances in medicine, materials technology, etc.); where the opening of a new environmentally friendly factory results in less output from factories that pollute.
c) External costs of consumption (MSB < MB): The effect of CFC aerosols on the ozone layer; the unpleasant sight of kites stuck in trees and wires.
d) External benefits of consumption (MSB > MB): People decorating the outside of their houses or making their gardens look attractive benefits neighbours and passers-by; car owners getting their cars properly serviced so as to reduce the smoke emitted and the pollution associated with it.

Some roads could be regarded as a public good, but some could be provided by the market. Which types of road could be provided by the market? Why? Would it be a good idea?

Roads where there are relatively few access points and where therefore it would be practical to charge tolls. Charges could be regarded as a useful means of restricting use of the roads in question, or, by charging more at peak times, of encouraging people to travel at off-peak times. Such as system, however, could be regarded as unfair by those using the toll roads, and might merely divert congestion onto the non-toll roads.

Which of the following have the property of non-rivalry: (a) a can of drink; (b) public transport; (c) a commercial radio broadcast; (d) the sight of flowers in a public park?

(a) No. (b) No (passengers take up seats). (c) Yes. (d) Yes (unless I get in your way!).

Give some other examples of public goods. Does the provider of these goods (the government or local authority) charge for their use? If so is the method of charging based on the amount of the good that people use? Is it a good method of charging? Could you suggest a better method?

Two examples are: national defence; urban roads. In both cases the user is not directly charged. The funding comes from taxation. In the case of roads, part of the funding comes from road users generally (in the form of taxes on petrol and road fund licenses) and part from general or local taxation. Only in the case of petrol tax is the charging related to the amount that people use the public good. It encourages people to use the roads less, and thus takes into account the marginal cost (i.e. repairs and maintenance) of

© Copyright Virtual University of Pakistan

road provision. In this sense, however, roads are not a pure public good because using them does create a small amount of wear and tear on them (although a significant portion of road maintenance costs are due simply to deterioration through time).

If the marginal cost of provision is zero (as is the case with a pure public good) then charging people according to how much they use it will not cause an efficient allocation of resources: with a zero marginal cost, the price should be zero. Charging people according to how much they use it, however, could be regarded as fair according to the benefit principle – but not according to the principle of vertical equity.

Name some goods or services provided by the government or local authorities that are not public goods.

Education, health, libraries, parks. Only limited people can use these facilities.

If health care is provided free, the demand is likely to be high. How is this high demand dealt with? Is this a good way of dealing with it?

It is dealt with by a system of queuing. Emergency cases are usually dealt with immediately, or at least very quickly, but non-emergency cases may have to wait weeks, months or even years for treatment.

Many people would argue that for reasons of equity, and the special nature of health, it is better to solve the problem of waiting lists by diverting more resources into health care, rather than by using a system of charging people. Except where there are initially idle resources or inefficiencies, this approach will result in a lower provision of other publicly provided goods or services, or higher taxes.

How would you attempt to value time that you yourself save (a) getting to work; (b) going on holiday; (c) going out in the evening?

The approach is to ask what the opportunity cost to you of that time is. What else could you have done with the time and what, as a result, would you have been prepared to pay to save time? Thus in the case of (b), if you have a long holiday and the travel is seen as an enjoyable part of it, then there may be no time cost to you, or it may even be seen as a benefit; whereas if you only have a week off work and want to get to the sun as quickly as possible, then you will want to minimize travel time and thus may be prepared to pay quite a lot more to fly rather than go over land.

Imagine that a public project yields a return of 13 per cent (after taking into account all social costs and benefits), whereas a 15 per cent private return could typically be earned in the private sector. How would you justify diverting resources from the private sector to this project?

If it could be argued that this particular project yielded longer-term benefits, and that the market rate of discount is too high in the sense that it gives undue weight to present benefits and costs over future benefits and costs than is socially desirable, then there would be some justification. The justification for a lower social rate of discount is that the market only reflects the wishes of the current generation, whereas governments ought to take a longer-term perspective.

An alternative justification may be in terms of the distribution of costs and benefits. If the project was an effective means of targeting help to the poor (say a new hospital in an area where there is a lot of poverty) then the government may want to apply a lower rate of discount.

Assume that a project has an initial construction cost of Rs10 000, takes a year to come into operation and then has a life of 3 years. Assume that it yields Rs5000 per year in each of these 3 years. Is the NPV positive at (a) a 10 per cent discount rate; (b) a 15 per cent discount rate?

(a) NPV = –Rs.10 000 + Rs.5000/1.1 + Rs.5000/1.21 + Rs.5000/1.331
= –Rs.10 000 + Rs.4545 + Rs.4132 + Rs.3757
= +Rs.2434
The NPV is therefore positive at a 10 per cent discount rate.

(b) NPV = –Rs.10 000 + Rs.5000/1.15 + Rs.5000/1.3225 + Rs.5000/1.5209
= –Rs.10 000 + Rs.4348 + Rs.3781 + Rs.3288
= +Rs.1417
The NPV is therefore still positive at a 15 per cent discount rate.

Why is this type of cost–benefit analysis (CBA) simpler to conduct that ones assessing the desirability of a new road or airport?

There are specific scenarios, with very precise assumptions. The main purpose was not to demonstrate the positive NPV (which depends on the assumptions about the value of the environmental benefits of reducing emissions), but to compare the relative advantages of the alternative scenarios.

© Copyright Virtual University of Pakistan

With a CBA of a new road or airport, there have to be assumptions, not only about the environmental impact, but about the value of time saved or additional time incurred by travellers, about the value of lives saved or lost and about the costs to local people disturbed by the road or airport. Thus the measurement of externalities is likely to be more problematic than in the case of lowering the sulphur content of road fuel.

How do merit goods differ from public goods?

They could be provided by the market (albeit with too little consumed). The problem of non-excludability does not apply.

Note: The concepts in this question will not be tested in the exam.

Summarize the economic policies of the major political parties. (If it is near an election you could refer to their manifestos.) How far can an economist go in assessing these policies?

You will need to look at the current policies.

Economists in their role as economists cannot challenge fundamental normative issues – such as whether it is desirable to have a much more substantial redistribution of income from the rich to the poor. They can, however, examine whether the factual claims of the parties are correct, and whether the policies they advocate will bring the effects they claim.

Note: The concepts in this question will not be tested in the exam.

Give some examples of how correcting problems in one part of the economy will create problems elsewhere.

Two examples are:

- A local authority reduces street parking in the centre of a town in order to reduce congestion on the streets, but succeeds in encouraging commuters and shoppers to park outside the town centre in residential areas, thus reducing the quality of life for those living in those areas.
- The government taxes the consumption of electricity in order to encourage people to become more fuel efficient and thus to reduce power station emissions. Some people respond by switching to burning coal, with the result that emissions from this source increase.

THE MARKET FOR FACTORS OF PRODUCTION

Why might the labour supply curve be backward bending?

Because after a point the income effect of the higher wage dominates the substitution effect. Note that when we talk of substitution, it is substitution between work and leisure. The labourer must decide how to utilize his time, i.e. how much hours to spend working and how much to spend relaxing. If the wage rate (which also represents the worker's income) becomes very high, given that leisure is a normal good, the demand for relaxation increases. This is the income effect and it is positive for leisure and negative for hours worked. However, as the wage rate increases, the opportunity cost of relaxing increases and prompts the worker to work more. This is the substitution effect and is negative for leisure and positive for hours worked. The labour supply curve becomes backward bending when the income effect of higher wages dominates the substitution effect.

What is the distinction between MRP_L and VMP_L? When is this distinction important?

Labour's marginal revenue product (MRP_L) = MR * MPP_L

Labour's value of marginal product (VMP_L) = P * MPP_L

The two terms mean the same when the product market is perfectly competitive, because then: MR = MC = P. However, when the product market is not perfectly competitive, for e.g., if it is a monopoly, then P > MR at the profit maximizing output, and therefore $VMP_L > MRP_L$. The important implication of this is that a monopolist would pay labourers less than the "value of the output that their labour helps produce", i.e. the VMP_L. To that effect this can be viewed as exploitation of labour.

Do any of the following contradict marginal productivity theory?

a) Nationally negotiated wage rates;

b) Discrimination;

Even if marginal productivity theory were not relevant in these cases, the theory would still be accurate in the sense that if firms wanted to maximise profits then they should employ workers to the point where $MC_L = MRP_L$.

But do any of the above two cases necessarily contradict marginal productivity theory?

a) No, not necessarily. Firms may find it convenient (in terms of the costs of negotiating and the avoidance of disputes) to pay nationally agreed wage rates. They then could employ workers up to the point where their MRP was equal to this wage rate (which, given that the firm was a 'wage taker' would be equal to the MC_L).

b) Yes. Discrimination would lead to firms employing those workers against whom they were discriminating below the level where their MRP was equal to their MC_L.

Which of the following are stocks and which are flows?

a) Unemployment.

b) Redundancies (job lay-offs).

c) Profits.

d) A firm's stock market valuation (share price).

e) The value of property after a period of inflation.

Stocks: (a), (d) and (e). They are measurements at a point in time.

Flows: (b) and (c). They are measurements over a period of time. (Note that (e) would only be a flow if it were measuring the rise in the value of property over a period of time.)

What is the present value of a machine that lasts three years, earns Rs.100m in year 1, Rs.200m in year 2 and Rs.200m in year 3, and then has a scrap value of Rs.100m? Assume that the rate of discount is 5 per cent. If the machine costs Rs.500m, is the investment worthwhile? Would it be worthwhile if the rate of discount were 10 per cent?

Using the formula given in the lectures:

$$PV = Rs.100/1.05 + Rs.200/(1.05)^2 + Rs.300/(1.05)^3$$
$$= Rs.95.24 + Rs.181.41 + Rs.259.15$$
$$= Rs.535.80$$

Thus the investment is profitable at a discount rate of 5 per cent given that the machine costs Rs.500.

If the rate of discount is 10 per cent, then the present value this time is given by:

$$PV = Rs.100/1.1 + Rs.200/(1.1)^2 + Rs.300/(1.1)^3$$
$$= Rs.90.91 + Rs.165.29 + Rs.225.40$$
$$= Rs.481.59$$

With a 10 per cent discount rate, therefore, the investment would not be profitable.

What market price would a piece of land sell for if it earned Rs.10,000 rent per year, and if the rate of interest were 5 per cent?

According to the formula, market price of land = [annual rental value (in Rs.) / interest rate (in % p.a.)]
Rs.10,000/0.05 = Rs.200,000.

What does this tell us about the relationship between the price of an asset (like land) and the rate of interest?

The higher the rate of interest, the lower the market price of the asset. The asset would have to be cheaper (i.e. yield a higher rate of return) to persuade the purchaser to sacrifice the alternative of earning the market rate of interest.

INFORMATION ECONOMICS

There are many dimensions to information economics. The first of these was touched upon in the lectures on background on demand under "demand under uncertainty." We touched concepts like moral hazard and adverse selection. Below we touch upon some of the remaining aspects that were not covered there. PART A contains questions related to the economics of information products on the web that were covered in the lecture, while PART B contains other "general" information economics issues.

PART A:

What has the internet done to the cost of distributing information?

It has virtually brought down this cost to zero. Distributors can place information on their websites and consumers can access it or download it from there without any additional cost to the distributor. There are however still the initial costs of preparing the information in a format that can be placed on the web, and

also the costs of maintaining the website and marketing the website to interested consumers of that information. However, in terms of the marginal cost of distributing information to one more consumer, that cost has now been brought down to virtually zero by the internet.

What are experience goods?

These are goods whose value can be ascertained by the consumer only after experiencing or consuming it. For example if a university wanted to deliver an online course in say, finance, it might allow potential students to take part of the course free and then if they are satisfied they could proceed with a charge for the remaining or whole of the course. The same principle applies to buying software on the web. You are often given a free trial version before you asked to commit to buy the software.

How is it possible for companies like MSN or yahoo to provide free e-mail or chatting facilities or "web space" to internet users the world over?

Everything has a cost. Providing free web space or e-mail account to millions of users also must have a cost. Now if the users are not paying this cost, someone else should. This someone else is the ever-growing pool of businesses (travel companies, financial advisors, supermarkets, fashion outlets – you name it) who wish to advertise their products to millions of potential customers worldwide. Yahoo and MSN, because they have such a large captive clientele can serve as the ideal vehicle media for their advertisements. Thus you will see that whenever you log on to the yahoo page there is some advert that appears without you asking. This is to ensure that "all" users do actually see the advert, so that "some of them" buy the product being advertised.

PART B

(YOU WILL NOT BE TESTED ON THIS IN THE EXAM)

Assume that you wanted the following information. In which cases could you (i) buy perfect information, (ii) buy imperfect information, (iii) be able to obtain information without paying for it, (iv) not be able to obtain information?

a) Which washing machine is the most reliable?
b) Which of two jobs that is vacant is the most satisfying?
c) Which builder will repair my roof most cheaply?
d) Which builder will make the best job of repairing my roof?
e) Which builder is best value for money?
f) How big a mortgage would it be wise for me to take out?
g) What course of higher education should I follow?
h) What brand of washing powder washes whiter?

In which cases are there non-monetary costs to you of finding out the information? How can you know whether the information you acquire is accurate or not?

(a) (i) or (ii);
(b) (iii) (by asking people currently doing the job) or (iv);
(c) (iii) (by obtaining estimates);
(d) (iii) (albeit imperfect, by inspecting other work that the different builders have done) or (iv);
(e) As (d);
(f) (iii);
(g) (iii);
(h) (i) or (ii) (as in (a)) or (iii) by experimenting.

All could involve the non-monetary costs of the time involved in finding out.

If the information is purely factual (as in (c) above), and you can trust the source of your information, there is no problem. If you cannot trust the source, or if the information is subjective (such as other people's experiences in (b) above), then you will only have imperfect information of the costs and/or benefits until you actually experience them.

Make a list of pieces of information a firm might want to know, and consider whether it could buy the information and how reliable that information might be.

- Some examples include:

The position and elasticity of the demand curve: Market research can provide some information, but it is very unreliable, especially in an oligopolistic environment, where the actions of rival are unpredictable.

- Next year's wages bill:

The information cannot be purchased, but it could use its own past experiences to predict (albeit imperfectly) the outcome of wage negotiations.

- The costs of alternative inputs:

This information is probably available free from suppliers.

- Ways of saving taxes:

Employing accountants can help the firm save money here.

What type of information can be a public good? (Clue: do not confuse a public good with something merely provided by the government, which could also be provided by the private sector.)

An example of information that is nearer to being a public good, is information that is simple enough not to require being presented as a set of tables or as a report. It can be told from one person to another: as such it would be difficult to enforce copyright. An example would be the current rate of inflation or the size of the balance of trade deficit or surplus.

© Copyright Virtual University of Pakistan

Lesson 25

INTRODUCTION TO MACROECONOMICS

MACROECONOMICS

As a subject, macroeconomics only began to be taught in colleges and universities in the 1940s after the influence of a very influential British economist, John Maynard Keynes who believed the macro economy (with its associated variables) deserved to be understood and analyzed in its own right, and not just as an aggregation of the various micro-markets, as was believed earlier.

Macroeconomics is a branch of economics that deals with the performance, structure, and behavior of a national economy as a whole. The variables of interest change from the price, demand or supply of a particular product to the economy-wide price level, aggregate demand and aggregate supply.

AGGREGATE DEMAND (AD)

Aggregate demand (AD) is the total planned or desired spending (expenditure) in the economy during a given period. AD is the sum of consumption, investment, government spending and net exports (i.e. exports minus imports), and is inversely related to the aggregate price level through the wealth, interest rate and international purchasing power effects.

AGGREGATE SUPPLY (AS)

Aggregate supply (AS) is the total value of goods and services that all the firms in the economy would and can willingly produce in a given time period. Aggregate supply is a function of available inputs, technology and the price level. It slopes upward in P-Output space but the exact slope depends whether the economy is operating at below full employment (flat) or full employment (steep).

CLASSICAL ECONOMICS

Classical economics is widely regarded as the first modern school of economic thought. Its major developers include Adam Smith, David Ricardo, Thomas Malthus and John Stuart Mill. Sometimes the definition of classical economics is expanded to include William Petty, Johann Heinrich von Thünen, and Karl Marx. Classical economists were the earliest brand of economists the world knew. They were essentially micro-economists who believed the macro economy was an uninteresting aggregation of individual (or micro) markets, and any problem at the macro level was necessarily a symptom of some micro level problem.

OPTIMAL ROLE OF GOVERNMENT UNDER CLASSICAL ECONOMICS

The optimal role for the government under classical economics was one of laissez-faire. They believed that if the prices of goods, services and factors were allowed to be determined by the free operation of the forces of demand and supply (i.e. the price mechanism) the best possible outcome for resource allocation would obtain. In other words the economy would be at the full employment level, and it would not be possible to improve that situation through government intervention.

Before 1930, there was no concept of macroeconomics. There were number of events happened during 1920-30s that necessitated the need of macroeconomics. Until the 1930s, most economic analysis did not separate out individual behavior from aggregate behavior. With the Great Depression of the 1930s and the development of the concept of national income and product statistics, the field of macroeconomics began to expand.

THE CONCEPT OF INVISIBLE HAND

Invisible hand was a concept introduced by Adam Smith in 1776 to describe the paradox of laissez-faire market economy. The invisible hand doctrine holds that, with each participant pursuing his or her own private interest, a market system nevertheless works to the benefits of all as though a benevolent invisible hand were directing the whole process. According to Adam smith, invisible hand of the market operates therefore the market mechanism is the best model if the economy wants to operate at a high level of efficiency. Since the classical economists believed on perfectly competitive markets, so according to them shortages & surpluses are temporary phenomena when markets decide about the price, market would automatically clear these shortages & surpluses through price mechanism. According to say's law, "supply creates its own demand". When there is surplus labor in the economy that situation could

not persist so long because the excess supply of labor push the prices of labor go down, wage rate goes down, firms will demand more labor due to lower wage rates, so in this way, supply of labor creates its own demand of labor.

Invisible hand is the term used by Adam Smith to describe the natural force that guides free market capitalism through competition for scarce resources. According to Adam Smith, in a free market each participant will try to maximize self-interest, and the interaction of market participants, leading to exchange of goods and services, enables each participant to be better of than when simply producing for him/her. He further said that in a free market, no regulation of any type would be needed to ensure that the mutually beneficial exchange of goods and services took place, since this "invisible hand" would guide market participants to trade in the most mutually beneficial manner.

FULL EMPLOYMENT

The Classical economists assumed that if the economy was left to itself, then it would tend to full employment equilibrium. This would happen if the labour market worked properly.

Full employment is a state of the economy in which the productive resources of the economy are fully employed. Output may be expanded from this full employment level by asking laborers to work overtime or renting capital from outside. An alternative (historical) definition of full employment was: that level of employment at which no (or minimal) involuntary unemployment exists.

An important law the Classical subscribed to, which assumed particular importance in the context of the Great Depression, was Say's law: "supply creates its own demand." The implication of this was that involuntary unemployment (people being unemployed against their wishes) was a temporary phenomenon as the excess supply of labour would cause wages to fall thereby prompting firms to demand more labour. If there was persistent unemployment, it was voluntary, i.e. workers themselves preferred to remain unemployed.

THE CLASSICAL VIEWS ABOUT GREAT DEPRESSION

The Classical' reading of the three problems of the Great Depression, i.e. low investment, high unemployment and low output, was as follows:

- **a.** Investment was low because the interest rate was too high in the loanable funds market. Policy recommendation: savings be increased to lower the interest rate and boost investment
- **b.** Unemployment was high because of obstructions to the free market mechanism in the labour market which were preventing wages from falling to the market clearing level. Policy recommendation: these obstructions: benefit payments to unemployed, taxes on income and trade unions be eliminated.

FAILURE OF THE CLASSICAL MODEL

After 1930, the classical model failed. Solution of classical economist was not found reasonable to solve the world crises prevailed at that time. The Great Depression was the longest and severest recession the world has ever seen. It struck North America and Europe in the late 1920s after the Wall Street crash of 1929 (and following the earlier hyperinflation in Germany, and the formation of the Soviet Union) and lasted till the mid 1930s. It was characterized by persistent high unemployment, low investment by firms and falling prices of goods, services and factors. Hyperinflation is inflation at extremely high rates (say 1000, 1 million, or even 1 billion percent a year).

At that time, unemployment rate went upto 25% in 1933 in USA and Western Europe. The classical model failed because they did not give satisfactory solution to all these problem. They kept on insisting on old doctrine. They focused on the removal of impediments of free market economy.

KEYNES AND THE ORIGINS OF MODERN MACRO ECONOMICS

Keynesian economics also called Keynesianism or Keynesian Theory is an economic theory based on the ideas of the 20th-century British economist John Maynard Keynes. Keynesian economics promotes a mixed economy, in which both the state and the private sector are considered to play an important role. He argued that government policies could be used to promote demand at a macro level, to fight high unemployment and deflation of the sort seen during the 1930s. Keynes gave the reasons of great depression and also suggested the policy advice on how Govt can rectify the situation.

© Copyright Virtual University of Pakistan

THE KEYNESIANS' VIEWS ABOUT GREAT DEPRESSION

Keynes' view on the causes of the Great Depression and what needed to be done was very different. He believed that there were overarching problems of low demand and static pessimistic expectations that needed to be addressed rather than disequilibria in the loanable funds, labour and goods markets. In particular, he maintained that:

a. Low investment was because of firms' bearish expectations about their ability to sell the products they produced. Firms needed to see that the potential buyers of their goods had the money and the willingness to buy goods before they could be convinced to undertake more production thereof. Therefore, higher savings, which would lead to low consumption expenditure on goods and services would not increase but decrease investment by reinforcing firms' bearish expectations about their ability to sell their products. Policy recommendation: households should be convinced to increase consumption and reduce saving.

b. Unemployment was high and rising because the labour market equilibrium was moving further and further away from the full employment level. This was not because wages were being prevented from falling to the market clearing level, but because the market clearing level fell further with each wage decrease. This happened because a reduction in wages also lowered consumers' earning and spending power reinforcing firms' pessimistic view of their ability to sell their products. Policy recommendation: higher money payments to consumers should be given out (possibly by the state) in order to increase their ability to buy the goods being produced by firms.

© Copyright Virtual University of Pakistan

Lesson 26

INTRODUCTION TO MACROECONOMICS (CONTINUED)

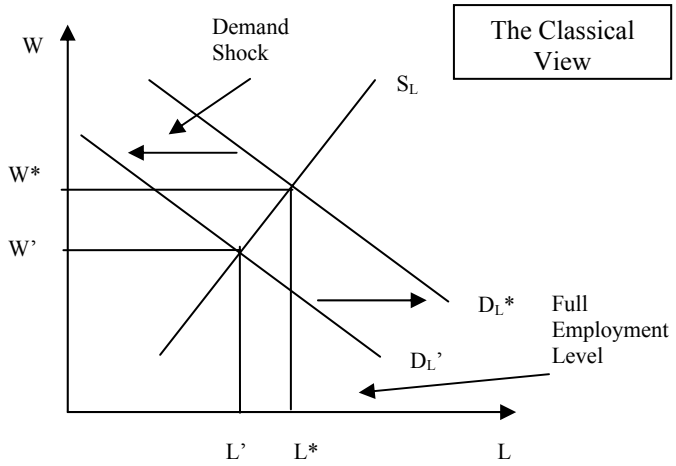
DIFFERENCES BETWEEN CLASSICAL AND KEYNESIAN ECONOMICS

We can see the major differences between classical and Keynesian economics in three ways:

1. Labor market
2. Market for loanable funds
3. Aggregate demand and supply

1- (A) LABOR MARKET: THE CLASSICAL VIEW

If there is excess supply of labor in the labor market, then market mechanism will cause the price of labor (wages) to fall and labor demand is increased by the firms and clears the market.

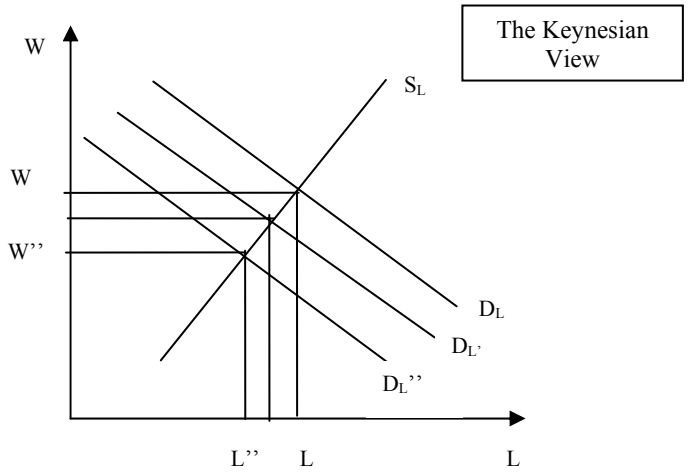


A negative demand shock decreases the labor demand and shifts the labor demand curve downward. If market mechanism works freely then wages would fall to W' and demand for labor will rise and shifts back again to D_L*, and equilibrium is reestablished again at full employment level. But classical economists face the problem that wages do not fall in accordance with the labor demand. The reason why the wage rate do not fall much is that wages are sticky downwards. Wages get stuck to a level and do not fall below certain level.

(B) LABOR MARKET: THE KEYNESIAN VIEW

Keynes said once there is an excess supply of labor in the labor market and there is the pressure of wage rate to fall then firms look at the pressure of wage rate falling in a negative way. They think people are becoming poorer due to lower wages and they will not buy our products. So firms have no incentives to invest in the production of new goods.

© Copyright Virtual University of Pakistan

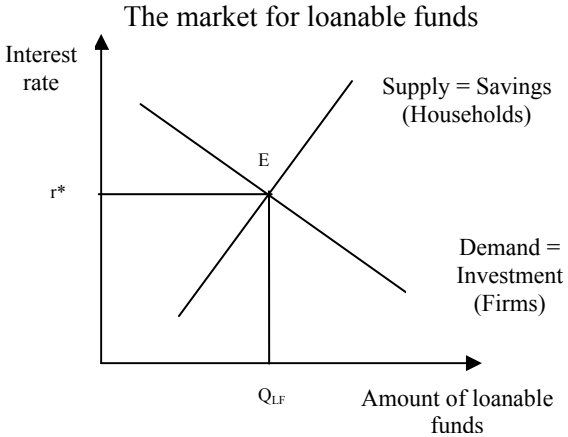


If demand for labor falls to $D_{L'}$, then this would require wage rate to fall but once the wages fall then what would be the impact of this on the firms? Wages of consumers are used as the consumer spending. So when firms saw that people are becoming poorer they will have less incentive to produce more goods. So, investment falls and demand for labor also falls and further shifts downward to D_L''. Wages would also decrease further. This will continue and increase unemployment. This is how Keynes explains the reasons of high unemployment in the period of great depression.

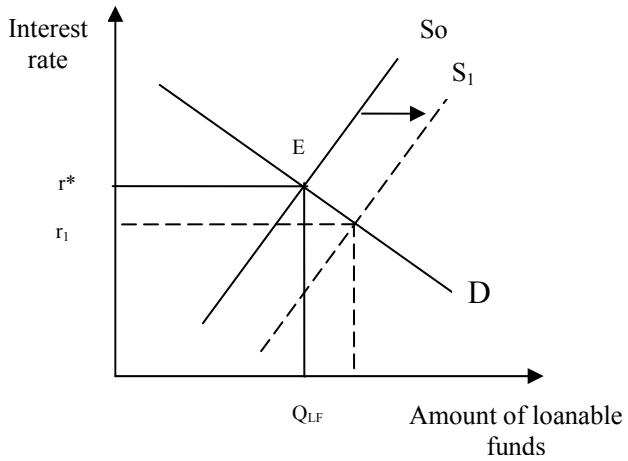
In summary, Keynes believed that an economy could settle at equilibrium below the full employment level, he advocated demand-side policies to lift the economy out of that equilibrium towards full employment. He suggested the government spend itself and encourage consumption spending. This would cause demand and prices of goods to rise, generating firms' interest in producing more. This would in turn require hiring to go up, which would cause labour incomes to go up which would lead to further higher demand for goods and hence a reinforcement of the virtuous circle. Only such a circle could, according to Keynes, change agents' pessimistic view of the future and take the economy out of Depression.

2- (A) MARKET FOR LOANABLE FUNDS: THE CLASSICAL VIEW

This is the market of money. Depositors provide the supply of loanable funds and business/firms borrow the money generating the demand for loanable funds.

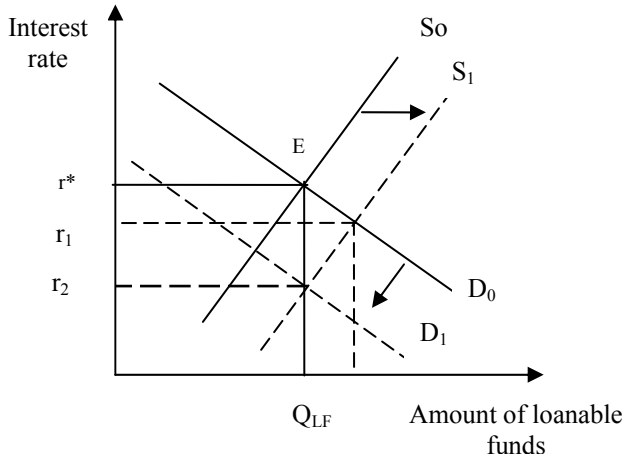


According to classicals, firms were not investing during great depression because of higher interest rate. Interest rate is the cost of borrowing the funds for the firms. When firms borrow funds, it has to pay the interest rate, that's why firm's investment was declined. According to them, if we lowered the interest rate then we can encourage the firms for investment. So individuals should save more, provide more and more money to the banks so that the supply of funds increase and interest rate fall.



(B) MARKET FOR LOANABLE FUNDS: THE KEYNESIAN VIEW

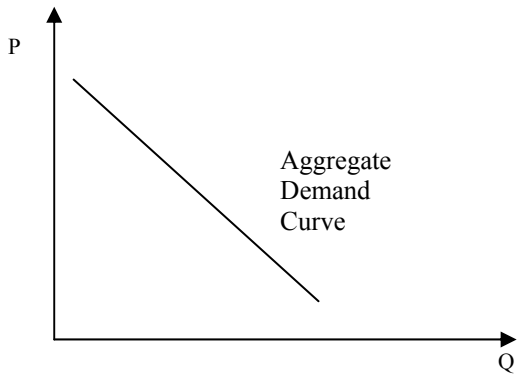
Keynes said if you increase the supply of loanable funds the savings increase and consumption of consumers falls. This means that firms demand for new investment will fall and its curve shifts downward. Because they see that they would not be able sell their goods. So the new market clearing interest rate would be r2. Thus increased savings would cause investment demand to fall.



AGGREGATE DEMAND

Aggregate demand (AD) is the total planned or desired spending (expenditure) in the economy during a given period. AD is the sum of consumption, investment, government spending and net exports (i.e. exports minus imports), and is inversely related to the aggregate price level through the wealth, interest rate and international purchasing power effects.

AD curve slopes downward for both Keynes and classicals.



WHY AD CURVE SLOPES DOWNWARD

AD curve slopes downward due to the following three effects.

1. The interest rate effect of a price level increase on AD is negative as it causes a fall in investment demand. Higher prices cause the nominal interest rate to rise discouraging firm investment.
2. The wealth effect of a price level increase on AD is negative and works through the reduction in the purchasing power of consumers' income and wealth (real asset values). These cause a reduction in consumption demand.
3. The international purchasing power (or competitiveness) effect of a price level increase on AD is also negative as it reduces the net foreign demand for domestic goods and services. As the price level of a certain country increases the demand for its exports falls because they become expensive (less competitive) in international markets.

FACTORS THAT SHIFTS AGGREGATE DEMAND

AD shifts to the right when any component of AD increases autonomously; e.g., if

a) Consumers become more willing to spend at every price level;
b) There are autonomous increases in investment due to better business prospects;
c) The government spends more, or reduces taxes;
d) Net exports rise at all prices (due to say an increase in the quality of domestic goods relative to foreign goods).

© Copyright Virtual University of Pakistan

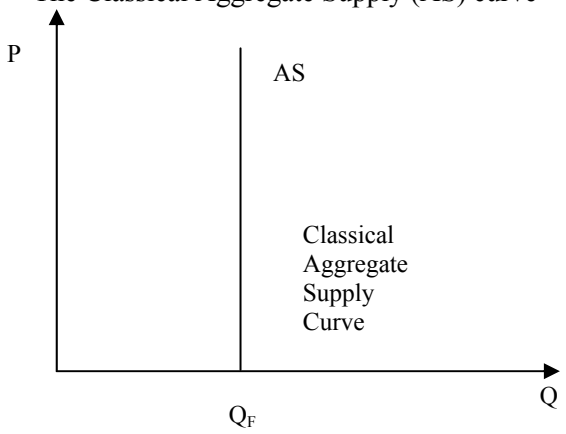
Lesson 27

INTRODUCTION TO MACROECONOMICS (CONTINUED)

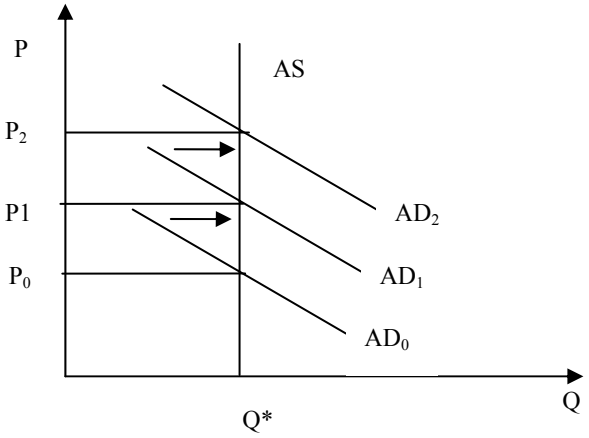
3- (A) AGGREGATE DEMAND AND SUPPLY: THE CLASSICAL VIEW

The AS curve was vertical therefore lack or excess of demand could not explain the low level of activity in the aggregate market for goods and services. Policy recommendation: focus on ways to move the AS curve to the right (i.e. supply side measures). According to classicals, economy is always at full employment level. Economy would automatically find the new equilibrium in the long run; they did not talk about short run.

The Classical Aggregate Supply (AS) curve



Shifts in AD curve would have no effect on ASC or on output level in the classical world. Any shift in AD curve will cause only change in the price level but output will not change. Output can change only if the AS curve would shift. AS curve can be shifted due to the availability of new resources, technology and wage rate.

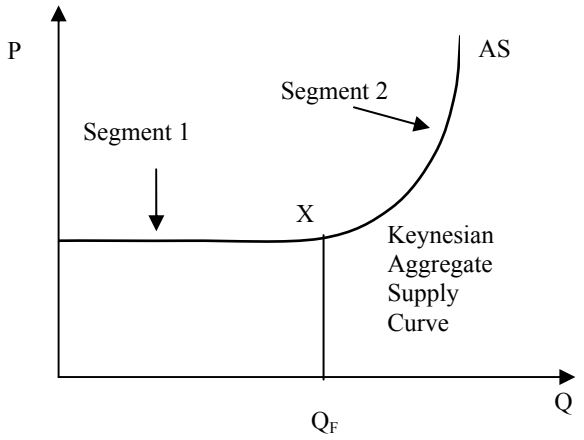


(B) AGGREGATE DEMAND AND SUPPLY: THE KEYNESIAN VIEW

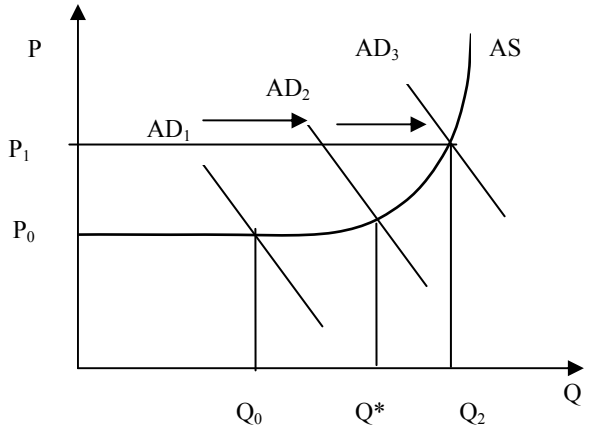
The AS curve was horizontal at the less than full employment level (i.e. when there was excess capacity or slack in the economy), and upward sloping after that, so that an injection of aggregate demand in times of recession could materially increase output, employment and national income. Keynes said that output can be increased after increasing the price. In short run, it is possible for the people to do overtime, so in short run AS curve is positively sloped and in the long run it becomes vertical.

© Copyright Virtual University of Pakistan

The Keynesian Aggregate Supply (AS) curve



Shifts in AD curve would have the impact on the output level. Output will increase as the AD curve shifts rightward. Keynes said that prices are fixed in the short run.



KEYNES DEMAND MANAGEMENT POLICIES

Keynes exerted a phenomenal influence on economic thinking and policy-making in the 20th century and to date. In the 1950s and 60s, Keynesian demand management policies were practiced by many governments when demand went "off" due to cyclical fluctuations of the economy. In recessions, the government increased spending and encouraged the private sector to do the same. In booms the opposite was done to cool the economy down.

The major problem with Keynesian demand management policies was that they viewed unemployment and inflation to be the opposite sides of the same coin. Thus, if unemployment was high, prices must be low and vice versa. Keynes' policies could not be applied in a situation where both prices and unemployment were rising (stagflation) – this situation arose in the 1970s with the two oil price shocks (which were essentially supply side shocks), and led to the decline of Keynesian economics.

Keynes' suggestions were taken on board by government but in a rather different context than he might have anticipated, i.e. in the context of war. The Second World War broke out in 1939 and the higher defense expenditures by European governments to finance the War gave the necessary boost to aggregate demand. But while the economy emerged from its low-demand recession, it now faced supply-side destruction due to war.

Keynes was not a socialist, just someone who believed the market could not be left alone. He was the brain child of institutions such as the IMF, WB and GATT.

© Copyright Virtual University of Pakistan

DIFFERENT SCHOOLS OF THOUGHTS

The Monetarist School:

The Monetarist School, led by Milton Friedman separated the explanation for inflation and unemployment. He noted that inflation was always and everywhere a monetary phenomenon and the key to keeping inflation low was to keep monetary growth aligned with expected real output growth.

The Real Business Cycles (RBC) School:

The Real Business Cycles (RBC) School also gained currency in the 1970s. The exponents of the business cycles view noted that output fluctuated mainly due to technology shocks faced by the economy, and that no Keynesian type policy could, or should attempt to, neutralize their effects.

The Rational Expectations School:

The same period, 1970s, saw the rise of the rational expectations school (as opposed to Keynes' static expectations hypothesis) led by such people as Robert Lucas, Robert Barro and Thomas Sargent who conceptualized agents as making use of all the information available to them, and not just past information, while making decisions. Under these and other conditions they showed that predictable macroeconomic policies (like Keynesian demand management policies) had no effect on real output or unemployment.

Neo Classical Economics:

Coupled with the insights of the monetarist and business cycle schools, this view of the world reinforced the pre-Keynesian beliefs in the power of the free market and stressed the micro-foundations of macroeconomics. For this reason, it is called new or Neo Classical Economics.

The Neo Keynesian School:

Since the 1980s, the new or Neo Keynesian School has emerged, led by economists such as Joseph Stiglitz. The new Keynesians have highlighted market failures at the micro level that may arise due to information asymmetries and coordination failures (moral hazard and adverse selection problems). As such they have shown avenues for meaningful government intervention.

This is broadly where modern macroeconomics currently stands.

© Copyright Virtual University of Pakistan

EXERCISES

Which of the following are macroeconomic issues, which are microeconomic ones and which could be either depending on the context?

a) Inflation.
b) Low wages in certain service industries.
c) The rate of exchange between the pound and the euro.
d) Why the price of cabbages fluctuates more than that of cars.
e) The rate of economic growth this year compared with last year.
f) The decline of traditional manufacturing industries.

a) Macro. It refers to a general rise in prices across the whole economy.
b) Micro. It refers to specific industries
c) Either. In a world context, it is a micro issue, since it refers to the price of one currency in terms of one other. In a national context it is more of a macro issue, since it refers to the euro exchange rate at which all UK goods are traded internationally. (This is certainly a less clear–cut division that in (a) and (b) above.)
d) Micro. It refers to specific products.
e) Macro. It refers to the general growth in output of the economy as a whole.
f) Micro (macro in certain contexts). It is micro because it refers to specific industries. It could, however, also help to explain the macroeconomic phenomena of high unemployment or balance of payments problems.

This question is about the merits and demerits of an economic system (like socialism) which mainly focuses on ways of achieving equality of incomes and wealth across citizens. Would it ever be desirable to have total equality in an economy?

The objective of total equality may be regarded as desirable in itself by many people. There are two problems with this objective, however.

The first is in defining equality. If there were total equality of incomes then households with dependants would have a lower income per head than households where everyone was working. In other words, equality of incomes would not mean equality in terms of standards of living. If on the other hand, equality were to be defined in terms of standards of living, then should the different needs of different people be taken into account and should people with special health or other needs have a higher income? Also, if equality were to be defined in terms of standards of living, many people would regard it as unfair that people should receive different incomes (according to the nature of their household) for doing the same amount of work.

The second major problem concerns incentives. If all jobs were to be paid the same (or people were to be paid according to the composition of their household), irrespective of people's efforts or skills, then what would be the incentive to train or to work harder?

Is it possible to disagree with the positions that the different countries have been assigned in the spectrum diagram in Lecture 25 based on one's general knowledge about these countries' economic systems?

Yes. Given that there is no clearly defined scale by which government intervention is measured, the precise position of the countries along the spectrum is open to question.

Which macroeconomic problem(s) has/have generally been less severe since in the early 1990s than in the 1980s?

Inflation and, since the mid-1990's, unemployment. We must remember that unemployment was a major problem in the 1920s and 1930s (during the Great Depression) and inflation was a major problem in the 1970s and early 1980s.

This question is about wages, about whose rigidity and flexibility Classical economists and Keynes argued for long. Why are real wages likely to be more flexible downwards than money (or nominal) wages?

Money (or nominal) wages are unlikely to fall. The reason is that price inflation is virtually always positive. Thus if money wages were to fall, there would have to be a bigger fall in real wages. For example if inflation were 10 per cent and firms wanted to cut money wages by 5 per cent, this would mean cutting real wages by 15 per cent: something they would find hard to get away with. Real wages, on the

© Copyright Virtual University of Pakistan

other hand frequently do fall. Because wage agreements are usually made in money terms, it only needs inflation to go ahead of money wage increases, and real wages will fall.

Another reason why money wages are less flexible downwards has to do with money illusion. People will resist a cut in money wages, seeing this as a clear cut in their living standard. If, however, a money wage increase is given a bit below the rate of inflation (i.e. a real wage cut), many workers will perceive this as an increase and will be more inclined to accept it. And indeed, because pay increases normally occur annually, any money rise (even if below the annual rate of inflation) will be a temporary real rise for a few months, until inflation overtakes it.

Would it be possible for a short-run AS curve to be horizontal at all levels of output?

No. Given that some factors are fixed in supply in the short run, there will inevitably be a limit to output. As that limit is approached, the AS curve will slope upwards until it becomes vertical at that limit.

If firms believe the aggregate supply curve to be relatively elastic, what effect will this belief have on the outcome of an increase in aggregate demand?

Firms will respond to the increase in aggregate demand by increasing their output and investment. There are two main reasons. The first is that they will expect output elsewhere to increase and that they will therefore be able to obtain supplies. The second is that, if they believe that the rise in aggregate demand is not going to cause inflation to increase significantly, they will not expect the government to start deflating the economy and thus dampening demand again. They will therefore expect their increased sales to continue.

What might be the negative effects of higher government expenditure (the suggested policy prescription of Keynes) on the private sector?

Increased government expenditure (financed from borrowing from banks) has two possible negative effects on the private sector: financial crowding out and resource crowding out. In the former, higher government borrowing from banks leaves fewer loanable funds with banks to lend to the private sector. In any case, the interest rate rises due to a higher demand for loanable funds. This has a negative impact on private sector investment. As for resource crowding out, government projects could divert key workers and other resources that are in short supply away from the private sector. Since labour and other resources are not homogeneous and not perfectly mobile, resource crowding out can occur even when the economy has some slack in it, i.e. is operating at less than full employment.

What, in Keynes's view, would be the impact of a higher money supply on output, given that there "is" slack in the economy?

A rise in money supply results in an increase in aggregate demand: as people hold more money and their consumption demand increases. Interest rates also fall causing investment demand to rise. All this will lead to a rise in output with little increase in the level of prices. Thus the nominal increase in money supply translates fully into a real increase, delivering a strong output response in the process.

What would be the Classical economists' criticism of this argument?

That the increases in money supply would simply lead to higher prices in the private sector, and that the government projects (public works etc.) would lead to "full" crowding out - financial and resource. Given that the cause of the problem, to Classical economists, was market rigidities, the solution was to free-up markets: to encourage workers to accept lower wages, and producers to charge lower prices.

In the extreme Keynesian model, is there any point in supply-side policies?

Yes. Successful supply-side policies, by increasing potential output, will shift the upward sloping and vertical portions of the AS curve to the right. As a result, expansionary demand management policies could now increase output to a higher level than before.

In the new (or neo) Classical model, should supply side policies be used as a weapon against inflation?

It is important o understand that new classical economics is strongly inspired by monetarist thinking. Monetarists separated the explanation for inflation and unemployment. According to them, the way to reduce unemployment was to invoke supply side measures which serve to reduce the natural rate of unemployment, whereas demand side policies (which for monetarists means monetary policy) policies should be used to tackle inflation. Therefore the answer to the above question is "no".

If we assume that if prices and wages are flexible and agents form expectations rationally, then is the task of the macroeconomic policymaker trivial?

© Copyright Virtual University of Pakistan

The answer is no. This question is about neo-Keynesianism. As you know, the debate between Classicals and Keynes was related to the functioning of markets and the flexibility of prices and wages therein. Keynes said wages were rigid, Classicals said they shouldn't be. Then there was the debate between Keynesian economists and neo-Classical economists over how agents formed expectations about the future. Keynes believed in static expectations whereas neo-Classical economists believed in rational expectations. Now if we assume that prices and wages are perfectly flexible and expectations are rationally formed, then we are essentially subscribing to the laissez faire, pre-Keynesian Classical view of things., in which there was very little role for government intervention. However, this is where neo-Keynesians come in. The new Keynesians have highlighted market failures at the micro level that may arise due to information asymmetries and coordination failures (moral hazard and adverse selection problems). As such they have shown avenues for meaningful government intervention.

How might expansionary aggregate demand policy positively affect aggregate supply?

If the expansion in demand comes about due to higher investment, and if the same leads to technological change (this usually happens in the very long run), then the long-run AS curve might also shift to the right. In this case, the expansionary impact on output and income effect will be magnified.

Does the shape of the long-run AS curve depend on how the 'long' run is defined?

Yes. If the long run is defined so as to include the possibility of technological change resulting from investment, then the long-run aggregate supply curve can be deemed relatively elastic (flat).

Assume that there is a fall in aggregate demand (for goods). Trace through the short-run and long-run effect on employment.

Prices fall. This causes the real wage to rise. At this real wage rate there is a deficiency of demand for labour. In the short run there will be an increase in unemployment. In the long run the deficiency of demand will drive down the money wage rate until the real wage rate has returned to its earlier level.

If AS and AD in an economy intersect at a point a, and after a rightward shift in AD and a leftward shift in AS, the new equilibrium obtains at a g which is vertically above point a, does this necessarily imply that the long-run AS curve is vertical?

It would only be so if the upward shifts in the (short-run) AS curves had been entirely due to the increased aggregate demand feeding through into higher prices. If, however, AS had shifted upwards partly as a result of cost-push pressures independent of aggregate demand, then point g could still be vertically above point a (i.e. if the long-run AS curve were upward sloping and had shifted upwards). With an upward-sloping long-run AS curve, if there had been no such cost-push pressures, g would be to the north east of a. Alternatively, if cost-push pressures had been great enough, point g could be to the northwest of point a.

Is it possible for the AS curve shift to the right over time? If it did how would this influence the effects of the rises in aggregate demand?

Potential GDP, Yp, and AS, will shift to the right over time as potential growth takes place (new resources discovered and new technologies invented). Also the rise in aggregate demand and in output may lead to increased investment and hence a bigger capital stock: this too will shift Yp and AS to the right. The rightward shift of Yp and AS will allow the rise in aggregate demand to lead to a bigger increase in actual output (Y) and a smaller increase in the price level.

Assume that there are two shocks. The first causes aggregate supply to shift to the left. The second, occurring several months later, has the opposite effect on aggregate supply. Show that if both these effects persist over a period of time, but gradually fade away, the economy will experience a recession which will bottom out and be followed in smooth succession by a recovery.

A fall (leftward shift) in aggregate supply in the new classical model will reduce output and hence cause a recession. If the shock pushing the AS curve to the left persists for a period of time, then the recession will deepen as aggregate supply falls, but less and less quickly as the effect fades away. If the second shock has a rightward pushing effect on the AS curve, then, as the first effect fades away, the second effect will become relatively stronger. Output will begin to rise again and gather pace as the first effect disappears. Whether output will continue to fall initially after the appearance of the second effect depends on the relative size of the two effects at that particular stage.

If you are living in a Keynesian world and there is slack in the economy and room for expansionary macroeconomic policies, would you introduce these policies in a slow and steady manner or haphazardly and suddenly?

Demand management would have be carried out in a steady and predictable way since Keynes assigned a lot of importance to certainty and stability and the confidence they give to firms undertaking investment.

If constant criticism of governments in the media makes people highly cynical and skeptical about the government's ability to manage the economy, what effect will this have on the performance of the economy?

The economy will become less manageable! It may become less stable and as a result investment and growth may be lower and inflation higher. The worse people believe the long-term economic prospects are for the country, the more pessimistic they are likely to become, and thus the worse is likely to be the actual performance of the economy.

This question is about the Monetarist challenge to Keynesian economics. Since this is a difficult question to answer, I would advise you to revisit it at the end of the course and during the discussion on inflation, and the monetary sector.

How would a monetarist answer the Keynesian criticisms given below?

1. 'The time lag with monetary policy could be very long.' Monetarists do not claim that monetary policy can be used to fine tune the economy. It is simply important to maintain a stable growth in the money supply in line with long-term growth in output.
2. 'Monetary and fiscal policy can work together.' Monetarists would argue that it is the monetary effects of fiscal policy that cause aggregate demand to change. Pure fiscal policy will be ineffective, leading merely to crowding out.
3. 'The velocity of money is not stable, thus making the predictions of the quantity theory of money – i.e. that monetary growth must necessarily lead to inflation – is unreliable.' Monetarists would accept that the velocity of money circulation fluctuates in the short term, but they will argue that there is still a strong correlation between monetary growth and inflation over the longer term.
4. 'Changes in aggregate demand cause changes in money supply and not vice versa.' Monetarists would argue that if governments respond to a rise in aggregate demand by allowing money supply to increase, then that is their choice to expand money supply. If they had chosen not to and had pursued a policy of higher interest rates, then money supply would have thereby been controlled and aggregate demand would soon have fallen back again.

Suppose that, as part of the national curriculum, everyone in the country had to study economics up to the age of 16. Suppose also that the reporting of economic news by the media became more thorough (and interesting!). What effects would these developments have on the government's ability to manage the economy? How would your answer differ if you were a Keynesian from if you were a new classicist?

People's predictions would become more accurate (at least that's what teachers of economics would probably hope!). Thus the government would be less able to fool people. In the new classical world there would be less shifting of the short-run AS curve or the short-run Phillips curve. The government would find it even more useless to try to reduce unemployment by demand-side policy. On the other hand a tight monetary policy would be more likely to reduce inflation very rapidly.

In the Keynesian world, correctly executed demand management policy would be seen to be so. This would create a climate of confidence which would help to encourage stable growth and investment. On the other hand, poorly executed government policy would again be seen to be so. This could cause a crisis of confidence, a fall in investment and a rise in unemployment and/or inflation.

© Copyright Virtual University of Pakistan

Lesson 28

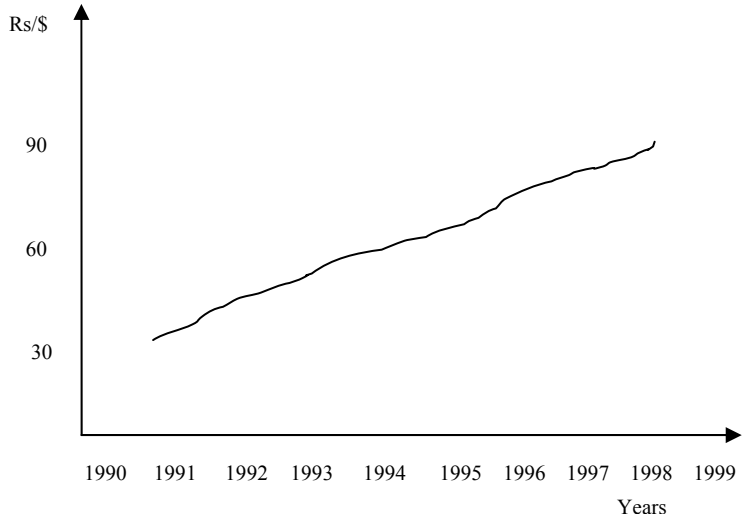
MACROECONOMIC DATA & NATIONAL INCOME ACCOUNTING

THE USE OF MACROECONOMIC DATA

As said: "there are lies, damned lies and statistics." Likewise, macroeconomic statistics are also susceptible of both manipulation and misinterpretation. In order to ensure that you understand what a particular number or data representation really means, the following need to be considered:

- **i.** Data might be used selectively. Certain information might be excluded: e.g. inflation as a whole might have increased but food inflation might have fallen.
- **ii.** In graphs, the vertical and horizontal scales used might be such in a way so as to paint a very dramatic (or totally benign) picture of things.
- **iii.** Values used might be absolute, not proportionate. People might be paying higher taxes, but as a proportion of income, the same may have fallen, as incomes might have risen even higher.
- **iv.** Questions of distribution might be ignored. For e.g., while the economy might have become richer overall, the ownership of the higher wealth might be highly skewed so that the richer have become richer and poor poorer.
- **v.** Data might be nominal or real. Nominal data is recorded in money terms, unadjusted for inflation. Real data is nominal data adjusted for changes in prices. Most macroeconomic data is presented and analyzed in real terms so as to permit meaningful intertemporal and cross-country comparisons.
- **vi.** Certain time periods might be excluded: e.g. economic growth might be 4.5% over the 1990-95 timeframe, but only 3.5% over the 1988-97 horizons.
- **vii.** Data might be aggregate, ignoring per capita considerations: e.g. a country's national income goes up but per capital income goes down due to a bigger population.
- **viii.** Vii also applies in the context of growth rates. So if national income is growing at 5% p.a. but the population at 6% p.a., per capital income would be falling at the rate of 1% p.a.

Graphical presentation of data (use of scale) Exchange rate



5 people in the economy	Income in (000)s				
	A	**B**	**C**	**D**	**E**
Old government	100	110	120	130	140
New government	60	70	75	300	450

Mean (old government) = $\frac{610}{5}$ = 122 Median (old government) = 120

Mean (new government) = $\frac{955}{5}$ = 191 Median (new government) = 75

Nominal data is the data which is expressed in monetary terms while real data is the data after adjusting nominal data for inflation.

Year	1979	1980	1981	1982	1983	1984	1985	1986
Real GDP Growth Rate	1%	-5%	1%	3%	4%	5%	2%	1%

Between 1982 & 1985, average growth rate = 3.5%
Between 1979 & 1986, average growth rate = 1.5%

NATIONAL INCOME ACCOUNTING

Gross Domestic Product (GDP):

Gross domestic product (GDP) is the value of the total final output produced inside a country, during a given year. GDP, like all measures of national income, is a flow (as opposed to stock) figure accruing over the period of one year. Gross Domestic Product is the total market value of all goods and services produced within the political boundaries of an economy during a given period of time, usually one year. This is the government's official measure of how much output our economy produces.

Concept of Flow and Stock:

A flow figure refers to a certain period of time. A stock figure implies a particular point in time and therefore changes instantaneously. Flows accumulate into stocks. Changes in stocks equal flows. In accounting terminology, stocks are balance sheet items, while flows are income statement items.

The change in stocks measures changes in the value of unsold inventories in a given time period. When aggregate demand is high and running ahead of current production, the value of stocks held by businesses tends to fall. This is known as de-stocking. Conversely when demand falls, business might be left with an unplanned increase in unsold output leading to a rise in stocks. Changes in stocks are normally a good leading indicator of where the economy is likely to head in the next six months.

Stock: A variable or measurement that is defined for an instant in time (as opposed to a period of time). A stock can only be measured at a specific point in time. For example, money is the stock of production that exists right now. Other important stock measures are population, employment, capital, and business inventories.

Flow: A variable or measurement that is defined for a period of time (as opposed to an instant in time). A flow can only be measured over a period. For example, GDP is the flow of production during a given year. Income is another flow measures important to the study of economics.

METHODS OF MEASURING GDP

There are three equivalent ways of measuring GDP:

i. **The product or value added method** which sums the value added by all the productive entities in the economy;
ii. **The expenditure method** which sums up the value of all the "final goods" transactions taking place in the economy;
iii. **The factor income method** which sums up all the incomes earned by all the factors of production in the economy (rent for land, wages for labour, interest for capital, and equity returns for entrepreneurship).

The three methods are equivalent. One way to see why this must be so is because in an ex-post sense, aggregate supply (i) = aggregate demand (ii) = national income (iii).

Value added is the difference between the value of goods produced and the cost of materials and supplies used in producing them. Value added consists of the wages, interest and profit components added to the output by a firm. Value added is the difference between inputs and outputs e-g if a firm spends Rs.500 making a good (inputs) and sells its product (output) for Rs.750, then value added is Rs.250.

© Copyright Virtual University of Pakistan

OR

Value added is the increase in the value of a good at each stage of the production process. The value that's being increased is specifically the ability of a good to satisfy wants and needs either directly as consumption good or indirectly as a capital good. A good that provides greater satisfaction has greater value. In essence, the whole purpose of production is to transform raw materials and natural resources that have relatively little value into goods and services that have greater value.

Final and Intermediate Goods:

Final goods are meant for direct use by the end consumer rather than for further processing. Intermediate goods are those that are intended for further processing. So an iron rod, if purchased by a household as a weapon against infiltrating thieves would categorize as a final good, but if purchased by a firm for use in the making of an automobile would categorize as an intermediate good.

GDP might be calculated at market prices (includes sales tax paid by consumer as part of the final price) or at factor cost (excludes sales tax). If there is no sales tax, the two measures collapse to the same thing.

Final good: A good (or service) that is available for purchase by the ultimate or intended user with no plans for further physical transformation or as an input in the production of other goods that will be resold. Gross domestic product seeks to measure the market value of final goods. Final goods are purchased through product markets by the four basic macroeconomic sectors (household, business, government, and foreign) as consumption expenditures, investment expenditures, government purchases, and exports. Final goods, which are closely related to the term current production, should be contrasted with intermediate goods--goods (and services) that will be further processed before reaching their ultimate user.

Intermediate good: A good (or service) that is used as an input or component in the production of another good. Intermediate goods are combined into the production of finished products, or what are termed final goods. Intermediate goods will be further processed before sold as final goods. Because gross domestic product seeks to measure the market value of final goods, and because the value of intermediate goods are included in the value of final goods, market transactions that capture the value of intermediate goods are not included separately in gross domestic product. To do so would create the problem of double counting.

Difference between total value and value added:

Firm A: Produces steel from raw iron and sells it for Rs 100,000 to firm B.

Firm B: Buys steel worth Rs 100,000 then processes it to produce a car body worth Rs 200,000.

Firm C: Buys the car body, adds the other parts etc. and sells complete car for Rs 450,000.

Value added or GDP:

Value of transactions: 100,000 + 200,000 + 450,000 = 750,000

GDP = Sum of the value added by each of the firms:

= 100,000 + (200,000 – 100,000) + (450,000 – 200,000)

= 100,000 + 100,000 + 250,000 = 450,000→ GDP.

Also total expenditure of consumer on car = 450,000

Example:

Good **Col 1**	**Seller** **Col 2**	**Buyer** **Col 3**	**Trans Value** **Col 4**
Steel	**Steel producer**	**Machine producer**	**100,000**
Steel	Steel producer	Car producer	300,000
Machine	Machine producer	Car producer	200,000
Tyres	Tyre producer	Car producer	50,000
Cars	Car producer	Consumer	500,000
Total value of transaction	-	-	1,150,000

MACROECONOMIC DATA & NATIONAL INCOME ACCOUNTING (CONTINUED)

GDP at factor and market prices:
Factor price is the price at which firm sells its final output to the consumers. While market price include factor price plus the indirect taxes imposed by the government. GDP at market price is higher than the GDP at factor price.

GDP at factor cost = GDP at market price – Indirect taxes

Net Domestic Product (NDP):
Net domestic product (NDP) is obtained by subtracting depreciation from GDP. Depreciation is the reduction in the value of a capital good due to the wear and tear caused during production. The total market value of all final goods and services produced within the political boundaries of an economy during a given period of time, usually a year, after adjusting for the depreciation of capital.

NDP = GDP – Depreciation allowance

Depreciation:
Wearing out, breaking down and technological obsolescence of physical capital that results by using in process of production of goods and services. To paraphrase an old saying, "You can't make a car without breaking a few socket wrenches." In other words, when capital is used over and over again to produce goods and services, it wears down from such use.

Gross National Product (GNP):
Gross national product (GNP) is the value, at current market prices, of all final goods and services produced during a year by the factors owned by the citizens of a country. Thus the income earned by Pakistani citizens working in the US would be included in Pakistan's GNP but excluded from Pakistan's GDP. Conversely, the income earned by a US citizen (individual or corporate) in Pakistan would be included in Pakistan's GDP but excluded from Pakistan's GNP. Generally, GNP = GDP + net factor income from abroad. The abbreviation for gross national product, which is the total market value of all goods and services produced by the citizens of an economy during a given time period, usually one year. Gross national product often was once the federal government's official measure of how much output our economy produces.

GNP = GDP + Net factor incomes from abroad

Net National Product (NNP):
Mathematically, national income is net national product (NNP). It is GNP adjusted for depreciation. In words, it is the net output of commodities and services flowing during the year from the country's production system in the hands of ultimate consumers. The total market value of all final goods and services produced by citizens of an economy during a given period of time, usually a year, after adjusting for the depreciation of capital. Net national product, abbreviated NNP, has the same relation to net domestic product (NDP) as gross national product (GNP) has to gross domestic product (GDP). Net national product also has the same relation to gross national product that net domestic product has to gross domestic product. Like NDP, NNP is a measure of the net production in the economy.

NNP = GNP – Depreciation allowance

National income (NI):
NNP is often referred to as national income. The total income earned by the citizens of the national economy as a result of their ownership of resources used in the production of final goods and services during a given period of time, usually one year. This is the government's official measure of how much income is generated by the economy.

National Income and Gross Domestic Product:
National income (NI) is the total income earned by the citizens of the national economy resulting from their ownership of resources used in the production of final goods and services during a given period of time, usually one year. Gross domestic product (GDP) is the total market value of all final goods and services produced within the political boundaries of an economy during a given period of time, usually a year. Although national income is generated by the production of gross domestic product, the value of production does not entirely result in earned income. In other words, national income can be derived from gross domestic product after a few adjustments.

© Copyright Virtual University of Pakistan

Real GDP: The total market value, measured in constant prices, of all goods and services produced within the political boundaries of an economy during a given period of time, usually one year. The key is that real gross domestic product is measured in constant prices, the prices for a specific base year. Real gross domestic product, also termed constant gross domestic product, adjusts gross domestic product for inflation. You might want to compare real gross domestic product with the related term nominal GDP.

Nominal GDP: The total market value, measured in current prices, of all goods and services produced within the political boundaries of an economy during a given period of time, usually one year. The key is that nominal gross domestic product is measured in current, or actual prices; the prices buyers actually pay for goods and services purchased. Nominal gross domestic product is also termed current gross domestic product.

Real flow includes services of land labor and capital going from households to firms, and products of firms as physical goods of services flowing to households. Real GDP therefore excludes the effect of prices and focuses entirely on the volume (or quantity) of goods and services produced.

Money (or nominal) flow includes the payments firms make to households for factor services and also it includes the household spending money to buy goods from firms. Nominal GDP would therefore include the effect of changes in the price level, as it is a measure of the money value of goods and services produced.

PRICE DEFLATOR

The process of converting nominal GDP into real GDP is known as deflation. A price index calculated as the ratio nominal gross domestic product to real gross domestic product. Also commonly referred to as the implicit price deflator, the GDP price deflator is used as an indicator of the economy's average price level.

$$\text{GDP Deflator} = \text{Nominal GDP} / \text{Real GDP}$$

It is the price deflator (see price\ratio expression in brackets below) which enables us to move from nominal to real GDP. It provides a measure of the change in prices from the base (or benchmark) year to year 'a', given values for some aggregate price index for the two years:

$$\text{Real GDP}_{\text{year a}} = \text{Nominal GDP}_{\text{year a}} \text{ X } (\text{Price Index}_{\text{base year}} / \text{Price Index}_{\text{year a}})$$

Using a similar formula and the same base year, Real GDP year b can be calculated and then be compared with Real GDP year a to get an idea of real GDP growth over the 'a' to 'b' period.

Example:

- Nominal GDP was $150 billion in 1985
  & $300 billion in 1994
- ASSUME that prices have risen by 50% over the period.
- Real GDP in 1994 measured in 1985 prices:
  = $300 billion x 100/150 = $200billion

Hypothetical economy

	Year 1	Year 2
Apples produced	100	150
Chicken produced	100	140
Cost per apple Rs	2	4
Cost per chicken Rs	4	6

- Nominal GDP in year1 = (100 x 2) + (100 x 4) = 600
- Nominal GDP in year2 = (150 x 4) + (140 x 6) = 1440
- Growth rate in nominal GDP = $\frac{1440 - 600}{600}$ = 140%
- Year2 price index at year 1 prices = $\frac{150 \times 2 + 140 \times 4}{290}$ = 2.966
- Year2 price index at year 2 prices = $\frac{150 \times 4 + 140 \times 6}{290}$ = 4.966 → Current year price index

GDP Deflator:

2.966X = 4.966 x100

X = 167.4%

This is the price level in percentage terms prevailing in the current year (Year2) relative to the price level of Year1.

Real GDP = $\frac{1440 \times 100}{167.4} = 860$

Growth rate = $\frac{860 - 600}{600} = 43\%$

Per Capita GDP:

Per capita GDP is simply the total GDP of the economy divided by the no. of people in the economy. The GDP of China might be bigger than the GDP of Switzerland but in average per capita terms, Switzerland's income might be several times that of China's; the figure given in the lectures was 160.

THE PURCHASING PARITY (PPP)

The purchasing power parity (PPP) measure of GDP recognizes the fact that a given amount of income in one country might not be able to purchase the same quantity of goods and services in another country. So, for e.g., if China' per capita income is 1/160th of Switzerland's per capital income, it might be that goods and services in China are much cheaper and therefore China's per capita income does not need to grow 160 times in order to deliver the same standard of living as in Switzerland. The PPP GDP per capita is therefore a more sensible measure to use for comparison across countries at different levels of development. This is indeed the reason why many international development organizations prefer this over simple GDP per capital.

Per Capita Income, Personal Income and Disposable Income:

Per capita income is obtained by dividing the national income by the total number of population. It is the average annual income per head for all the inhabitants of the country; it is used to represent the standard of living of the people.

Personal income of an individual is the total amount of income s/he receives form deploying all the different factors of production s/he owns. Aggregate personal income is just the above definition aggregated for the whole of the economy. The total income received by the members of the domestic household sector, which may or may not be earned from productive activities during a given period of time, usually one year. The primary use of personal income is to measure the income actually paid out to the household sector. After adjusting for income taxes, personal income forms the basis for consumption expenditures on gross domestic product.

Disposable income is obtained by subtracting the amount of direct taxes from the personal income of the person. Aggregate holds as above as well. The total income used by the household sector for either consumption or saving during a given period of time, usually one year. This is the income left over after income taxes and social security taxes are removed and government transfer payments, like welfare, social security benefits, or unemployment compensation are added.

DRAWBACK OF GDP BASED MEASURES

There are many caveats with a GDP based measure of national income.

- **i.** GDP by definition excludes productive activities in the informal economy. Thus, activities such as a person painting a wall in his own house, or a woman cooking food in her house, would be excluded by a GDP-based measure. In countries where a large part of economic activity goes unreported and undocumented (like in lower income countries), the GDP might seriously understate the level of national income and production.
- **ii.** GDP cannot include the black or illegal economy. So, for example, if a banned good is produced illegally and exported outside the country, and foreign money is received in exchange for it, then that "export revenue" will not be included as part of the GDP. Lower income countries often confront a large black economy which cannot be documented. Living standards in such countries are therefore often higher than what a per capital income measure based on GDP would suggest.

© Copyright Virtual University of Pakistan

iii. A GDP-based measure of welfare or living standards also needs to be corrected for externalities. For e.g., if a country's GDP is growing at a very fast rate but this is at the cost of rising environmental pollution (which might cause serious future health hazards) or non-renewable natural resource depletion, then a simple GDP measure of income will overstate the performance of the economy and ignore the serious long-term risks it faces.

© Copyright Virtual University of Pakistan

Lesson 30

MACROECONOMIC EQUILIBRIUM; THE DETERMINATION OF EQUILIBRIUM INCOME

THE KEY VARIABLES OF THE MACROECONOMIC MODEL

The circular flow of money in the economy helps illustrate the Classical and Keynesian notions of macroeconomic equilibrium. The circular flow depicts incomes flowing from firms to households in return for factor services supplied by households to firms, and subsequently these household incomes being expended on goods and services supplied by firms to households.

The key variables for a macroeconomic model are:

Y = Income
C = Consumption
S = Savings
I = Investment
T = Taxes
G = Government Expenditures
M = Imports
X = Exports

CIRCULAR FLOW

Circular flow refers to the continuous movement of production, income, and resources between producers and consumers. This flow moves through product markets as the gross domestic product of our economy and is then the revenue received by the business sector in payment for this production. This stream of revenue then flows through resource markets as payments by businesses for the resources employed in production. The payments received by resource owners, however, is nothing more than the income of the household sector. The resource owners of the household sector use this income to purchase goods and services through the product markets, coming full circle to where we began.

THE CONCEPT OF LEAKAGES AND INJECTIONS

A leakage or withdrawal is any use of the income received by households that does not return as revenue to domestic firms. Savings, taxes and imports are examples of leakages as this money does not fall as expenditure on goods and firms produced by domestic firms.

Injections are payments to firms not originating from households: government spending, firms' investment and exports are all examples of injections into the circular flow.

Injection:

A non-consumption expenditure on gross domestic product, including investment expenditures, government purchases, and exports. Injections are combined with leakages in the injection-leakage model used to identify equilibrium aggregate output in Keynesian economics. The notion of injection is best viewed through the circular flow, in which investment expenditures, government purchases, and exports are "injected" into the main flow between output, factor payments, national income, and consumption.

Leakage/Withdrawals:

Leakage is known as non-consumption uses of income, including saving, taxes, and imports. Leakages are combined with injections in the injection-leakage model used to identify equilibrium aggregate output in Keynesian economics. The notion of leakage is best viewed through the circular flow, in which saving, taxes, and imports are "leaked" out of the main flow between output, factor payments, national income, and consumption.

Injection-leakage model:

A model used in Keynesian economics based on the equality of non-consumption expenditures (or injections) and non-consumption uses of income (leakages). On one side of the equality is saving, taxes, and imports -- the non-consumption leakages. On the other side of the equality is investment, government purchases, and exports -- the non-consumption injections. The injection-leakage model provides an alternative to the Keynesian cross for identifying equilibrium aggregate output.

© Copyright Virtual University of Pakistan

MACROECONOMIC EQUILIBRIUM: CLASSICAL VIEW

Macroeconomic equilibrium in a Classical sense refers to joint equilibrium in all the underlying sectors or markets of the economy. So S must equal I (loan able funds market; key players are banks and financial markets), G must equal T (fiscal sector; key player is government) and X = M (external sector, key players are importers and exporters). Any disequilibrium at the macro level was attributable to disequilibrium in one or more of these individual markets.

MACROECONOMIC EQUILIBRIUM: KEYNESIAN VIEW

Macroeconomic equilibrium in a Keynesian sense obtains when total injections equal total leakages (or total withdrawals), or aggregate supply equals aggregate demand. These are two equivalent notions of Keynesian equilibrium and can be expressed respectively as:

$$\mathbf{S + T + M \equiv I + G + X \text{ and}}$$

$$\mathbf{AS = Y = AD \equiv C + I + G + (X\text{-}M);}$$

where AS is aggregate supply, Y is national income, AD is aggregate demand, C is consumption, I is investment, G is government spending, X is exports, M is imports, S is saving and T is taxes.

Withdrawal = Injection

By definition → $\underline{S + T + M} = \underline{I + G + X}$

(Adding C to both sides)

$$C + S + T + M = C + I + G + X \quad \text{(Now taking M on other side)}$$

$$C + S + T = C + I + G + X - M$$

$$M = Cf + If + Gf$$

$Cd = C - Cf$ $\qquad Id = I - If$ $\qquad Gd = G - Gf$

R.H.S = (C – Cf) + (I – If) + (G – Gf) + X

= Cd + Id + Gd + X => Total expenditure on domestic goods

Cd + Id + Gd + X = C + I + G + X – M

Total expenditure on domestic goods = AD

For Equilibrium

AD = AS

C + S + T = C + I + G + X – M

In L.H.S

- C + S + T = Y (total income = Y)
- Therefore another way of viewing Keynesian equilibrium is:

Y = AD = AS

Income = Expenditure = Output

Keynes' major insight was that equilibrium in the individual markets was not a necessary condition for equilibrium at the macro level. Indeed it was possible for all the individual markets or sectors to be in disequilibrium but aggregate demand and supply to be equal, and therefore the overall economy to be in equilibrium. As such, he argued that in the face of macroeconomic equilibrium (situations like unemployment, high inflation etc.) policy needed to focus on aggregate demand and aggregate supply rather than individual markets.

To refresh your memories, aggregate demand is the total planned or desired spending in the economy during a given period. It is determined by the money supply, aggregate price level, consumption, domestic investment, government spending and taxes, net exports (i.e. exports minus imports). Aggregate supply is the total value of goods and services that firms would willingly produce in a given time period. Aggregate supply is a function of available inputs, technology and the price level.

Disposable income (Y_d) is that part of the total national income (Y) that is available to households for consumption or saving. So $Y_d = Y - T$.

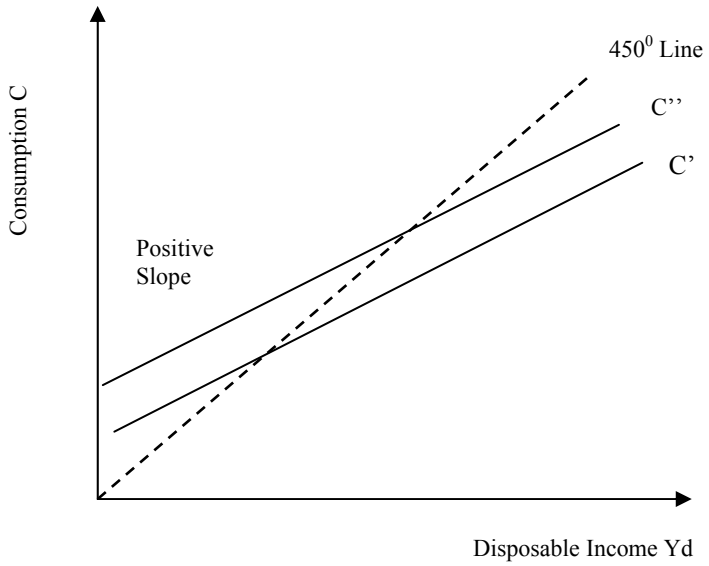
CONSUMPTION AND CONSUMPTION FUNCTION

Consumption (C) is the amount of national income that is spent on goods and services produced by domestic firms in a given period of time. Consumption is the most stable and important component of aggregate demand, accounting for about two-thirds to three-fourths of GDP in most countries.

© Copyright Virtual University of Pakistan

The consumption function is a schedule relating total consumption to personal disposable income. It usually takes the form $\mathbf{C = a + bY_d = a + b(Y-T)}$, where "a" is the minimum level of consumption that must take place even if Y_d is zero, and b is the marginal propensity to consume.
When drawn in expenditure-income space, the consumption function plots as a straight line with positive intercept, and a positive (but less than 1) slope. The slope is merely the MPC. The intercept is positive because some consumption must happen even at a zero level of income (people will borrow and spend on food for e.g.), and the slope is less than 1 because not all the income is consumed (part of it is saved).

Disposable Income (Yd)	Consumption (C`)	Saving (S = Yd – C`)
500	500	0
550	540	10
600	580	20
650	620	30
700	660	40
750	700	50
800	740	60



Marginal Propensity to Consume (MPC) and Marginal Propensity to Save (MPS):
Marginal propensity to consume (MPC) is the extra amount that people consume when they receive an extra dollar of disposable income. MPC's numerical value is usually between 0.5 and 1, but can vary considerably across different countries, population age groups, and stages of a person's life.
Marginal propensity to save (MPS) is the fraction of the additional dollar of disposable income that is saved. Thus, MPC = 1 – MPS. Average propensity to consume (APC) is the ratio of total consumption to total disposable income. Average propensity to save (APS) is the ratio of total saving to total disposable income. As before, APC = 1 – APS.

THE SAVING FUNCTION
The saving function yields the amount of saving that households of a nation will undertake at each level of income. A usual formula is $S = c + d(Y_d)$. d is MPS, positive, and usually less than 0.5.
The relationship between saving and the interest rate is also important. The relationship is positive, is plotted in i-S space, and implies that household saving increases as the interest rate goes up, i.e. the

incentive to keep one's money in the bank and earn interest thereon increases as the return on that money increases.

CALCULATION OF APC, APS & MPC, MPS

- **Average propensity to consume:**
  APC = C / Yd
- **Average propensity to save:**
  APS = S / Yd
  Or
  APS = 1 – APC
- **When** **Yd** = $500 billion **APC** = 1 **APS** = 0
- **When** **Yd** > $500 billion **APC** < 1 **APS** > 0
- **Marginal propensity to consume:**
  MPC = ΔC / ΔYd
- **Marginal propensity to save:**
  MPS = ΔS / ΔYd
  Or
  MPS = 1 – MPC

APC = C/Yd	APS	Yd	C	MPC(ΔC/ΔYd)
500/500=1.0	0	500	500	
540/500=0.98	0.02	550	540	40/50=0.8
580/600=0.97	0.03	600	580	40/50=0.8
620/650=0.95	0.05	650	620	40/50=0.8
660/700=0.94	0.06	700	660	40/50=0.8
700/750=0.93	0.07	750	700	40/50=0.8
740/800=0.92	0.08	800	740	40/50=0.8

© Copyright Virtual University of Pakistan

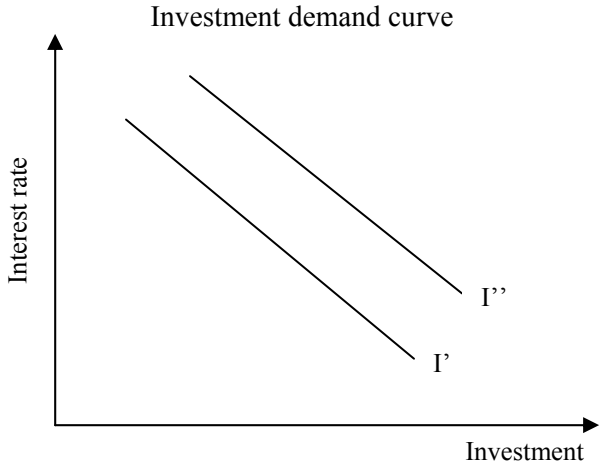
Lesson 31

MACROECONOMIC EQUILIBRIUM; THE DETERMINATION OF EQUILIBRIUM INCOME (CONTINUED)

INVESTMENT AND INVESTMENT DEMAND CURVE

Investment (I) or gross capital formation is any economic activity (usually undertaken by firms) that forgoes consumption today with an eye to increase output in future. Investment is by far the most volatile component of aggregate demand.

The investment demand curve shows the relationship between the level of investment and the cost of borrowing for the firm (i.e. the interest rate), plotted in i-I space. The cost of borrowing is important because most investments are financed using borrowed resources (e.g. loans from banks). The relationship between the interest rate on such borrowing and investment demand is obviously negative, i.e. as the interest rate goes up, investment demand decreases.



TYPES OF INVESTMENT

Investment can be of various types: residential and non-residential construction, purchases of producer durables (i.e., capital equipment, machinery etc.) and buildup of business inventories. While all these different types are affected t some extent by the interest rate, there are other important determinants as well.

- **i.** Residential construction depends upon the number of willing house-buying households, their wealth and indebtedness levels, their ability to obtain a house-building loan from financial institutions and the cost of housing units.
- **ii.** Non-residential construction depends upon the willingness and ability of firms to buy commercial property, the vacancy rate of existing units, the needs of business units for additional commercial space, and firms' ability to meet increased rental costs which are directly linked to their current and expected costs and sales.
- **iii.** The demand for producers' durable purchases depends on utilization of existing productive capacity, the availability of advanced (more efficient) technology, current and expected sales and existing and future competition.
- **iv.** Changes in business inventories depend on current and expected sales, current and expected inventory prices, and certainty of inventory deliveries.

IMPORTS, EXPORTS AND TRADE BALANCE

- Imports are goods and services that are produced in another country and consumed in the home country. Thus a refrigerator produced in Korea brought into Pakistan to be sold here locally would characterize as an import.
- Exports are goods and services that are produced in the home country and consumed in another country. Thus a communications satellite produced in Pakistan but sold to neighboring Iran would categories as a Pakistani export.

© Copyright Virtual University of Pakistan

- A country's imports are related to its level of income, exchange rate, domestic prices relative to prices in foreign countries, import tariffs (taxes and customs duties levied on imported goods), and quantitative restrictions (quotas) on imported goods. Imports are influenced by the same variables except that they are affected by foreign, not home, country income levels.
- Trade balance is the excess of exports over imports. A negative trade balance is called a trade deficit. Because the determinants of a country's exports and imports change with time, it is reasonable to expect a country's trade balance to change over time.
- Fiscal Policy is a government program with respect to i) expenditure (G): the purchase of goods and services and spending in the form of subsidies, unemployment benefits etc. and ii) tax revenue (T): the amount and type of taxes.
- T-G is referred to as the fiscal balance. If G>T, there is a fiscal or budget deficit; if G<T, there is a fiscal or budget surplus. If G=T, there is a balanced budget.

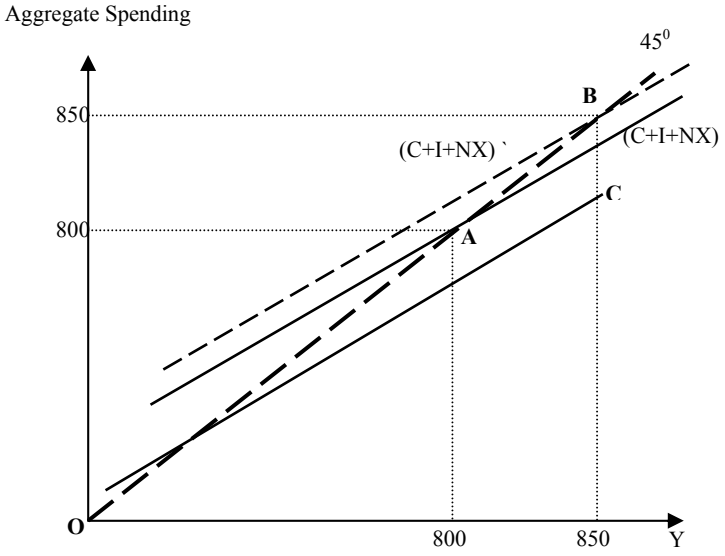
DETERMINATION OF NATIONAL INCOME

The 45^0 Line approach to equilibrium:

The 45^0 line drawn in Y-X space has the feature that at any point on the line, the horizontal and the vertical distances are the same. Thus, if the units used to measure X and Y are the same (i.e. same scales), the values of the two variables at any point along the line are equal.

The 45^0 line drawn in expenditure-income (or AD-Y) space captures macroeconomic equilibrium in the economy (recall, macroeconomic equilibrium obtains when AS = AD = Y). At all points along this line, expenditure and income are equal.

Superimposing the aggregate demand (AD) line or expenditure function on the 45^0 line diagram helps get the level at which a particular economy's equilibrium is struck; i.e. the point at which the AD line intersects the 45^0 line.



The AD or expenditure function is given by **AD = C + I + G + (X-M)**. We saw earlier that the C function was upward sloping with positive intercept but slope between 0 and 1 (i.e. less steep than the 45^0 line). Adding I, G and X-M functions to the C function simply involves moving the C line vertically upwards (parallel shift). So C+I will be higher than C by the amount of I; C+I+G will be higher than C+I by the amount of G; and C+I+G + (X-M) will be higher or lower than C+I+G depending on whether the country is running a trade surplus or deficit, respectively.

Starting from a certain equilibrium level, any increase in G, I and (X-M) will cause a multiplied increase in income. Thus depending on the slope of the AD line, it is possible for a $10mn increase in G (shown by an upward vertical shift of the AD line) to lead to a $50mn increase in equilibrium income and expenditure.

In the above example, if the economy had started from the full-employment equilibrium, then the $10mn increase in G would lead to an inflationary gap. An inflationary gap refers to a situation where there is pressure on prices to rise. The size of the inflationary gap is $10mn, i.e. the amount by which the C+I+G+NX line must shift down to bring equilibrium income back to the full employment level. Likewise, a deflationary gap could result if, starting from the full employment level, there was a reduction in G.

In Billions of $					
Output (Y) Col 1	**Consumer spending (C) Col 2**	**Investment spending (I) Col 3**	**Net Exports (NX) Col 4**	**Aggregate spending (C+I+NX) Col 5**	**Surplus / Shortage (C+I+NX – Y) Col 6**
650	570	100	10	680	30
700	610	100	10	720	20
750	650	100	10	760	10
800	690	100	10	800	0
850	730	100	10	840	-10
900	770	100	10	880	-20
950	810	100	10	920	-30

ALGEBRAIC DETERMINATION OF EQUILIBRIUM

Algebraic determination of equilibrium can be done by inserting the plugging the consumption function in place of C in the equation

$$\mathbf{AD = C + I + G + (X-M)}$$

In the absence of taxes, a consumption function simply collapses to C = a + bY

In equilibrium,

$$\mathbf{Y = AD}$$

Therefore,

$$\mathbf{Y^* = a + bY^* + G + I + (X-M)}$$

This leads to:

$$\mathbf{Y^* = [1/(1-b)] \, . \, [“a” + I + G + X-M]}$$

a is the autonomous part of consumption, i.e. the level of consumption that is independent of income.

Equilibrium analysis can also be done using the injections-leakages approach, i.e. by identifying the point where the upward sloping leakage function (S+M+T) intersects the horizontal injections line (I+G+X).

Example:

Consumption function

C = A + b Y

Where

A = Level of consumption

b = MPC = $\Delta Y / \Delta C$

Y = Income

Consumption function can be formed by:

650 – 610 = C – 610

750 – 700 = Y – 700

C = 0.8Y + 50

Y = C + I + NX

Putting C = 0.8Y + 50

Y = 0.8Y + 50 + 100 + 10

0.2Y = 160

$Y = \frac{160}{0.2}$

= 800

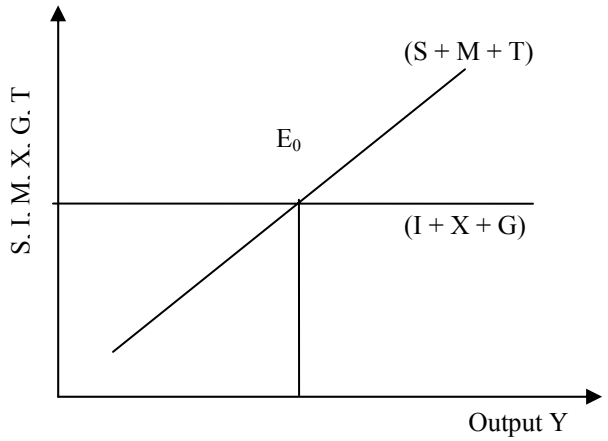
THE WITHDRAWALS - INJECTIONS APPROACH TO EQUILIBRIUM

W = J

S + T + M = I + G + X

Output (Y) Col 1	**Saving (S) Col 2**	**Gross Imports (M) Col 3**	**Gross investment (I) Col 4**	**Gross exports (X) Col 5**
650	80	80	100	90
700	90	80	100	90
750	100	80	100	90
800	110	80	100	90
850	120	80	100	90
900	130	80	100	90
950	140	80	100	90

G Col 6	**T Col 7**	**Withdrawals Leakages (S+M) + T Col 8**	**Injections (I+X) + G Col 9**	**Difference (Leakages - Injections) Col 10**
10	10	170	200	-30
10	10	180	200	-20
10	10	190	200	-10
10	10	200	200	0
10	10	210	200	10
10	10	220	200	20
10	10	230	200	30



How responsive this equilibrium level of income or output to changes in AD or Aggregate expenditures: The Keynesian Multiplier:

Reverting to the 45^0 line approach, the term **[1/(1-b)]** is called the Keynesian multiplier ("k") and is the factor by which equilibrium output, income or expenditure increase in response to an increase in AD (caused by an increase in "a", G, I or X-M). The higher is b, the bigger is the multiplier.

Mathematical representation of Keynes multiplier is as follows:

$$Y = C + I + G + NX$$

As $C = a + bY$

Then,

$$Y = a + bY + I + G + NX$$
$$Y - bY = a + I + G + NX$$
$$Y = \frac{a + I + G + NX}{1 - b} = \frac{1}{1 - b}(a + I + G + NX)$$
$$\mathbf{k = \frac{1}{1 - b}}$$

If any item in the numerator goes up by 10, Y will go up by 10 / 1 – b

If b = 0.8 $\Delta G = 10$

$$k = \frac{1}{1 - 0.8}$$

$\Delta Y = \Delta G \times b = 50$

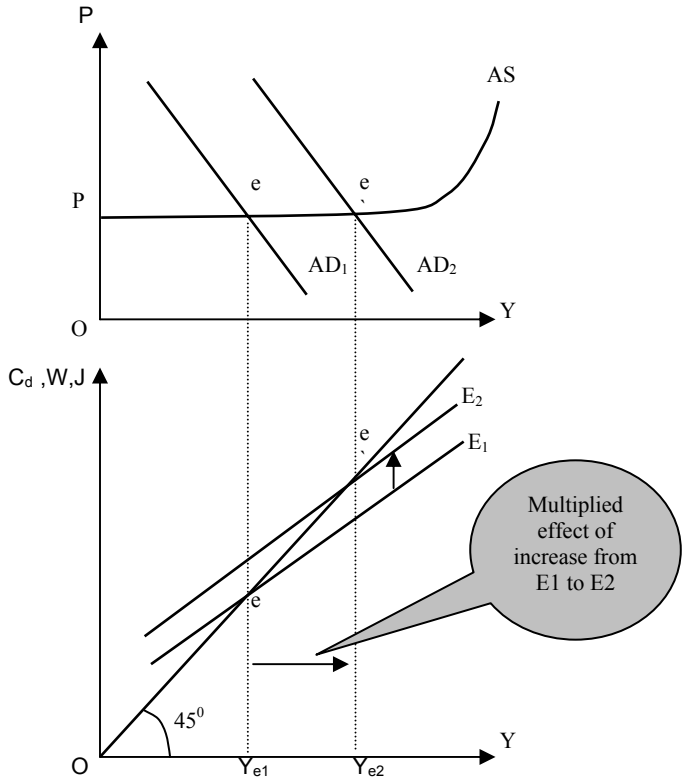
- The higher the value of b, the bigger will be the size of the multiplier,
- The smaller the value of b, the lower will be the size of the multiplier.

© Copyright Virtual University of Pakistan

Lesson 32

MACROECONOMIC EQUILIBRIUM; THE DETERMINATION OF EQUILIBRIUM INCOME (CONTINUED)

KEYNESIAN AD & AS APPROACH TO EQUILIBRIUM WITH THE 450 LINE APPROACH



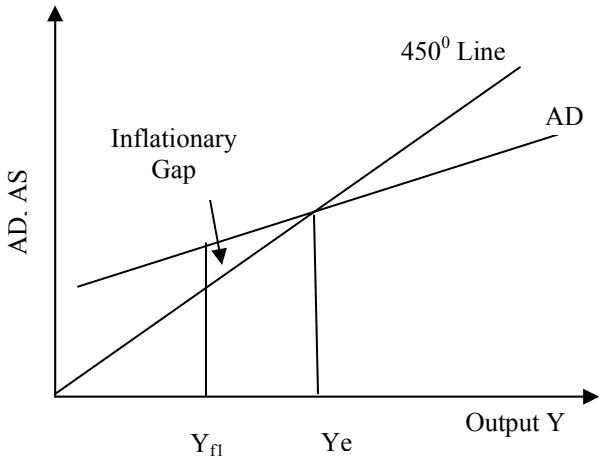
As the aggregate expenditures increases, AD also increases and output will also increase. Change in expenditures is less but change in income is higher due to the multiplier effect. This is the case of horizontal portion of AS where prices are constant.

KEYNES'S INTUITION ABOUT THE MULTIPLIER WAS AS FOLLOWS

An increase in AD caused by an injection into the circular flow, e.g. higher government spending on wages paid to government employees, would lead to higher money wages held by government servants. Higher wages would translate into higher consumption expenditure on goods and services in the economy, leading to higher money incomes of sellers of goods and services. When firms see consumers more prosperous, they are incentivised to produce more, thus their demand for labour goes up. This triggers a second rise of income increases in the hands of workers (who are also consumers) leading to a further multiplied effect on consumption, production and hiring. And so on. The multiplier effect would not be infinite as there are leakages (saving, taxes, and imports) from the circular flow of incomes each time the workers receive wages from firms. The lower the leakages and the higher the marginal propensity to consume, the higher will be the multiplier effect.

© Copyright Virtual University of Pakistan

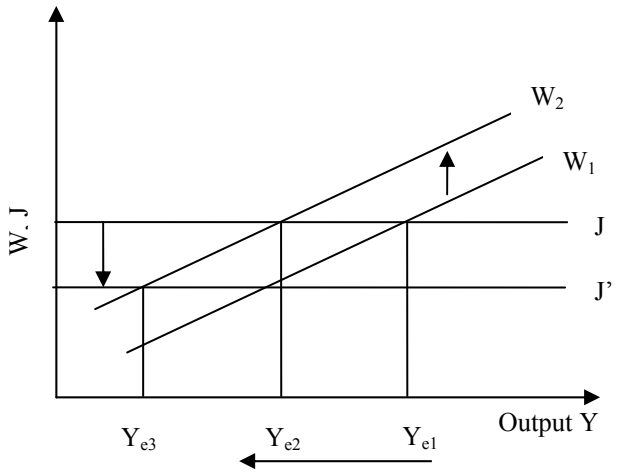
Inflationary Gap



KEYNES PARADOX OF THRIFT

The reverse multiplier effect can be illustrated in the context of Keynes's paradox of thrift, which highlights the negative impact of higher saving in an economy in recession. As noted earlier, Classical economists thought the solution to the problem of low investment during the Great Depression was high real interest rates caused by low savings. If the latter could be increased, the real interest rate would fall and investment would pick up. However, Keynes said that such thrift (or conservative saving behavior) would accentuate the recession. As people save more, they will spend less. Firms will therefore produce less, and labour hiring will, as a result, fall, leading to a decline in incomes. This decline would also happen in a multiplied fashion, causing a huge decline in national income. The paradox lies in the fact that that saving, while usually considered good for any one individual, can actually be harmful to the overall economy if everyone started saving.

Figure: How higher savings lead to lower national income



THE ACCELERATOR

The accelerator is a related concept which formalizes the investment response to output or income changes in an economy. The key observation here is that when an economy begins to recover from a slump, investment can rise very rapidly and, in percentage terms, the rise in investment may be several times the rise in income. Since investment is an injection into the circular flow of income, these changes in investment will cause multiplied changes in income and thus heighten a boom or deepen a recession. The formula for the accelerator is $\alpha = I/(\Delta Y)$, or $(\Delta K)/(\Delta Y)$, noting that $I = \Delta K$, where I is investment and K is capital (the stock of plants, buildings or machinery in the economy).

© Copyright Virtual University of Pakistan

The reason why investment increases by much more than a change in income is as follows:
Suppose firms anticipate national income (and hence the demand for their products) to rise by 10% p.a. over the next 5 years. In response, firms will therefore normally look to undertake an investment (such as buying a machine) which will enable them to meet this new demand for the entire 5 year period. It is usually neither feasible nor possible to buy a machine that has a one year life! Thus, it is easy to see why a given annual change in output (10%) might prompt firms with a five year horizon to make an investment of over 50%.
Reverting back to the formula, the size of the accelerator, α, depends on the marginal capital to output ratio: $(\Delta K)/(\Delta Y)$. This is the cost of extra capital required to produce a Re.1 increase in national output. So if Rs.2 billion worth of capital is required to produce Rs.1 billion worth of output, then $(\Delta K)/(\Delta Y)$ is 2. It is easy to see that, other things being equal the marginal capital-output ratio and the accelerator are essentially the same. α is likely to be greater than 1.

INTERACTION OF ACCELERATOR AND MULTIPLIER
It is obvious that the interaction of the accelerator and multiplier can set off a chain reaction in the economy which can life output and income manifold. For example, if there is a rise in government expenditure, this will lead to a multiplied rise in national income. But this rise in national income will set off an accelerator effect: firms will respond to the rise in incomes (and the resulting rise in consumer demand) by investing more. But this rise in investment will constitute a further rise in injections and thus will lead to a second multiple rises in income. And so on…
The reason why such an interaction cannot raise output infinitely is because of two reasons i) the economy runs into the full-employment constraint, i.e. there is a fixed number of workers in the economy, and ii) output must grow at an increasing rate (something which is difficult to sustain for very long) in order for investment to continue rising. This is because the accelerator links investment to changes in output, not the level of output. So for e.g., if output rises in year 1 by Rs.3bn, in year 2 by Rs.2bn, and in year 3 by Rs.1bn, then with $\alpha = 2$, investment will be Rs.6bn, Rs.4bn, and Rs.2bn in years 1, 2 and 3 respectively. As can be seen, investment falls even though output is rising, leading to a reverse multiplier accelerator chain reaction to be set off effect will be reversed. The key point to remember, again, is that investment is related to "changes in income" not the "level of income", and therefore "changes in income" have to increase in order for investment to increase. A mere increase in level is not important.

© Copyright Virtual University of Pakistan

EXERCISES

If we were trying to get a 'true' measure of national production, which of the following activities would you include: (a) washing-up; (b) planting flowers in the garden; (c) playing an educational game with children in the family; (d) playing any game with children in the family; (e) cooking your own supper; (f) cooking the supper for the whole family; (g) reading a novel for pleasure; (h) reading a textbook as part of studying? Is there a measurement problem if you get pleasure from the do-it-yourself activity itself as well as from its outcome?

The difficulty stems from separating production from consumption. In the paid-employment sector of the economy, the distinction is clear. With production, money flows from firms to households (as wages, etc.), and with consumption, money flows from households to firms. Many activities in the home, however, have both a production and consumption element. Although they all lead to a benefit when complete (e.g. washing-up leads to clean dishes), several, if not all, could give pleasure while they are actually being performed. If so, should two (or even three) of benefits be recorded?

Playing an educational game with children can give pleasure to the children, future benefits to the children from the educational element, and pleasure to the parents. Then there is the cost element. Should this be deducted? It is not deducted for marketed output. In other words, the final value of goods and services sold is what is included, not the value minus the cost of producing them: costs such as the disutility (effort, boredom, etc.) experienced by workers.

Ideally, a true measure of national welfare, as opposed to national production, should be only a net measure (i.e. benefits from consumption, minus costs of production). If this principle was used to measure welfare in the household, then all pleasurable activities should be included with a positive sign (including things such as reading a novel for pleasure) and anything causing displeasure should be recorded with a negative sign. Most of the above activities would have elements of both benefits and costs. However, when marketed national production is recorded, costs are ignored, and so for comparative purposes, household production should be recorded on the same basis, and only the benefits recorded.

All the above items bring pleasure, either directly (such as reading a novel) or indirectly (such as doing the washing-up), and in this sense they should all be included, but whether activities that give direct pleasure should count as production or merely as consumption, is a question of definition.

Review this question after the balance of payments lectures. If the Malaysian ringgit is undervalued by 47 per cent in PPP terms against the US dollar, and the Swiss franc overvalued by 53 per cent, what implications does this have for the interpretation of Malaysian, Swiss and US GDP statistics?

The GDP figures understate the purchasing value of Malaysian national income by 47 per cent relative to US national income, and overstate the purchasing value of Swiss national income by 53 per cent relative to US national income. In other words, at the exchange rates in question, Malaysian national income seems 47 per cent lower relative US national income than it really is in purchasing terms, and Swiss national income seems 53 per cent higher relative to US national income than it really is in purchasing terms.

If there are no sales taxes, no net factor income from abroad and no depreciation, will the GDP at market prices and national income measures collapse to the same thing?

Yes.

- **i.** National income is NNP at factor cost = GNP at factor cost - depreciation. Since depreciation = 0, NNP at factor cost = GNP at factor cost.
- **ii.** GNP at factor cost = GDP at factor cost + net factor income from abroad. Since net factor income from abroad = 0, GNP at factor cost = GDP at factor cost
- **iii.** GDP at factor cost = GDP at market price – sales taxes. Since sales taxes = 0, GDP at factor cost = GDP at market price
- **iv.** Therefore NNP at factor cost = GDP at market price.

If nominal GDP has increased by 10% over last year but real GDP has fallen by 2%, by what percentage must have prices risen?

12%. Real GDP growth rate = GDP growth rate – the rate of inflation. -2% = 10% +? = -12%.

© Copyright Virtual University of Pakistan

Is population growth good or bad for a country's economic welfare?

It depends. If the energies of the growing population (and labour force) can be usefully and efficiently employed towards productive activity, then the growth impact of the larger population may dominate the negative impact of the large denominator in the per capital income formula. However, if more and more people produce less and less (law of diminishing returns) and the quality of human capital created is generally poor, then it might well be that a large population leads to a decline in per capita income and hence average living standards.

It also depends on the starting level of the population. In many African countries, centuries of slavery and migration to other countries, and decades of disease and wars, have led to the working populations in these countries to fall below the minimum threshold required for them to "take off" in an economic sense. By contrast, many South Asian and East Asian countries are quite heavily populated and could use a little cooling down of population growth rates.

How should one treat macroeconomic statistics?

With extreme caution, as such data is likely to be used and abused by different interest groups to support their respective stories. It is usually not the data which is misleading or not consistent with the truth but the manner in which it is presented which makes a certain interpretation of that data more likely. Objective analysis of data consists in stripping it off its particular dressings and looking at all the possible stories it can tell.

By what would we need to divide GDP in order to get a measure of labour productivity per hour?

The total number of hours worked in the year throughout the country.

Is the size of the underground or black economy likely to increase or decrease as the level of unemployment rises?

It could rise or fall depending on which of two effects is the larger. On the one hand, if a certain proportion of unemployed people claim unemployment benefit and work in the underground economy, then, with a higher official level of unemployed, the size of the underground economy is likely to be bigger. On the other hand, if the economy is in recession, it is likely that the size of the underground economy will shrink along with the rest of the economy.

Name some external benefits that are not included in GDP statistics?

Three examples are: the pleasure people get from seeing other people's attractive houses and gardens, aesthetically pleasing architecture, improved health from a better diet.

Are worries about the consequences of economic growth a 'luxury' that only rich countries can afford?

This is a very cynical way of looking at the issue. The point is that the marginal benefit of increased output in a poor country is likely to be much higher than in a rich country (given the diminishing marginal utility of income). Thus if a cost–benefit study were done of specific growth policies, the benefits would probably enter with a higher value per unit in a poor country than in a rich country. This does not mean that the cost should be ignored. It is just that people may be prepared to make bigger sacrifices for increased output in poor countries than in rich countries.

We must be careful with these arguments, however. They could be used to 'justify' policies that are highly damaging to the environment by governments which have little long-term interest in the welfare of the people, or by firms which are unconcerned about the environmental consequences of their activities. The point is that costs should still be taken into account: it is just that the benefits should possibly be given a higher weighting.

If a retailer buys a product from a wholesaler for £80 and sells it to a consumer for £100, then the £20 of value that has been added will go partly in wages, partly in rent and partly in profits. Thus £20 of income has been generated at the retail stage. But the good actually contributes a total of £100 to GDP. Where then is the remaining £80 worth of income recorded?

At the wholesale stage and earlier, each stage adds value – value that is partly in wages, partly in rent, etc. When the values added at all the stages are summed, this gives the final value of the good.

An index called the index of sustainable economic welfare (ISEW) has been developed by certain economists to measure sustainable development in different countries. The index takes account of factors like depletion of natural resources which reduces the likelihood of growth being sustained. Make out a case against using ISEW. How would an advocate of the use of ISEW reply to your points?

There are three major criticisms of ISEW. The first concerns its use as a substitute for GDP. GDP is not meant to be a true measure of living standards, both now and sustainable into the future. Instead it is primarily a measure of output that involves exchange, an important measure when attempting to understand the relationship between aggregate demand (as expressed through exchange relationships) and aggregate supply. The second criticism concerns the selection of items that should be included. Any list could be criticized for including too many or too few items. For example, it could be argued that various forms of public expenditure should be included (other than on health and education, which are already included). On the other hand, various forms of 'services of household labour' are not clearly production. They could be seen as a form of consumption. For example, does time spent gardening constitutes work or pleasure? We would not include watching television or sitting relaxing as production, so should be include gardening or any other hobbies as production which generates pleasure when consumed or merely as pure consumption? Similarly, do relationships between people constitute the 'provision of services' or is it rather mere joint consumption? The third and perhaps the most serious criticism concerns measurement. How, for example, should the depletion of non-renewable resources or long-term environmental damage be measured? Such measurement entails various value judgments about the relationship between present and future costs. In fact, the value placed on all non-marketed items is likely to be highly controversial (more so than marketed items, where corrections for market distortions could relatively easily be made).

An advocate of ISEW would reply that ISEW, as its name says, is meant to be a measure of sustainable economic welfare, and not a measure of marketed output and is thus doing something different from the conventional use of GDP. If GDP is used, not for its original purpose, but as a measure of welfare, then ISEW is superior. As far as the selection of items and their measurement is concerned, there will be inevitably be disagreement, because people have different values. But here the advocate of ISEW would reply with the last two sentences of the box.

What are the conditions for macroeconomic equilibrium in the economy.

i. Injections (governemnt spending, exports, investment) into the circular flow of incomes must equal the withdrawals (saving, taxes, imports) from the circular flow; or

ii. Aggregate demand must equal aggregate income must equal aggregate supply.

The two approaches are equivalent. Note, however, that the equilibrium of an economy, at least in a Keynesian world, does not imply the full-employment equilibrium. It is possible for inflationary and deflationary gaps to exist.

What are the major macroeconomic variables involved in the determination of national income?

C, I, G, X, M, T, S, prices, exchange rate, interest rate and money supply. We focus on the first seven in this part of the course, but will enrich our analysis with the remaining four later in the context of the IS-LM approach to equilibrium determination and international finance considerations.

What does the 45 degree line in expenditure-income space represent?

It represents all the points at which the economy is in equilibrium, i.e. the expenditure on domestic goods and services is equal to the supply of domestic goods and services is equal to the incomes distributed to factors used in the production of those goods and services

Are the following net injections, net withdrawals or neither? If there is uncertainty, explain your assumptions.

i. Firms spend money on research.
ii. The government increases personal tax allowances.
iii. The general public deposits more money in banks.
iv. Pakistani investors earn higher dividends on overseas investments.
v. The government purchases US military aircraft.
vi. People draw on their savings to finance holiday trips abroad.
vii. People draw on their savings to finance holidays within Pakistan.
viii. The government runs a budget deficit (spends more than it receives in tax revenues) and finances it by borrowing from the general public.
ix. The government runs a budget deficit and finances it by printing more money.

i. Increase in injections (investment).
ii. Decrease in withdrawals (taxes).
iii. Increase in withdrawals (saving).

© Copyright Virtual University of Pakistan

iv. Fall in withdrawals (a reduction in net outflow abroad from the household sector).
v. Neither. The inner flow is unaffected. If, however, this were financed from higher taxes, it would result in an increase in withdrawals.
vi. Neither. The inner flow is unaffected. The consumption of domestically produced goods and services remains the same.
vii. Decrease in withdrawals (saving).
viii. Neither. An increase in government expenditure (or decrease in taxes, or both) is offset by an increase in saving (i.e. people buying government securities).
ix. Net injections. An increase in government expenditure (or decrease in taxes, or both) is not offset by changes elsewhere. Extra money is printed to finance the net injection.

It is possible that as people get richer they will spend a smaller and smaller fraction of each rise in income (and save a larger fraction). Why might this be so? What effect will it have on the shape of the consumption function?

It is likely that the rich will feel that they can afford to save a larger proportion of their income than the poor. The consumption function will slope upwards, but get less and less steep. This means mpc will fall as incomes rise.

What effect will the following have on the mpc:

a) a rise in the rate of income tax;
b) people anticipate that the rate of inflation is about to rise;
c) the government redistributes income from the rich to the poor?

a) The mpc will fall. Note that here we are relating consumption to gross income. For any given gross income, a rise in taxes will cause a fall in disposable income and hence a fall in consumption.
b) The mpc will rise as people spend a larger fraction of any rise in income, for if they wait to consume, their incomes will be worth less in the enxt period in urchasing power terms.
c) The mpc will increase, because the poor have a higher mpc than the rich.

What would be the impact of changing the determinant variables given in the first column (below) on consumption and saving. Must saving always fall if consumption falls?

Determinant	**Consumption**	**Saving**
Income (rise)	rise	rise
Assets held (increase in)	rise	fall
Taxation (fall)	rise	rise
Cost of credit (lower interest rates)	rise	fall
Expectations (that prices will rise)	rise	fall
Redistribution of income (becomes more equal)	rise	fall
Tastes and attitudes (people want to consume more)	rise	fall
The average age of durables (increases)	rise	fall

Thus there are two determinants of consumption (namely income and taxation, which will not cause saving to rise if consumption is caused to fall.

Why, if the growth in output slows down (but is still positive), is investment likely to fall (i.e. be negative)?

Because firms will require a smaller increase in capital. They will thus buy fewer extra machines and other equipment: i.e. investment will fall. The underlying concept is that of Keynes's investment accelerator which relates induced investment to changes in output rather than the level of output.

Give some other examples of changes in one injection or withdrawal that can affect others.

- A rise in government expenditure on infrastructure projects may encourage firms to invest, or, on the other hand, may replace private investment.
- A rise in taxation will reduce savings and imports as well as consumption of domestic goods and services.

- A depreciation of the exchange rate will lead to increased exports (an injection) and decreased imports (a withdrawal). This could encourage increased investment in the domestic economy.
- Higher savings will mean less total consumption, including less expenditure on imports.

Keeping Keynes's paradox of thrift arguments in mind, is an increase in saving ever desirable?

Yes.

- If there is a problem of excess demand, an increase in savings will reduce inflationary pressures.
- If investment increases over time, an increase in savings will allow these increases to be financed without problems of rising interest rates or inflation, problems which would have the effect of curtailing the investment.

The present level of a country's exports is £12 billion; investment is £2 billion; government expenditure is £4 billion; total consumer spending (including on imports) is £36 billion; imports are £12 billion and expenditure taxes are £2 billion. The economy is currently in equilibrium. It is estimated that an income of £50 billion is necessary to generate full employment. The marginal propensity to save is 0.25.

a) Is there an inflationary or deflationary gap in this situation?
b) What is the size of the gap? (Don't confuse this with the difference between Y_e and Y_f.)
c) What would be an appropriate government policy to close this gap?

Injections (J) = £12bn + £2bn + £4bn = £18bn
Domestic consumption (C_d) = £36bn – £12bn – £2bn = £22bn
$\therefore$ Expenditure on domestic goods, E $= C_d + J$ = £18 + £22 = £40bn
Multiplier = 1/mps = 1/0.25
= 4

a) Deflationary gap. If the economy is in equilibrium, then Y = E. Thus Y_e = £40bn. But full employment is achieved at an income of £50bn. There is thus a deflationary gap.
b) £2.5bn. This is the amount that must be injected (given a multiplier of 4) in order to increase national income by £10bn from the current £40bn to the full-employment level of £50bn.
c) Increase government expenditure by £2.5bn.

Why does investment in construction and producer goods industries tend to fluctuate more than investment in retailing and the service industries?

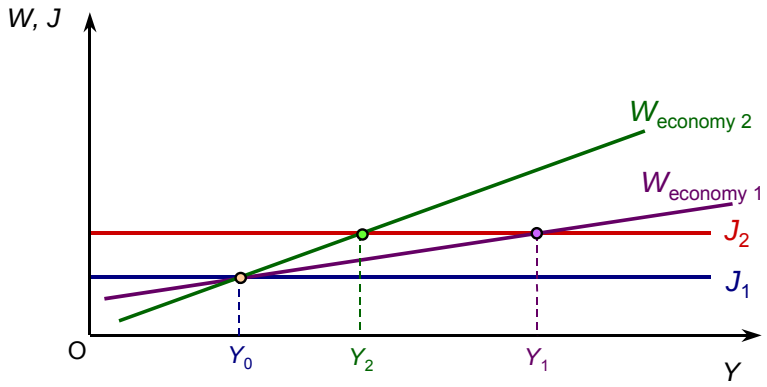
Because demand for the output of these industries (which are 'investment' goods industries) fluctuates much more as a result of the accelerator effect.

Give some examples of single shocks and continuing changes on the demand side. Does the existence of multiplier and accelerator effects make the distinction between single shocks and continuing effects more difficult to make on the demand side than on the supply side?

Examples of single shocks include government expenditure on a specific project, a surge in consumer spending in anticipation of a rise in taxes and a temporary movement in the exchange rate (a depreciation causing a rise in aggregate demand through increased exports and decreased imports, and an appreciation causing a fall in aggregate demand). Examples of continuing changes include a sustained increase in consumer or business confidence, which builds over time, and changes in interest rates that then remain for a period of time. The multiplier and accelerator will amplify single shocks on the demand side and the process will last for several months. Aggregate demand will not go on and on rising, however, unless there are continuing changes on the demand side, which then continue to be amplified by the multiplier and accelerator. Thus the effects are somewhat less clear cut than with changes on the supply side, but it is still possible to distinguish between single shocks on the demand side and continuing changes (even if the single shocks do cause multiplier and accelerator effects).

Draw an injections and withdrawals diagram, with a fairly shallow W curve. Mark the equilibrium level of national income. Now draw a second steeper W curve passing through the same point. This second W curve would correspond to the case where the mps is higher.

© Copyright Virtual University of Pakistan



Economies with different marginal rates of taxation

Assuming now that there has been an increase in injections, draw a second J line above the first. Mark the new equilibrium level of national income with each of the two W curves. You can see that national income rises less with the steeper W curve. The higher mps has a dampening effect on the multiplier. A higher tax rate has the same dampening effect as well by reducing the size of the multiplier (by increasing the size of the term in the denominator). Multiplier with taxes = 1/[1-{mpc(1-t)}];as t increases, (1-t) falls,, therefore 1-{.} rises, causing the multiplier to fall.

What effects will government investment expenditure have on public-sector debt (a) in the short run; (b) in the long run?

a) Increase. Unless financed by extra taxation, an increase in government expenditure (for whatever purpose) will lead to an increase in public-sector debt.

b) Possibly decrease. If the investment leads to extra output and income, then the extra tax revenue from the extra incomes and expenditure could more than offset the cost of the investment, thereby leading to a fall in public-sector debt.

If cuts in interest rates are not successful in causing significant increases in investment, how can they lead to economic recovery? What, in these circumstances, determines the magnitude of the recovery?

They can lead to recovery if they cause consumers to borrow more. The increased spending causes a multiplied rise in national income. The magnitude of the recovery depends on (a) the amount of extra consumer spending; (b) the size of the multiplier; (c) whether there is any subsequent increase in investment (through the accelerator effect).

How do people's expectations influence the outcome?

People's expectations will reinforce whatever it is they expect (self-fulfilling expectations). If firms expect a rise in government expenditure to lead to a) higher interest rates, b) a reduction in private-sector investment and hence c) no expansion of the economy, they will reduce their investment plans, thus bringing about the effect (i.e. economic stagnation) that they had anticipated.

If the government increases spending by Rs.10bn and finances it totally from taxes, will there be any expansionary impact on output?

Yes. The increase in spending is an injection of Rs.10 bn. The withdrawal, however, is less than Rs.10bn, as saving (a withdrawal from the system falls). Why does saving fall? Because higher taxes reduce disposable income and therefore given a fixed mps out of disposable income, saving will fall. The concept is called balanced budget multiplier, i.e. the fact that tax-financed spending (which has no effect on the fiscal balance) can still be expected to have a multiplied (albeit much smaller) effect on equilibrium output and income.

© Copyright Virtual University of Pakistan

Lesson 33

THE FOUR BIG MACROECONOMIC ISSUES AND THEIR INTER-RELATIONSHIPS

To study any major issue or problem in macroeconomics, it is important to address at least three **questions** about it:

i. Why is it important (i.e. what are its costs);
ii. What are its causes or the possible diagnoses of the problem; and
iii. What is the policy prescription associated with each different diagnosis.

We will look at **four major problems** here:

i. Unemployment
ii. Inflation
iii. Balance of payments problem
iv. The lack of growth

Because this is a course in introductory economics, some of these problems will have to be introduced in the context of the economic history of HICs.

We'll begin with unemployment, which, as you know, peaked during the Great Depression leading to the great rift between Keynes and the Classicists, and the subsequent birth of modern macroeconomics. We shall then move to inflation which became a major problem in the 1970s in the context of the two oils price shocks. We'll then turn to balance of payments disequilibria which have especially afflicted the LICs since the early 1980s. Finally we'll look at the challenges involved in achieving sustainable and sustained economic growth.

One thing you should remember at all times is that macroeconomic problems tend to be related to each other, and it is difficult (and often misleading) to analyze them in isolation. It would be important, therefore, to see how these four problems might be interrelated.

UNEMPLOYMENT

The History of Unemployment:

The history of unemployment, which is relevant to macroeconomics, started way back in the Great Depression (1929-33), when unemployment rates reached levels of 25% in the US and western Europe. During the Second World War, the problem subsided due to higher government defense spending and war-related recruitment. Post-war, unemployment rates continued to fall as rebuilding efforts gathered pace all over the world, esp. in war-ravaged Europe and East Asia. Many colonies gained independence during this time as well (late 1940s till early 1960s) and undertook massive infrastructure and industrial initiatives which absorbed a large part of the workforce. The problem did not raise its head again until the 1970s, when two oil price shocks (1973, 1979), and the associated episodes of cost-push inflation and balance of payments deficits in many countries led to a global recession that was compounded in the early 1980s by rising interest rates (induced by tight US monetary policy). The world recovered from recession in the mid-1980s, and following a brief recession (that lasted till the early 1990s), saw the rise of the new economy (i.e., the age of information technology) and a rapid growth in jobs related thereto. By the turn of the millennium, however, the new economy bubble had burst, causing decline in growth rates in many HICs. This decline was compounded by the events of September the 11th in the New York and the subsequent "war on terror" started by the U.S. and its allies. It is worth noting that Japan, the world's 2nd largest economy, has remained in recession virtually all through the 1990s. Interestingly, there has been a general rise in the rate of unemployment in many LICs (except East Asia) over the last 2-3 decades – a rise that has not been strictly correlated with global boom-recession cycles. The unemployment problem in these LICs was seen to assume a more permanent nature due to their high population growth rates – rates that far outstripped the rate of new job-creation in these economies. Also there was a loss of jobs in many of these countries due to adoption of capital-intensive as opposed to labour-intensive technologies in industrial production.

DEFINITION OF UNEMPLOYMENT

While unemployment can be defined in terms of absolute numbers, in most cases, it is the rate of unemployment which is quoted and which enables cross-country comparisons. The unemployment rate is defined as the ratio of the no. of unemployed people divided by the sum of the employed and

unemployed people. A rate of 3-4% is usually considered low, 10-15% considered high, and over 20% considered extremely high. It is worth mentioning that unemployment figures, because they are such a sensitive political issue, are often under-stated by government and over-stated by opposition groups. In most LICs, "official" unemployment rates are seriously misleading, and you can find the government quoting a figure of 5% for unemployment, when the actual rate is around 20-25%, if not higher.

Unemployment is the state in which a person is without work, available to work, and is currently seeking work.

Types of Unemployment:

There are several types of unemployment. **Frictional unemployment** occurs when a worker moves from one job to another. While he searches for a job he is experiencing frictional unemployment. **Structural unemployment** is caused by a mismatch between the location of jobs and the location of job-seekers. "Location" may be geographical, or in terms of skills. The mismatch comes because unemployed are unwilling or unable to change geography or skills. **Cyclical unemployment**, also known as demand deficient unemployment, occurs when there is not enough aggregate demand for the labor. This is caused by a business cycle recession. **Technological unemployment** is caused by the replacement of workers by machines or other advanced technology. **Classical or real-wage unemployment** occurs when real wages for a job are set above the market-clearing level. This is often as a result of government intervention, as with the minimum wage, or unions.

COSTS OF UNEMPLOYMENT

If unemployment is voluntary, i.e. people do not work because they feel they are better off being unemployed, the costs are borne essentially by society, not the individual per se. The costs are:

- **a.** Output and hence national income is lower than potential.
- **b.** Government loses tax revenues because of a.
- **c.** Firms lose revenues as they could have employed more workers and produce and sell more.
- **d.** Other workers lose additional wages that they might have otherwise been able to earn with higher national output.
- **e.** There is a general tendency for crime and violence to rise in society as unemployment levels increase.

If unemployment is involuntary, then all the above broader social costs are borne, but private individual costs for the unemployed individual must also now be added. These would include loss of personal income, mental stress due to loss in self-esteem, worsening of relationship with family or friends.

The Concept of Labor Force (LF):

A fundamental concept in relation to the above definition of unemployment is that of the labour force (LF). The labour force is essentially the denominator in the formula for unemployment rate. The labour force includes all people eligible and able to work, so excludes children, elderly people, parent(s) busy raising children, the handicapped and terminally ill etc.

Note, however that there is a difference between a person who is able to work and a person who is also willing to accept a particular job. So, for instance, a chartered accountant who is looking for a job may be offered the job of a bus driver, but he will not accept that job because it is not worthy of his qualifications, and/or offers a wage below his reservation wage. Thus, in order to be employed you need to fulfill two conditions: you have to be a member of the labour force (LF) and you have to be willing to accept a particular job ("AJ"). This distinction will be developed further shortly.

DEFINITIONAL PROBLEMS WITH UNEMPLOYMENT RATE

Keeping the AJ and LF distinction aside for a while, there can be some other definitional problems with the unemployment rate that need to be addressed. In particular, we might wish to see why the unemployment rate may be reported as:

- **a.** Lower than it actually is (i.e. the severity of the problem of there being very few jobs compared to workers are under-stated). There are two common reasons: underemployment and disguised unemployment. Underemployment refers to the situation when a person is reported as employed but is actually only doing a part-time job. Disguised unemployment is a situation where a person gets a salary but does not really have a job to do, as is often the case for excess workers in government departments.

b. Higher than it actually is (i.e. the severity of the problem of there being very few jobs compared to workers is over-stated). The possible reasons here could be:

i. The existence of child labour, i.e. children taking the jobs that would otherwise have been available to adults.

ii. Incompatibility between skills and jobs, i.e. there might be a demand for workers possessing a certain skill, but the people who are seeking jobs do not have that skill and therefore remain unemployed.

iii. People doing more that one job. If a doctor works in a hospital in the morning and runs his/her clinic at home in the evening, s/he is actually doing two jobs. Were s/he to concentrate on his/her home practice only, the hospital job would become available to some other doctor.

iv. Unemployment benefit given by the state to the unemployed. This is usually the case for the welfare states (most HICs) where people can live off rather well on unemployment benefit and therefore choose to not work. In LICs, where the state does not quite pay unemployment benefits, the analogy would be beggary. Some people would rather beg on the streets than work honorably and earn their living.

An important concept related to unemployment is that of its **duration**. The duration of any particular unemployment spell depends on when the benefits of accepting a certain job exceed the costs of continuing to searching for a better job (see also the section on search or frictional unemployment below). In an aggregate sense, however, the duration of an unemployment episode in a country depends on the rate at which people enter the pool of the unemployed (i.e. become unemployed) and the rate at which they exit the pool of the unemployed (i.e. find an acceptable job).

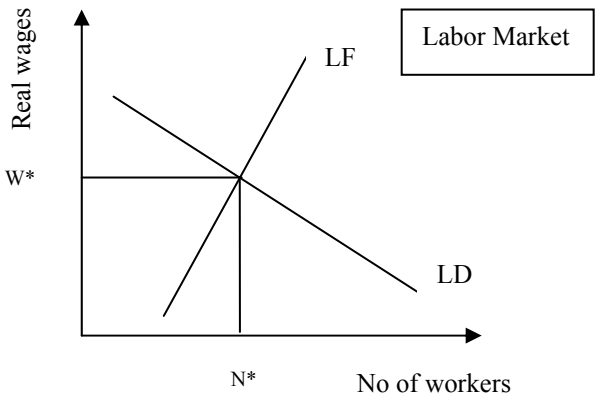
People entering the unemployed pool include those made redundant, sacked, resigning or temporarily laid off. They could also include those formerly outside the labour force, for e.g.: college leavers, women returning to the labour force after raising children.

People leaving the unemployed pool include those taking new jobs, returning to old jobs (if they had been temporarily suspended or laid off) They could also include people who have become disheartened and give up looking for a job, those who have reached retirement age, or who temporarily withdraw from the labour force (e.g. to raise a family), those who emigrate or die.

THEORIES ABOUT THE CAUSES OF UNEMPLOYMENT: THREE VIEWS ABOUT UNEMPLOYMNET

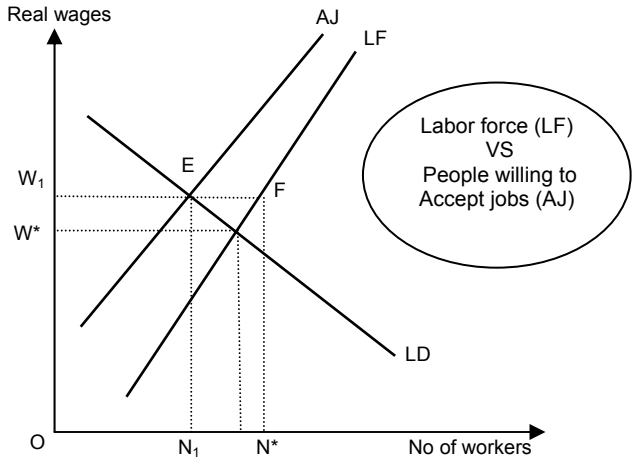
There are essentially three schools of thought regarding the causes of unemployment: **the Classical, Keynesian and Monetarist schools.** However, before we delve into the specific arguments presented thereby, we must develop an understanding of how labour market equilibrium is generally struck in an economy.

1- MONETARIST'S VIEW



There is first the supply side of labour. As mentioned earlier, however, a distinction needs to be made between LF and AJ. LF stands for the size of the labour force, and is drawn as an upward sloping fairly inelastic line in wage – no. of workers space. It is drawn as fairly inelastic because the size of labour

force would be expected to be fairly unresponsive to the wage rate. A badly handicapped or terminally ill person will not suddenly decide to join the labour force just because wages went up. Some people (like parents looking after kids) however might still be inclined to become members of the labour force if wages go up; the reason why the LF curve is not perfectly inelastic (i.e. vertical).



The AJ curve represents those members of the labour force which are willing to accept suitable jobs. The AJ curve is flatter than the LF curve because job seekers would be more willing to accept jobs in response to a rise in wages compared to people who are not even members of the labour force. The AJ curve is to the left of the LF curve because there will always be some people in LF who cannot accept jobs (like the terminally ill). However, given a flatter AJ and a steeper LF, it is clear why the horizontal gap between AJ and LF would narrow at higher wage rates.

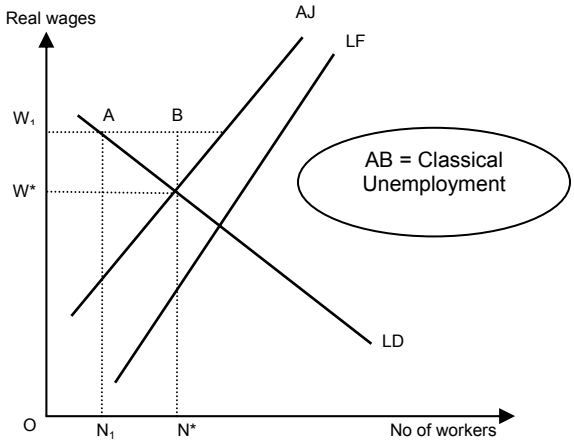
The demand for labour is generated by firms, government-owned or private, which need to hire workers to produce goods and services. The lower the wage rate, the more will firms be willing to hire workers. Therefore, the demand curve for labour, LD, is downward sloping in wage – no. of workers space.

The intersection of LD and AJ determines labour market equilibrium, i.e. the no. of potential workers who will be employed (N_1), and the wage rate that they will earn (w*). The intersection of LD and LF delivers N* is the maximum possible no. of workers that can be employed at a particular wage rate. The horizontal distance between N* and N_1 is referred to as the natural level of unemployment. When the horizontal axis measure the employment rate, the same measures the natural rate of unemployment. To keep things simple, we will not differentiate between the two terms and will use them interchangeably.

2- CLASSICAL VIEWS

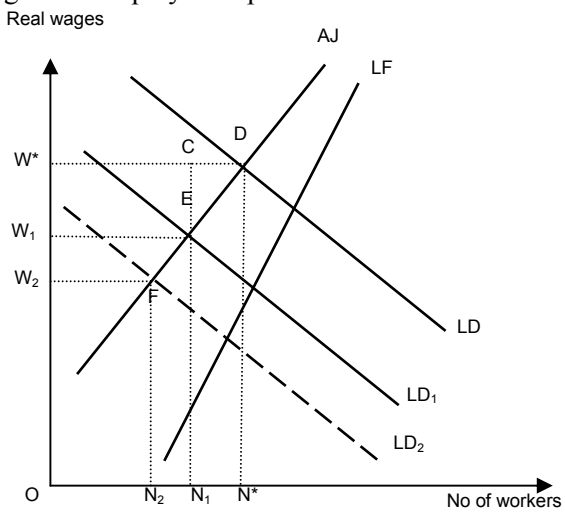
The Classicists viewed unemployment as an essentially voluntary phenomenon caused by wages that were higher than the free market level. If wages were allowed to fall to the market-clearing level, firms' demand for labour would increase, removing the initial unemployment. Their main policy prescription was therefore to remove any factors (labour unions, minimum wage legislation, and unemployment benefit) that prevented wages from falling to market-clearing levels. The theoretical problems with this view of unemployment aside, there were serious difficulties that could be expected in implementing the above policy prescription. Unions were politically strong bodies and could not simply be wished away; removing the minimum wage threshold would hurt the poorest workers, whose wages would now fall below the threshold. Similarly, removing unemployment benefit was likely to be seen as an attack on the safety net for the poorest sections of society.

© Copyright Virtual University of Pakistan



3- KEYNESIAN VIEWS

Keynes located the origins of unemployment in deficient aggregate demand. According to him, if aggregate demand could be boosted by pumping government expenditure, this would cause the demand for labor to increase as part of a multiplier effect. The increased demand would absorb the excess supply of laborers, thus alleviating the unemployment problem.



THE MONETARISTS' VIEWS ABOUT UNEMPLOYMENT

The Monetarists viewed unemployment essentially in its natural rate context, and thus as a problem that could not be cured through wage decreases or demand injections. According to them, the economy usually operated around the full employment level, and thus the only type of employment to worry about the natural rate kind. Attention, therefore, needed to focus on the horizontal distance between the AJ and LF curves at the market-clearing wage rate, w*. If this distance could be reduced, by shifting the AJ curve to the right (i.e. closer to the LF curve), the unemployment rate could be reduced.

According to monetarists, the reason why people on the labour force might not be willing to accept jobs, was located in **frictional (search), structural and seasonal reasons.**

Frictional unemployment was defined as unemployment caused by delays in matching job-seekers to jobs. Delays were seen as being essentially caused by a lack of information, and thus job centers newspapers etc. with better information on jobs etc. could help.

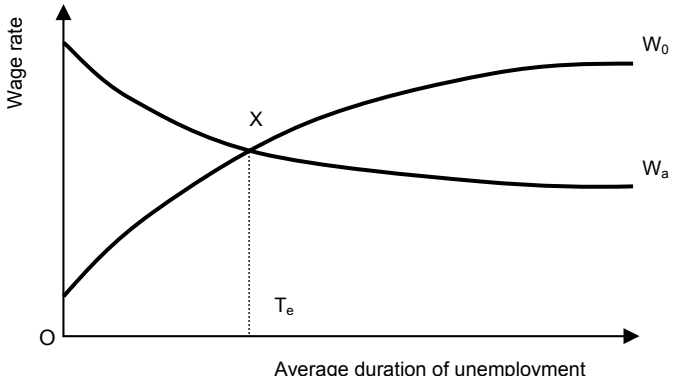
Structural unemployment was associated with changes in the structure of an economy: changes in demand patterns (tastes, fashion etc.), changes in methods of productions (capital vs. labour intensive production techniques being adopted, the replacement of some jobs with computer-based solutions). Also, if industrial or business activity were reduced in a particular region of the economy due to environmental or law and order reasons, or if a geographical area suffers a natural calamity, the

resulting unemployment would also be categorized as structural unemployment. Both market-friendly and interventionist policies have been suggested to address this type of unemployment. Among the market-friendly policies are encouraging people to i) retrain themselves (for e.g., facilitate training of mine workers for computer jobs), ii) get on their bikes and look for jobs. Interventionist policies included directed government action to match jobs with skills. Thus the government could give financial grants for training a certain group of people for a certain type of job etc.

Seasonal unemployment relates to certain types of workers going out of job due to seasonal factors. Thus crop producers in cold countries would have little to do when the fields are covered with snow from December till March. The policies that could address this problem would be to facilitate labour migration in winter months, or to develop alternative tasks for the winter (holding winter games in the region and developing it as a tourist spot for e.g.!)

Monetarists also suggested **supply side measures** which generally reduced the incentive to work. One example is lowering income tax rates and thus increasing the incentive for people to work the extra hour and earn the extra dollar.

Understanding Frictional UE, Structural UE
Seasonal UE



Lesson 34

THE FOUR BIG MACROECONOMIC ISSUES AND THEIR INTER-RELATIONSHIPS (CONTINUED)

HYSTERESIS

Hysteresis refers to the permanent effects of a temporary change. In the context of unemployment, for example, a temporary fall in demand in the economy which leads to lower economic activity and hence lay-offs by firms may have more permanent effects given the search behavior of workers (laid off workers become disheartened as time goes by and if they fail the first few job interviews; they become lazy, their skills rust, they become used to unemployment benefit and are therefore less likely to find jobs) and the recruitment behavior of firms (by the time firms need to re-hire, their own motivation and speed of recruitment has slowed; they're not putting up enough job adverts and hence the likelihood of instant recruitment decreases). The result could well be longer spells of unemployment. Generally, it has also been seen that the likelihood of a person leaving the unemployment state falls as the duration of his/her unemployment spell lengthens.

INFLATION AND DEFLATION

Inflation is a situation in which there is a continuous rise in the general price level. **Deflation** is the opposite of inflation and occurs when the general level of prices falls. The rate of inflation is the percentage annual increase in average price level.

Pure inflation is a special case of inflation in which the prices of all the goods and services in the economy are rising at the same rate. So if an economy produces three goods: apples, shirts and cars, and they cost Rs. 5, Rs. 100 and Rs. 400,000 respectively in 1992, while the prices in 1993 are Rs. 6, Rs. 120 and Rs. 480,000, and the prices in 1994 are Rs. 9, Rs. 180 and Rs. 720,000, respectively, then we can say that there was pure inflation of 20% in 1993 (over 1992) and pure inflation of 50% in 1994 (over 1993).

MEASUREMENT OF INFLATION

More generally, inflation (in % p.a.) is measured as

$$[(P_t - P_{t-1})/P_{t-1}]*100$$

Where P_t refers to the average price level prevailing in year t, and P_{t-1} is the average price level prevailing in period t-1. The term average price level usually refers to the value of an index, like consumer price index or producer price index etc., which weights the prices of goods according to their share in the total nominal GDP.

Dates	Price level	Inflation (%)
30th June 2000	100	------
30th June 2001	105	5%
30th June 2002	107	1.9%
30th June 2003	120	12.1%

Ideal Inflation Rate for an Economy:

It is difficult to say what the ideal inflation rate for an economy is. But it is not usually zero. A small positive inflation rate of about 3% is considered healthy for mature HICs while 7% is quite acceptable for fast growing emerging economies. Inflation rates above 10% are generally considered undesirable.

Some countries, esp. in Latin America, have recorded inflation rates in 100s and 1000s of percentage p.a. – these episodes were known as hyper inflation episodes. The first country to suffer hyperinflation, and perhaps in its severest form, was Germany in the 1920s. The country was burdened with very high debt – linked to obligations taken on as a result of being defeated by the allies in the 1st World War. The German government could not find the resources to pay off the debt or the interest thereon and resorted to printing money. This, however, plunged the local economy into hyperinflation.

The Choice of price Index:

There are important statistical challenges to resolve in the definition of inflation. The choice of price index often affects what one can say about inflation. Thus it might be that overall inflation is high, but food inflation is low. Similarly, there can be a price index for students, the health sector, housing and

© Copyright Virtual University of Pakistan

each has a different meaning attached to it. When talking about inflation, it should be clear which index is being referred to. The most commonly used index when referring to overall inflation in the economy is the retail or consumer price index (CPI).

The CPI and PPI:

CPI measures the cost of a fixed basket of consumer goods in which the weight assigned to each commodity is the share of expenditures on that commodity by consumers. The producer price index (PPI) is the price index of goods and raw materials sold at the wholesale level to producers: examples of goods in the wholesale basket are steel, wheat, cotton etc.

However, all these indices are measures of price inflation. A slightly different but related concept is that of wage inflation, which measures the rate of increase of average wages in the economy. Since real wages are nominal wages adjusted for prices, it is straightforward to see that if wage inflation is greater than price inflation, real wages are rising, and vice versa. Countries where price inflation is very high often keep track of wage inflation rates to ensure that the real wage (which measures the purchasing power of workers) remains constant. The practice of linking wages to prices is called "index-linking" and is the norm in many Latin American countries.

COSTS OF INFLATION

- **a.** Inflation redistributes income away from those on fixed incomes (or who do not have the bargaining power to renegotiate wages) towards owners of land, property or assets whose prices are generally quite sensitive to the general price level. Traders also raise prices faster when they see a rise in the inflation rate. But the salary class is often constrained from doing so. In many African and South Asian countries, the problem has been quite acute. Wage earners, esp. in the government sector, had lost (by the 1990s) up to 90% of the purchasing power of their incomes from the 1960s. The reason, a gradual but persistent decline in real wages what could not be reversed. This has led to corruption and inefficiency in many countries.
- **b.** High inflation increases uncertainty for firms, thus impacting investment rather negatively. The point to note here is that inflation is most volatile at high levels (thus the fluctuation of the inflation rate around 25% will be much higher than its fluctuation around 2%). Thus high inflation translates into uncertainty about prices, which means inability to accurately forecast firm revenues and expenditures, which means lower investment ex-ante.
- **c.** Balance of payments problems are also often a result of high domestic inflation. Rising prices in a country, if not offset by equally offsetting depreciation of the exchange rate, can lead to the domestic currency becoming overvalued and therefore to a decline in exports and a rise in imports – in other words to a deterioration of the current account.
- **d.** Resource wastage is high when inflation is high. Extra resources (time and money) are dedicated, both by individuals and firms, merely to hedge against the purchasing power erosion effects of inflation. Restaurants have to change their menus frequently; price lists have to be issued more frequently.

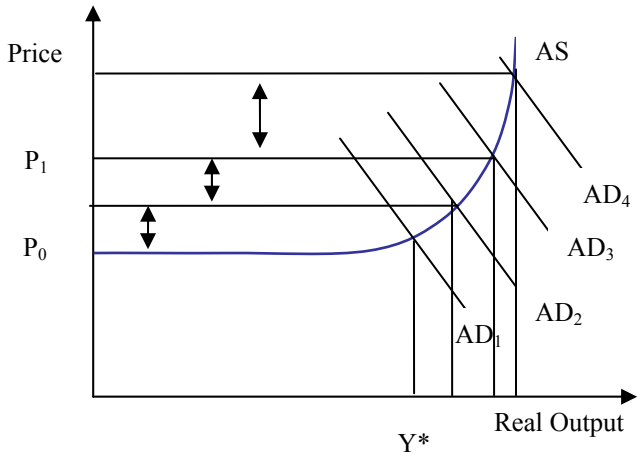
THEORIES ABOUT THE CAUSES OF INFLATION: THREE VIEWS ABOUT INFLATION

There are three views here: The Traditional Keynesian Views, The cost push inflation, the monetarist views of quantity theory of money.

1- TRADITIONAL KEYNESIAN VIEW

Keynes sees inflation and unemployment as opposite sides of the same coin, so is merely a result of excessive aggregate demand (demand-pull inflation). Assuming that increases in aggregate demand in a Keynesian world do have some output and employment impact, one can think of plotting the relationship between inflation and unemployment as trade-off: a downward sloping curve in inflation-unemployment space. This curve is called the Phillips curve names after the economist who first quantitatively documented this trade-off in the context of the UK economy in the 1950s and 60s. The Phillips curve tradeoff can be summarized as follows: Lower unemployment can be achieved only at the cost of higher inflation. The policy prescription flowing from this particular diagnosis of inflation was simple: reduce aggregate demand by contractionary fiscal and/or monetary policies.

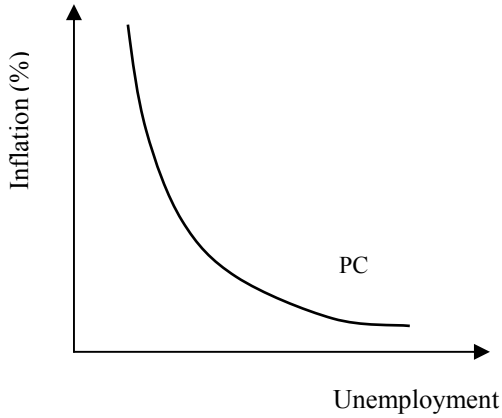
Demand Pull Inflation



Keynes looked inflation and unemployment as the opposite side of the same coin. If inflation increases, unemployment decreases and vice versa.

Philips Curve

W.A.Philips gave the idea of Keynes a formalized shape and draws the Philips curve stating inverse relationship between unemployment and inflation rate.



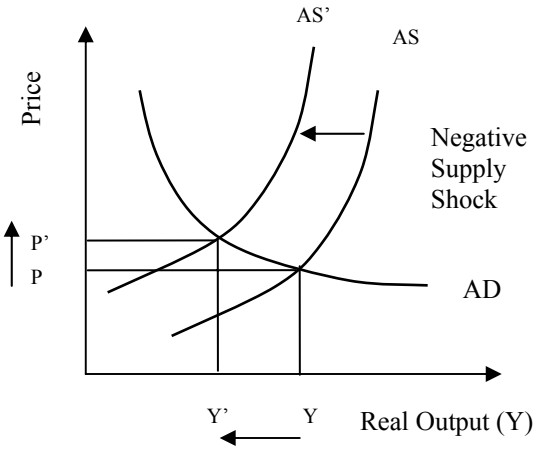
Philips's views were consistent with the Keynesian views. The cost of reducing inflation is unemployment and the cost of reducing unemployment is inflation.

2- COST-PUSH INFLATION

This view came to fore in the 1970s when the world was confronted with a situation of rising prices but high unemployment (stagflation), something that demand-pull theories could not explain. It was observed that the two oil price shocks in the 1970s, which were essentially supply side shocks (because they increased the cost of production), were capable of producing such a situation. In AD-AS space, such a supply shock would be shown by shifting the AS curve to the left (and up) causing prices to rise and output (and employment) to fall. In the context of the Phillips curve, the supply shock would be shown by shifting the Phillips curve out to the right, reflecting a structural shift in the inflation-unemployment trade-off. The name given to the resulting higher inflation (at any level of unemployment) was cost-push inflation. The policy prescription appropriate for dealing with it, included supply-side measures such as developing alternative energy sources, fuel efficient technologies, production cost reduction methods, and reducing tax distortions (that reduce the incentive to produce), increasing competition (in search of productivity gains), removing price floors etc. Keynesian demand management policies were obviously not seen as relevant in this context. It is important to note that sometimes what appears as cost-push inflation is actually driven by higher demand. For e.g., let's say demand for property increases in an economy; this causes housing prices to rise, causing rents to rise,

and causing workers to demand higher wages. Higher wages causes firms' production costs to increase prompting them to raise goods prices which in turn cause retail prices to rise. At every point of the whole chain, it is the costs that are rising (rental costs, production costs, purchase costs of retailers), but the cause of these rising costs is higher demand for property. This situation is often branded cost-push illusion.

Cost Push Inflation



Summing up in the words of Hazrat Ali (AS), "high inflation together with a deteriorating law and order position are hallmarks of the worst possible government."

Lesson 35

THE FOUR BIG MACROECONOMIC ISSUES AND THEIR INTER-RELATIONSHIPS (CONTINUED)

3- THE MONETARISTS VIEW

In economics, the **quantity theory of money** is a theory emphasizing the positive relationship of overall prices or the nominal value of expenditures to the quantity of money.

Monetarists located the causes of inflation in the Quantity Theory of Money (QTM), which provided an explanation for inflation totally independent from that for unemployment. QTM states: MV = PQ, where M is the real money supply, V is the velocity of money (the no. of times money is circulated in the economy in a year), P is the price level and Q is the real output. Assuming a constant V and a stable (natural rate) output Q*, changes in P could be explained totally by changes in M. A stable M would imply a stable P. Thus the Monetarist key to solving the inflation problem was a stable money supply set to grow at the rate of growth of natural rate output (Q*). For Monetarists, the concern was not the government's expansionary fiscal policy per se, but the manner in which the fiscal deficit was financed. If the government financed its deficit by borrowing from the central bank (i.e. printing money, and thus expanding money supply), this would be tantamount to inflationary finance of the budget. If, however the government financed the deficit by borrowing from banks or the retail savers, then there would be little inflationary consequences.

Monetarism and Philips curve:

It is also instructive to see how Monetarist's viewed the Phillips curve, and the inflation-unemployment tradeoff. Monetarists believed that the economy generally gravitated around a full-employment or natural rate level, and any positive output or employment impact of inflationary demand policies would have be limited. The duration and extent of this limited impact would depend on how much money illusion private agents suffered from.

Money illusion is when agents base their decisions on their expectations about inflation (set in period t-1), so that when government driven actual inflation (increase in prices and wages) in period t exceeds expected inflation, agents view the increase as real rather than nominal, and therefore erroneously spend more than they should.

Adaptive expectations: In setting expectations for period t+1, however, they learn from the previous period, raising their inflationary expectations based on the outcome in period t. Only an inflation rate higher than this new expected rate can convince them to spend more. The net effect of learn and error process is that inflation rises very steeply in response to continued demand-injections by government until the effect on spending and employment is virtually zero – a vertical Phillips curve. This is how Monetarists characterized the long-term tradeoff between output and inflation, i.e. that there was no trade-off and that expansionary demand policies (i.e. expansionary monetary policy) translated fully into higher inflation with no impact on employment whatsoever.

THE BALANCE OF PAYMENTS (BOP)

BOP is an accounting record of a country's transactions with the rest of the world. To illustrate the related concepts in a non-complicated way, we shall assume a two-country world (Pakistan and the US), and view things from the Pakistani side.

The balance of payments (or BOP) measures the payments that flow between any individual country and all other countries. It is used to summarize all international economic transactions for that country during a specific time period, usually a year. The BOP is determined by the country's exports and imports of goods, services, and financial capital, as well as financial transfers. It reflects all payments and liabilities to foreigners (debits) and all payments and obligations received from foreigners (credits). Balance of payments is one of the major indicators of a country's status in international trade, with net capital outflow.

Before we can fully grasp the BOPs, it is important to develop an understanding of the market for foreign exchange. Foreign exchange, in the Pakistani context, simply means US dollars (note that foreign exchange from the US's point of view would be Pak rupees).

© Copyright Virtual University of Pakistan

THE MARKET FOR FOREIGN EXCHANGE

The market for foreign exchange (or dollars) in Pakistan works like the market for any other commodity (like apples, oranges etc.). We have an upward sloping supply curve and a downward sloping demand curve. We operate in the same price-quantity framework, noting, however, that quantity in this context means the quantity of dollars and price in this case means price per dollar, i.e. the rupee price of a dollar. However, the latter is simply the Rupee/US$ exchange rate, and hence we can label the vertical axis accordingly.

The foreign exchange (**currency** or **forex** or **FX**) market exists wherever one currency is traded for another. It is by far the largest financial market in the world, and includes trading between large banks, central banks, currency speculators, multinational corporations, governments, and other financial markets and institutions.

Exchange rate:

In finance, the exchange rate (also known as the foreign-exchange rate, forex rate or FX rate) between two currencies specifies how much one currency is worth in terms of the other. For example an exchange rate of 123 Japanese yen (JPY, ¥) to the United States dollar (USD, $) means that JPY 123 is worth the same as USD 1.

HISTORY OF EXCHANGE RATE IN PAKISTAN

During the past five decades, Pakistan's foreign exchange regime has been moving towards a deregulated and market-oriented direction:

Before the 1970s, Pakistan linked its currency, rupee, to the Pound Sterling. With the economic influence of the USA getting more apparent, in 1971, Pakistan linked rupee to the U.S. Dollar. Pakistan fell into a budget deficit in 1982, when the strengthening U.S. Dollar made remittances abroad through official channels slumped. The plunging black market rate suggested that the rupee pegged to the U.S. Dollar largely deviated from the underlying economic realities. In this view, Pakistan put the rupee on a controlled floating basis, with the currency linked to a trade-weighted currency basket. In 1998, to alleviate the financial crisis in Pakistan, the authorities adopted a multiple exchange rate system, which comprised of an official rate (pegged to U.S. dollar), a Floating Interbank Rate (FIBR), and a composite rate (combines the official and FIBR rates). Export proceeds, home remittances, invisible flows, and "non-essential" imports can be traded at the FIBR rate. With the economy recovering from the crisis in 1999, the three exchange rates were unified and pegged to the U.S. within a certain band. This band was removed in 2000.

Now, Pakistan is maintaining a floating rate. Under this exchange rate system, each bank quotes its own rate depending on its short and long positions. Strong competition, however, means the exchange rates vary little among the banks. Under the prevailing Exchange Control Act, the State Bank of Pakistan on application may authorize any person or institution to deal in the foreign exchange market. By virtue of this vested authority, the SBP may determine the extent to which a Bank would be authorized to deal in various currencies.

© Copyright Virtual University of Pakistan

Lesson 36

THE FOUR BIG MACROECONOMIC ISSUES AND THEIR INTER-RELATIONSHIPS (CONTINUED)

DEVALUATION

This is the act of reducing the price (exchange rate) of one nation's currency in terms of other currencies. This is usually done by a government to lower the price of the country's exports and raise the price of foreign imports, which ultimately results in greater domestic production. A government devalues its currency by actively selling it and buying foreign currencies through the foreign exchange market.

REVALUATION

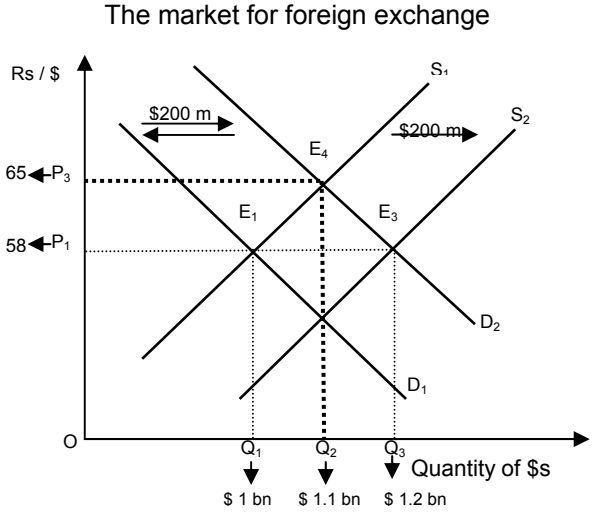
This is the act of increasing the price (exchange rate) of one nation's currency in terms of other currencies. This is done by the government if it wants to raise the price of the country's exports and lower the price of foreign imports. This is an appropriate action if the country is running an undesired trade surplus with other countries. The procedure for revaluation is for the government to buy the nation's currency and/or sell foreign currencies through the foreign exchange market.

APPRECIATION

This is a more or less permanent increase in value or price. "More or less permanent" doesn't include temporary, short-term jumps in price that are common in many markets. Appreciation is only those price increases that reflect greater consumer satisfaction and thus value. While all sorts of stuff can appreciate in value, some of the more common ones are real estate, works of art, corporate stock, and money. In particular, the appreciation of a nation's money is seen by an increase in the exchange rate caused by a growing, expanding, and healthy economy.

DEPRECIATION

This is a more or less permanent decrease in value or price. "More or less permanent" doesn't include temporary, short-term drops in price that are common in many markets. It's only those price declines that reflect a reduction in consumer satisfaction. While all sorts of stuff can depreciate in value, some of the more common ones are capital, real estate, corporate stock, and money. The depreciation of capital results from the rigors of production and affects our economy's ability to produce stuff. A sizable portion of our annual investment is thus needed to replace depreciated capital. The depreciation of a nation's money is seen as an increase in the exchange rate.

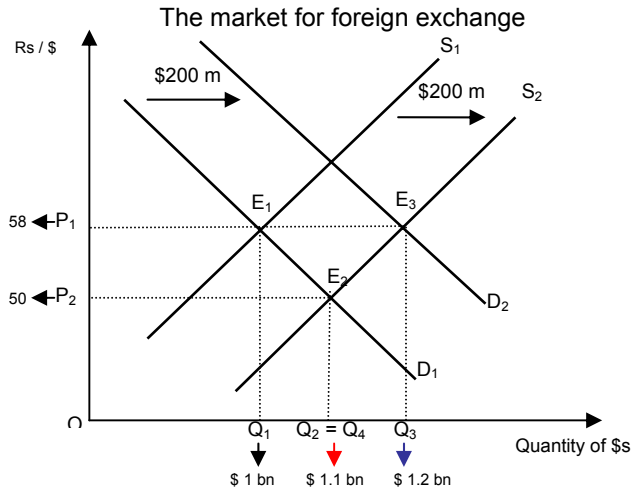


THE FORCES OF DEMAND AND SUPPLY IN FOREIGN EXCHANGE MARKET

Now, consider what the forces of demand and supply are in this market. First consider what could cause the supply curve for dollars to shift to the right, i.e. what would cause the supply of dollars in the market to increase given a certain exchange rate. Well, any transaction which has the effect of bringing dollars into the country would have this effect. Examples of such transactions are net inflows of US investment into Pakistan, Pakistani exports to the US, remittances from Pakistanis working in the US. Now what are examples of transactions that cause the demand for dollars to increase? Pakistani imports of US

goods, Pakistani travelers traveling to the US, Pakistani students paying for study in US universities, profits repatriated to US by US firms operating in Pakistan. All these will cause the demand for dollars in the market to increase.

Any transaction which causes the supply curve of dollars to shift to the right is recorded with a positive sign on the BOPs (as it corresponds to an inflow of dollars), while any transaction which causes the demand curve to shift to the right is recorded with a negative sign on the BOPs.



EQUILIBRIUM IN THE MARKET OF FOREIGN EXCHANGE

Equilibrium in the market for foreign exchange occurs at the point of intersection of the supply and demand curves. In BOP terminology, this is when all the +vs and the –ves balance; i.e. the BOPs is zero (external balance).

Given an initial equilibrium, it is useful to study note how market equilibrium responds to a shift in, say, the supply curve. A distinction has to be made between the cases when the exchange rate is fixed by the government and when it is left to float freely.

When the exchange rate is fixed, the government has to make up for any excess or shortfall in the market. Thus, if the **supply curve shifts to the right** (say due to a rise in exports), and there is an excess supply of dollars, the government must step in and purchase those excess dollars from the foreign exchange market, pumping the equivalent local currency in the process. This purchase is an example of foreign exchange market intervention by government (often implemented by the central bank on behalf of the government).

Similarly, if there is a **rightward shift in the demand curve** (due to, say, a rise in imports), and there is a situation of excess demand for dollars at the given exchange rate, the government must step in and supply those dollars from its coffers in exchange for local currency. The government's foreign exchange reserves fall and the local currency (rupee) supply contracts as a result of this kind of intervention.

To let the exchange rate float freely is to allow the price mechanism to bring about automatic equilibrium in the foreign exchange market. Thus in this case, if there is an excess supply of dollars, the price of the dollar falls (i.e. less rupees are required to purchase one dollar). In other words, the rupee appreciates vis-à-vis the dollar. Conversely if there is an excess demand for dollars in the market, then this pushes the exchange rate up (i.e. more rupees will now be needed to buy one dollar). In other words, the rupee depreciates. Note that an increase (decrease) in the price of the dollar is equivalent to a(n) depreciation (appreciation) of the rupee, not vice versa.

PARTS OF BOP

The BOPs can be divided into three parts:

i. Current account,
ii. Capital account and
iii. Changes to reserves.

© Copyright Virtual University of Pakistan

(1) THE CURRENT ACCOUNT

The current account balance is essentially the trade balance (exports minus imports), but with net factor receipts from abroad added.

If the exchange rate is fixed, then changes in reserves must mirror the combined balance on the current and capital accounts in order to bring the overall BOPs to zero. If the exchange rate is floating, then changes to reserves can remain zero, as the adjustment burden is borne by the exchange rate which appreciates (depreciates) in response to a joint surplus (deficit) on the current and capital accounts.

External Transactions:

External transactions which have no long-term (or future) flow implications for the current account are recorded on the current account. Thus exports, imports, and factor payments (foreign workers' outward remittances, interest on foreign debt, and dividends on profits of foreign firms) and factor receipts (overseas Pakistanis' inwards worker remittances, interest earned on foreign assets held, dividends earned by Pakistani firms abroad) are all recorded on the current account.

Compare these transactions with the taking on of a new long-term foreign debt – recorded with a plus sign under the capital account. Here, the initial inflow of dollars does not make the transaction complete in an inter-temporal sense. The money that has come in will have to be repaid, both principal and interest over the future. Similarly, foreign investment comes into the country. The initial dollars coming in will imply a future stream of current account outflows in terms of dividend remittance abroad.

In the long-term, the current account and capital account should usually mirror each other. So if the current account is in deficit, you would expect the country to be borrowing or attracting foreign investment on the capital account to bring the overall BOPs to zero. Similarly, if the current account is in surplus, you would expect the country to be lending to the rest of the world or investing outside the country.

Current account balance (+ or -)

(i) Goods or visible balance (+ or -)

(+) Exports
(-) Imports

(ii) Services or invisible balance (+ or -)

(+) Exports
(-) Imports

(iii) Income and transfers (+ or -)

(+) Factor income from abroad, e.g. worker remittances, dividends, interest
(-) Factor payments, e.g., MNC profits, interest on debt

(2) THE CAPITAL ACCOUNT

The capital account generally provides a direct picture of the net asset position of a country vis-à-vis the rest of the world. If the capital account stays in surplus year after year, this indicates the country's increasing indebtedness to the rest of the world. If however, the capital account stays in deficit year after year, this means the country's indebtedness to the rest of the world is falling.

At the introductory level, BOP problems normally refer to a deficit on the current account, since the capital account is assumed to be passive. Thus external disequilibrium is usually associated with a situation where the trade balance (exports – imports) is in deficit.

This raises two questions:

a. **Is a current account deficit necessarily bad?** The answer is no. Recalling the condition for macroeconomic equilibrium S+T+M = I+G+X, and rearranging, we can get {M-X} = [I-S] + (G-T). The {} term is the current account or trade balance, the [] term gives the private sector resource deficit (i.e. the excess of the private sector's investment over savings) and the () term is the government fiscal deficit. It is clear that if M>X because G>T (i.e. government is spending in excess of its resources), then the current account deficit might be unsustainable (i.e. bad), especially if the government's spending is essentially of a current nature. However, a trade deficit which finances private investment that would otherwise not have been possible, is likely to be desirable, esp. if the private sector is investing in industries that will have future export potential (because this means the country will have the foreign exchange reserves in the future to pay off the debt that is being incurred today to finance the current account deficit).

© Copyright Virtual University of Pakistan

b. How can a current account, which is in deficit, be restored to balance? Firstly it must be recognized that perennial current account deficits of the sort implied in the question only obtain under fixed exchange rates (because under floating exchange rates, the disequilibrium would self-correct through exchange rate depreciation). One quick fix solution to sort out current account deficits under fixed exchange rate regimes is to have an economic deflation. The theory here is as follows: when a country's national income rises, it spends more; part of that spending falls on imported goods; higher imports cause the current account to worsen. The reverse is also true: lower income must reduce import spending and therefore improve the current account spending. However, economic contraction is a rather painful way of restoring current account equilibrium. A less painful one suggested by economists is devaluation, the name given to exchange rate depreciation but in the context of fixed exchange rates. (The corresponding term for exchange rate appreciation is revaluation.) A devaluation attempts to bring the exchange rate in line with its long-run equilibrium level, i.e. a level consistent with international competitiveness. Competitiveness is simply defined as the real exchange rate (RER), where RER = (P_f/P_d)*NER; NER is the nominal exchange rate (in Rs/$), P_f is the price level prevailing in the foreign country (US), and P_d is the price level prevailing in the home country (Pakistan). The formula simply says that, given a fixed NER, if inflation is higher in Pakistan (relative to the US), Pakistani exports will become less attractive (or competitive) in the international market. As a result, our exports will fall, and current account will go into deficit. To rectify the situation, the NER can be devalued so as to make our goods cheaper and bring competitiveness back to its original higher level. However, there are many provisos attached to the devaluation policy prescription. Devaluation only works if the country's exports and imports are elastic, otherwise the price effect of the devaluation will dominate the volume effect and the current account will worsen. Secondly, the country must have excess productive capacity in order to meet the higher demand for exports that is created as a result of the devaluation. Thirdly, the country should not have a very high foreign debt whose burden increases so much as a result of the devaluation that the negative effects associated therewith overwhelm any positive competitiveness effects.

Capital account (+ or -)

(+) Incoming FDI, FPI or other private capital
(-) Outgoing FDI, FPI or other private capital
(+) Borrowing, aid inflows
(-) Payments of debt principal, aid outflows

(3) CHANGES TO OFFICIAL FOREIGN EXCHANGE RESERVES (+ OR -)

(+) Sales of foreign exchange by government, i.e. drawdown of reserves
(-) Purchase of foreign exchange by government, i.e. build-up of reserves

Balance of payments (1+2+3 =0, or net errors and omissions)

Lesson 37

THE FOUR BIG MACROECONOMIC ISSUES AND THEIR INTER-RELATIONSHIPS (CONTINUED)

DETERMINANTS OF CAPITAL ACCOUNT

Although the focus of discussion above has been the current account, it is useful to briefly look at the determinants of the capital account, and the factors which increase the ability of a country to attract capital account inflows:

a. The attractiveness of the macroeconomic environment, the law and order situation etc. is an important determinant of foreign investment inflows into the country. The better the situation, the more inflows can be expected by way of direct investment by foreign firms.

b. The more favorable are international conditions to borrowing (foreign lenders' attitude towards, and perception of, the borrowing country; foreign interest rates), the more easily can a country raise foreign debt.

c. If foreign interest rates are lower than domestic interest rates (the latter adjusted downwards for any expected exchanger ate depreciation), then foreign portfolio investors will want to invest in the domestic country's stocks, bonds and other interest bearing assets. The underlying relationship being referred to here is that of interest parity which says: $i_d - \Delta E_e$ should approximately equal i_f if private portfolio flows are to balance. Here i_d stands for domestic interest rate, ΔE_e is the expected depreciation adjustment, and i_f is the foreign interest rate.

If it is not already clear, the costs of running a high BOPs or current account deficit (high is usually defined as over 5% of GNP) for a long time can be fairly severe. The country is on risk of losing precious foreign exchange reserves if the exchange rate is fixed[1]. In this case, a monetary contraction, and hence AD contraction, follows the loss in reserves with obvious social costs. Alternatively, if the country completely runs out of reserves, a BOPs crisis can occur which can be very costly both in terms of the image of the country internationally as well as its ability to borrow and attract investment from abroad.

COMPETITIVENESS OF A PAKISTANI GOOD RELATIVE TO A US GOOD: REAL EXCHANGE RATE

The nominal exchange rate (NER) is the price in domestic currency of one unit of a foreign currency.
On the other hand, real exchange rate is defined as:

$$C = RER = \frac{PF}{PD} \times NER$$

Where NER is Rs / $

- PF goes up → for a given exchange rate our competitiveness goes up as Pakistani goods become relatively cheaper.
- NER depreciates → For given PD and PF Pakistani goods become cheaper for foreign buyers

Increase in D=domestic prices

- If $\frac{PF}{PD}$ falls

→ RER falls, competitiveness falls.
→ Current account deficit deteriorates.
→ NER must adjust.
i.e. it must rise, in order to restore competitiveness.

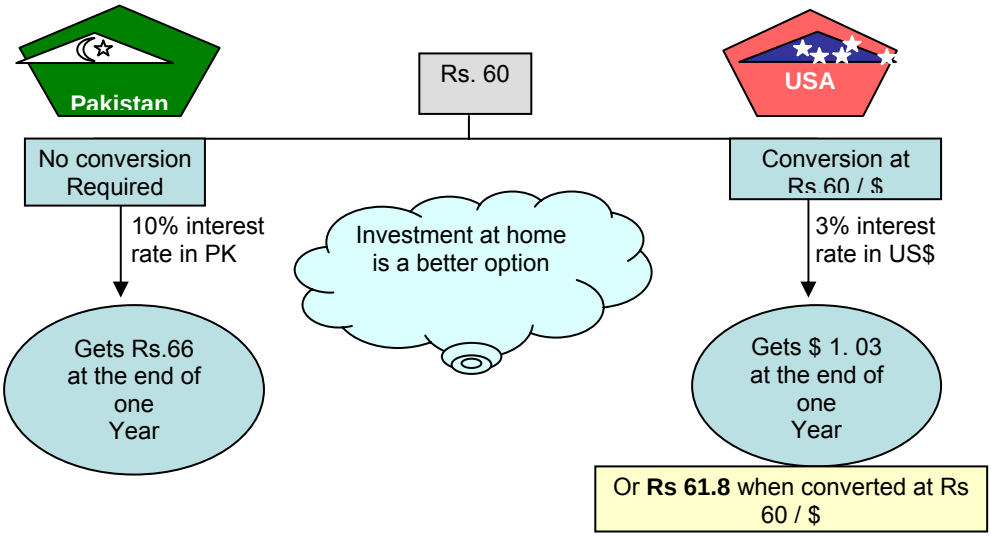
The **RER** is only a theoretical ideal. In practice, there are many foreign currencies and price level values to take into consideration. Correspondingly, the model calculations become increasingly more complex. Furthermore, the model is based on purchasing power parity (PPP), which implies a constant RER. The empirical determination of a constant RER value could never be realized, due to limitations on data collection. PPP would imply that the RER is the rate at which an organization can trade goods and services of one economy (e.g. country) for those of another. For example, if the price of good increases 10% in the UK, and the Japanese currency simultaneously appreciates 10% against the UK currency,

[1] Note that serious BOPs problems or crises are unlikely under floating exchange rates.

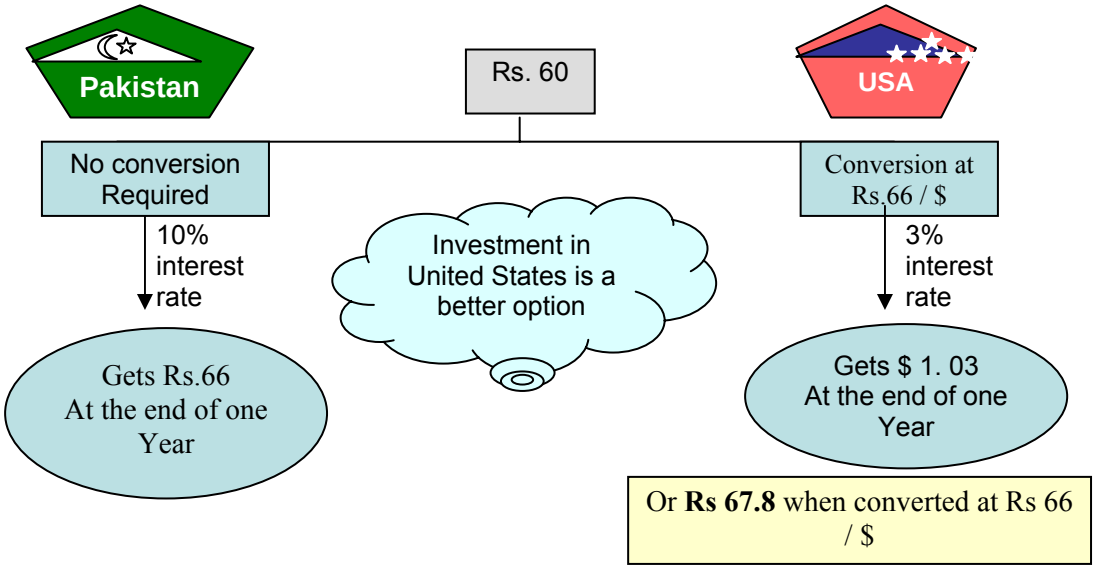
© Copyright Virtual University of Pakistan

then the price of the good remains constant for someone in Japan. The people in the UK, however, would still have to deal with the 10% increase in domestic prices. It is also worth mentioning that government-enacted tariffs can affect the actual rate of exchange, helping to reduce price pressures. PPP appears to hold only in the long term (3–5 years) when prices eventually correct towards parity.

Comparison of investment of $60, at home & in United States



Pakistani rupee depreciates



INTEREST PARITY CONDITION

This condition holds if there are no incentives to move the capital from one country to another country. The interest rate parity is the basic identity that relates interest rates and exchange rates. The identity is theoretical, and usually follows from assumptions imposed in economics models. There is evidence that supports as well as rejects interest rate parity.

Interest rate parity is an arbitrage condition, which says that the returns from borrowing in one currency, exchanging that currency for another currency and investing in interest-bearing instruments of the second currency, while simultaneously purchasing futures contracts to convert the currency back at the

end of the investment period should be equal to the returns from purchasing and holding similar interest-bearing instruments of the first currency. If the returns are different, investors could theoretically arbitrage and make risk-free returns.

iD ≈ iF + ΔEe

Domestic interest rate = Foreign interest rate + Expected depreciation

13% = 3% + 10%

IF iD > iF + ΔEe Invest in Pakistan

IF iD < iF + ΔEe Invest in USA

CURRENT ACCOUNT DEFICIT

Current account is very much important in order to maintain the long term sustainability of the balance of payment.

Recall the equilibrium condition of the economy is where withdrawals equal the injections.

$$\mathbf{W = J}$$

$$S + T + M = I + G + X$$

$$M - X = I - S + G - T$$

Current account deficit = Private sector resource deficit + Government budget deficit

Japan and Korean economy remained in high current account deficit due to high private sector resource deficit. This deficit arises when firms want to invest more and debts that are taken to finance the current account deficit go for the investment of the firms. Government spending and household consumption was not being financed. African and Latin American economies were also remained in high current account deficit. But this deficit was due to the higher consumption expenditures by the households and consumers. This caused worsen the debt problems of these countries.

HOW TO REDUCE CURRENT ACCOUNT DEFICIT?

Devaluation can help in this regard. Devaluation causes an increase in exports and decrease in imports leading to reduction in current account deficit. But this policy is also not successful empirically due to several reasons in many countries.

© Copyright Virtual University of Pakistan

Lesson 38

THE FOUR BIG MACROECONOMIC ISSUES AND THEIR INTER-RELATIONSHIPS (CONTINUED)

THE CONCEPT OF ECONOMIC GROWTH AND GROWTH RATE

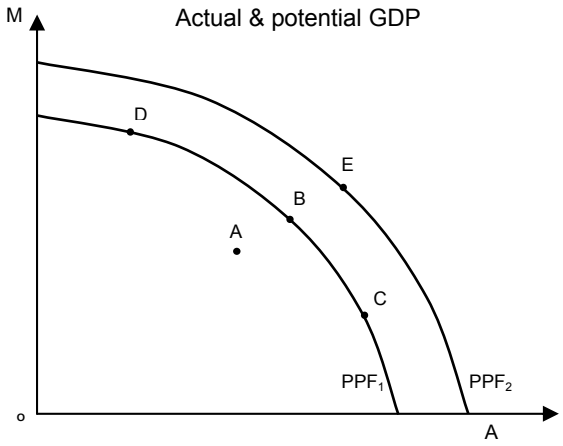
Economic growth is increase in an economy's level of production, output or income. We can talk about production or output in two broad definitional contexts. One, we can compare real GDP with some other measure of welfare (for e.g., one which adjusts for externalities, social indicators, the black market, purchasing power parity, income inequality etc.). Two, we can talk about potential vs. actual output. Potential output is the aggregate capacity output of a nation; the maximum quantity of goods and services that can be produced with available resources and a given state of technology.[2] In our discussion here, we will abstract from such complexities and take output to simply mean real GDP.

The growth rate of a country's real GDP can be negative, positive or zero. A growth rate of between 2-3% is considered normal for mature developed countries; for LICs, 5-7% is considered healthy and 7%+ excellent.

ACTUAL & POTENTIAL GDP

The GDP gap or the output gap is the difference between actual GDP and potential GDP or potential output. The calculation for the output gap is Y-Y* where Y is actual output and Y* is potential output or the natural level of output. If this calculation yields a positive number it is called an expansionary gap and indicates an economy in expansion; if the calculation yields a negative number it is called a recessionary gap and indicates an economy in recession.

The percentage GDP gap is the actual GDP minus the potential GDP divided by the potential GDP. (*Actual GDP − potential GDP*) / *Potential GDP*.

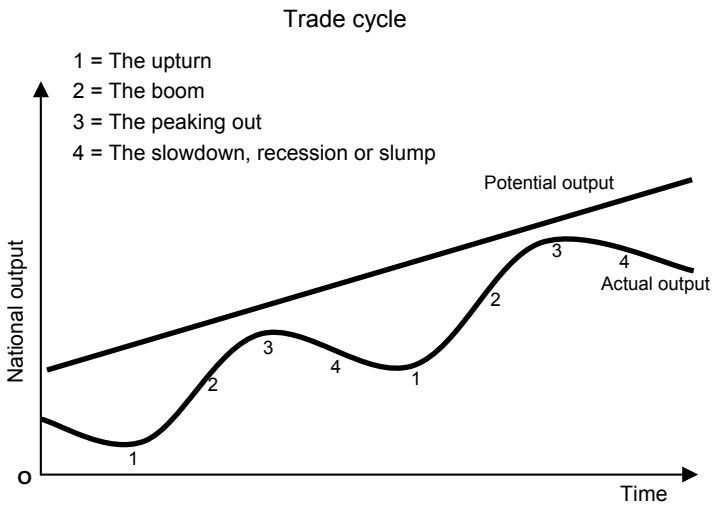


TRADITIONAL THINKING ABOUT GROWTH

Traditional thinking on growth was that it can be driven either by an increase in factor resources (land, natural resources, labour, capital), i.e. an increase in potential GDP, or by more efficient use of the factors, i.e. a move from inside the PPF to the PPF. The policy implication attached to this line of thinking was simple. Countries must either accumulate factors of production (esp. capital), or develop more cost-efficient technologies and methods of production to utilize those resources better. In any event, factors of production were at the heart of growth theory.

[2] Thus, when the production possibilities frontier of a country shifts out, that represents an increase in potential GDP. Actual GDP can be less than or equal to potential GDP, and is usually less. The difference between potential and actual GDP is sometimes referred to as the *output gap*.

© Copyright Virtual University of Pakistan



REAL VS NOMINAL GDP

Nominal GDP measures the value of output during a given year using the prices prevailing during that year. Over time, the general level of prices rises due to inflation, leading to an increase in nominal GDP even if the volume of goods and services produced is unchanged.

Real GDP measures the value of output in two or more different years by valuing the goods and services adjusted for inflation. For example, if both the "nominal GDP" and price level doubled between 1995 and 2005, the "real GDP" would remain the same. For year over year GDP growth, "real GDP" is usually used as it gives a more accurate view of the economy.

Relation between Real GDP and Nominal GDP

Nominal GDP is calculated using current prices whereas real GDP uses constant prices. The difference between the nominal GDP and real GDP is due to the inflation rate in market. The relationship between inflation, real GDP and nominal GDP is explained by Fisher Equation.

Real GDP = Nominal GDP – Inflation

AGGREGATE GDP VS PER CAPITA REAL GDP

Economy's total income **or the** sum total of all incomes in an economy in a given period, usually a year is known as the aggregate GDP or aggregate income level.

When studying growth, it is always instructive to analyze changes in per capita real GDP along with changes in real GDP. Per capita real GDP growth adjusts GDP growth downwards by the population growth rate and gives a more accurate indication of improvements in living standards in a country. For mature HICs, Real GDP growth rate = per capita real GDP growth rate, since the population size in these countries is quite stable.

It is also important to note that even a small per capital real GDP growth rate (say around 2% p.a.), if sustained for a very long very of time (say 100 years) can deliver huge improvements in living standards. The U.S. and Japan in the 19th and 20th centuries and East Asian tiger economies in the last four decades are a neat example of this.

Why Growth is an Important Macroeconomic Issue:

It is obvious why growth is an important macroeconomic issue. Every government aspires to deliver a higher growth rate for the country. High growth rates means higher national income which means better living standards on average, which in democracies, means happier electorates and therefore increased chances of re-election for another term in office. However, while all countries might wish to achieve high growth rates, in practice, only a handful have been able to convert the wish into reality.

HOW PER CAPITA GROWTH RATES RELATED TO THE AGGREGATE GROWTH RATE IN AN ECONOMY? DEFINING GDP GROWTH RATE

$y = Y / L$

Where,

- Y = Total GDP
- L = Population

- y = Per capita GDP

Taking log of both sides

- ln y = ln Y – ln L

Taking derivative *w.r.t.* time

- $\frac{1}{y}(dy/dt) = \frac{(dY/dt)}{Y} - \frac{(dL/dt)}{L}$

$$\mathbf{gy = gY - gL}$$

Growth rate of per capita income = Growth rate of total output - Growth rate of population

Real Gross Domestic Production figures

Countries	Ratio of 1999 / 1870	Annual growth
Japan	100	3.7
US	66	3.4
Australia	43	3.1
Sweden	33	2.8
France	15	2.2
UK	10	1.9

RGDP per capita figures

Countries	Ratio of 1999 / 1870	Annual growth
Japan	27	2.7
US	10	1.8
Australia	4	1.2
Sweden	14	2.2
France	10	1.9
UK	5	1.3

Pakistan's growth rate statistics since independence

Era	Aggregate Real GDP
60s	6.7
70s	4.8
80s	6.4
90s	4.7

Per Capita RGDP	Population
4	2.7
1.7	3.1
3.3	3.1
2	2.7

Reference: Zaidi.A, Issues in Pakistan's Economy

© Copyright Virtual University of Pakistan

LINK BETWEEN GROWTH AND THE VARIOUS FACTORS OF PRODUCTION

Capital:

Any increase in capital should cause an increase in growth rate of output. **Capital deepening** is a term used in economics to describe an economy where capital per worker is increasing. It is an increase in the capital intensity. Capital deepening is often measured by the capital stock per labour hour. Overall, the economy will expand, and productivity per worker will increase. However, economic expansion will not continue indefinitely through capital deepening alone. This is partly due to diminishing returns and wear & tear. **Capital widening** is a term used to describe the situation where capital stock is increasing at the same rate as the labour force, thus capital per worker remains constant. The economy will expand in terms of aggregate output, but productivity per worker will remain constant.

Labor:

Human capital also matters for economic growth. Quantity as well as the quality of labor should also be considered. This is also an engine of growth.

Land:

Pakistan is an agrarian country in which land matters much. Japan and Korea has been grown rapidly because they have used their scarce land very efficiently.

Raw materials:

If stock of raw materials increases economy will produce more output which will increases growth rate of output.

Technical knowledge:

If there are technical advancements then production will increase, growth rate of output will also increase. The factors of technological advancements are learning by doing, invention, innovation etc.

© Copyright Virtual University of Pakistan

Lesson 39

THE FOUR BIG MACROECONOMIC ISSUES AND THEIR INTER-RELATIONSHIPS (CONTINUED)

EXOGENOUS GROWTH THEORY

The Exogenous growth model, also known as the Neo-classical growth model or Solow growth model is a term used to sum up the contributions of various authors to a model of long-run economic growth within the framework of neoclassical economics. The most important contribution was probably the work done by Robert Solow; Solow received the 1987 Nobel Prize in Economics for his work on the model. The key assumption of the neoclassical growth model is that capital is subject to diminishing returns. Given a fixed stock of labor, the impact on output of the last unit of capital accumulated will always be less than the one before. Assuming for simplicity no technological progress or labor force growth, diminishing returns implies that at some point the amount of new capital produced is only just enough to make up for the amount of existing capital lost due to depreciation. At this point, because of the assumptions of no technological progress or labor force growth, the economy ceases to grow.

MATHEMATICAL FORM OF THE MODEL

Cobb Douglas production function (constant returns to scale)

Before we move to neo-classical and endogenous growth theories, let us gain a better understanding of the link between growth and the various factors of production. We begin by recalling the familiar Cobb-Douglas constant returns to scale production function:

$\mathbf{Y = K^{\alpha}L^{1-\alpha}}$ for a hypothetical economy. Here Y denotes output, K denotes capital (machines, buildings etc.), L denotes labour, and α is a parameter that lies between 0 and 1. Dividing both sides by L and substituting Y/L = y (per capita output), and K/L = k (per capita capital),

We have the per capita production function $\mathbf{y = k^{\alpha}}$

$Y = A K^{\alpha} L^{1-\alpha}$ $(0< \alpha <1)$

A = Level of technical knowledge (fixed)

K = Stock of capital

L = Size of the labor force

Y = Aggregate real output

Diminishing returns to factors: Differentiate Y w.r.to K

$dY / dK = A \alpha K^{\alpha-1} L^{1-\alpha}$

R.H.S is falling in K as $(\alpha - 1) < 0$

Differentiate Y w.r.to L

$dY / dL = AK^{\alpha} (1 - \alpha)L^{-\alpha}$

R.H.S is falling in L as $(-\alpha) < 0$

To get per capita functions, divide Y by L

- $\frac{Y}{L} = \frac{AK^{\alpha} \times L^{1-\alpha}}{L}$

Let, $L = L^{\alpha} \times L^{1-\alpha}$

- $\frac{Y}{L} = \frac{AK^{\alpha}}{L^{\alpha}} \times \frac{L^{1-\alpha}}{L^{1-\alpha}}$
- $y = A k^{\alpha}$

Where,

y = Per capita output

k = Capital per person (K/L)

Total capital accumulation = sY

As $Y = Ak^{\alpha}$

So,

Total Capital accumulation = sAk^{α}

Capital widening = nk

(Maintaining K/L ratio)

Let $k\blacksquare = dk / dt$

$k\blacksquare = sAk\alpha - nk$

As k increases k falls

$k\blacksquare = o$ when $sAk\alpha = nk$

This is the point of Steady State level of capital. Or Constant per capita capital

Solving the equation of $k\blacksquare$

$$\mathbf{k\blacksquare = \left[\frac{sA}{n}\right]^{1/(1-\alpha)}}$$

When $k\blacksquare = 0$ It means $\frac{d(K/L)}{dt} = 0$

i.e. K & L are growing at the same rate

Now $gk = n$

$gk = \frac{(dK/dt)}{K}$ & $n = \frac{(dL/dt)}{L} = g_L$

Rate of growth for Y:

$Y = A K^{\alpha} L^{1-\alpha}$

Take log of both sides

$\ln Y = \ln A + \ln K^{\alpha} + \ln L^{1-\alpha}$

Take derivatives of this w.r.to time

We get,

$$\frac{dY/dt}{L} = 0 + \alpha gK + (1-\alpha)gL$$

- $gY = \alpha n + (1-\alpha)n = \alpha n + n - \alpha n = n$

Therefore Y is growing at n ***(exogenously given).***

Thus the growth rate of output is determined by the growth rate of population which is exogenously given and Govt can not do anything about it.

INFERENCES FROM THIS THEORY

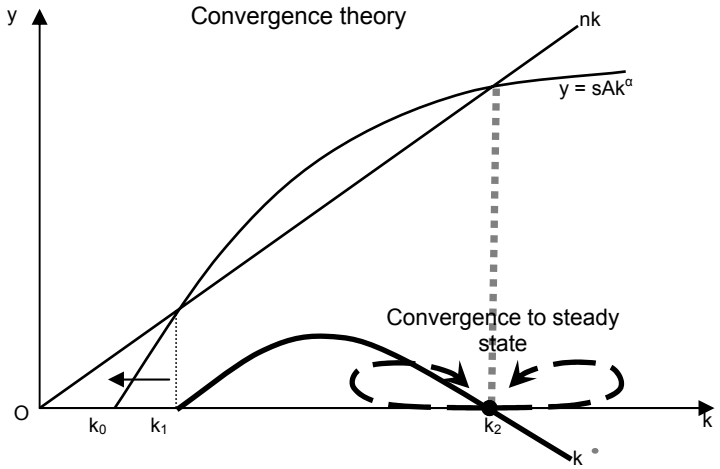
We can draw following inferences from this theory:

- Saving has no effect on the steady state growth rate.
- Determinants of growth are beyond the control of the policy makers.
- Convergence theory: Countries with higher level of 'k' would converge to the level of output of those countries which has lower level of 'k'.

Based on the principle of diminishing returns to capital, the main theses of the neo-classical exogenous growth theory were:

- The steady-state growth rate of real GDP depends on n and t, the exogenous rates of growth of population and technology. By exogenous, we mean determined outside the model. Thus, there were no policy insights for how governments could affect the steady state growth rates of countries. In particular, the model suggested that higher savings could only have a level effect on income, not a long-term growth effect as had been earlier thought. The reason was that savings-enabled investment and capital accumulation eventually banged into diminishing returns.
- If one country started with lower income and capital than another country, then the poorer country would grow faster in order to catch up with the richer country. Eventually, both would grow at the same rate.

© Copyright Virtual University of Pakistan



This convergence theory states that if we are to the right of k_2, k▪ is negative. So k▪ will decrease and move towards k_2. On the other hand, If we are to the left of k_2, k▪ is positive. So k▪ will increase and move towards k_2.

CRITICISM / MAJOR WEAKNESSES OF EXOGENOUS GROWTH MODEL

Empirical evidence offers mixed support for the model. Limitations of the model include its failure to take account of entrepreneurship (which may be catalyst behind economic growth) and strength of institutions (which facilitate economic growth). In addition, it does not explain how or why technological progress occurs. This failing has led to the development of endogenous growth theory, which endogenizes technological progress and/or knowledge accumulation.

Exogenous growth theory suffered from three major weaknesses:

- **i.** It could not explain why the gap between the poor and rich countries had widened (anti-catch up),
- **ii.** It could not explain why some countries in East Asia had apparently grown consistently on the back of higher saving rates, and
- **iii.** It modeled technology as exogenous, and beyond the influence of policy.

The first weakness was answerable within the neo-classical framework: the key insight was that convergence would only be witnessed among countries with similar capital and income levels to start with; countries with very low capital to start with might actually never grow out of their poverty and could see their capital stock falling over time.

The second weakness was addressed by endogenous growth theory (endogenous because the steady state growth rate was determined inside the model, not determined by factors exogenous to it) which set up the model in a way that the steady state growth rate now depended directly on the saving rate and level of technology. A permanent increase in the saving rate, therefore, meant a permanent increase in the growth rate.

The third weakness was also addressed by endogenous growth theory, which by using different industry structures and technology functions specifications could link technological progress to conscious R&D effort by firms and government. Non-diminishing returns to technical progress would then generate endogenous growth.

ENDOGENOUS GROWTH THEORY

In economics, **endogenous growth theory** or **new growth theory** was developed in the 1980s as a response to criticism of the neo-classical growth model.

In neoclassical growth models, the long-run rate of growth is exogenously determined by assuming a savings rate (the Solow model) or a rate of technical progress. This does not explain the origin of growth, which makes the neo-classical model appear very unrealistic. Endogenous growth theorists see this as an over-simplification.

Endogenous growth theory tries to overcome this shortcoming by building macroeconomic models out of microeconomic foundations. Households are assumed to maximize utility subject to budget constraints while firms maximize profits. Crucial importance is usually given to the production of new

technologies and human capital. The engine for growth can be as simple as a constant return to scale production function (the AK model) or more complicated set ups with spillover effects, increasing numbers of goods, increasing qualities, etc.

Endogenous growth theory demonstrates that policy measures can have an impact on the long-run growth rate of an economy. In contrast, with the Solow model only a change in the savings rate could generate growth. Subsidies on research and development or education increase the growth rate in some endogenous growth theory models by increasing the incentive to innovate.

MATHEMATICAL FORM OF THE MODEL

y = Ak

There is no α because of non diminishing returns to factors.

- Total capital accumulation: sy = sAk
- Capital widening = nk
- k▪ or capital deepening = sAk – nk or (sA – n)k
- (k▪ / k) = sA – n

Since, y = Ak

Take log of both sides

lny = lnA + lnk

- $\frac{y▪}{y} = \frac{k▪}{k}$
- y = Y / L
- gy = gY – gL
- gY = gy + gL

- $gy = \frac{y▪}{y} = sA – n$

Putting in gY = gy + gL

- gY = sA – n + n

- gY = sA

Thus growth arte of output depends on the saving rate and technological progress.

Labor and Capital:

Now for a given L and no depreciation, an increase in K should translate into an increase in k and through it an increase in y. This is an example of capital deepening induced growth. However, when there is depreciation (say at a rate d% p.a.) of the capital stock and the labour supply is growing at n% p.a., capital must grow at least by (d+n)% p.a. in order keep K/L, or k, constant. This is called capital widening, i.e. more capital being created but spread over a larger population so as to deliver the same K/L. The per capita output impact of capital widening is zero, because k remains the same.

Now taking capital as fixed, let's analyze the ways in which labour can serve as the engine of growth. It is obvious that an increase in the no. of labour hours worked would expand output. However, historically, the working week has been shortened from 6 to 5 days so it would be incorrect to cite this as the major source of world economic growth over the last century. What else could therefore have driven the rapid expansion of production in the 20^{th} century? It might be the case that there are now more people on the labour force, due to perhaps a larger proportion of women doing marketable jobs (which is historically accurate). Then it might be that the quality of human capital has gone up. The same workers, because they are better educated and have better skills, can produce more output using the same amount of capital. Japan and Germany are prime examples of this – i.e. of countries which achieved very high growth rates despite having very low levels of physical capital left after World War II. It was the quality of these countries' human capital which made the difference.

Land:

Let's now concentrate on land. The earliest thinking on this was all doom and gloom. Malthus (1798), for instance, noted that the supply of land, esp. agricultural land, was fixed, whereas world population was rising fast. Given diminishing returns (in terms of marginal food product) to labour, the implication

was obvious: world hunger. While the starvation hypothesis did come true for come countries, it did not happen for the whole world. Why? Predominantly because of unanticipated productivity improvements in agricultural production, technological breakthroughs, like tractors, fertilizers, etc. increased yields per acre by many 100s of percents permitting a food output that far exceeded world food requirements even with a larger population. Today, land does not feature centrally in growth theory, as many countries (e.g. European countries, Japan, Singapore, Hong Kong, etc.) were seen to achieve very high growth rates while geographically much larger South Asian, Latin American and African countries lagged behind.

Land is one type of natural resource that goes into production. The other type is raw materials like mineral wealth or timber. The important point about these resources is that some of them they are not renewable (like oil, coal, gas and other minerals), while others are: timer, fish etc. It is important to take these concerns into consideration when talking about the ability of a particular type of natural resource to act as the engine of growth.

The above is not true for technical progress, however, which neither depletes nor requires renewing. An essential and important ingredient in the production process, the technical knowledge/stock of a country is additive and cumulative and depends on the pace of invention, innovation and learning by doing that is happening in the economy. In order to protect the incentive to invent and innovate, governments introduce patent and copyright laws which grant the inventor monopoly production rights for a certain period. Also governments directly or indirectly fund research and development activities which are the engine for invention and innovation.

© Copyright Virtual University of Pakistan

Lesson 40

THE FOUR BIG MACROECONOMIC ISSUES AND THEIR INTER-RELATIONSHIPS: BILATERAL RELATIONSHIP AMONG THE "BIG FOUR" & FISCAL POLICY

BIG FOUR IN CASE OF SHORT RUN

In the short-term (up to about two years), the big four objectives of faster growth, lower unemployment, lower inflation and the avoidance of balance of payments deficits are all related.[3] They all depend on aggregate demand, and all vary with the course of the trade (or business) cycle.

In the expansionary phase of the trade cycle (i.e. just following a recession), AD grows rapidly, the gap between actual and potential output narrows and unemployment (of the demand-deficient sort) falls. However, rising demand puts pressure on prices (inflation), sucks in imports and lowers competitiveness, moving the balance of payments towards a deficit. Thus two of the problems get better, two worsen. The opposite happens in the contractionary phase of the cycle (i.e. just following a boom).

BIG FOUR IN CASE OF LONG RUN

In the long-run, and in a LIC context, however, the inter-relationships between the four variables can get quite complex. We therefore take a more detailed look at the two way relationships between pairs of issues.

a. **Inflation-unemployment:** This has already been covered extensively under the Philips curve discussion (both under unemployment and inflation). Whether there is actually a trade-off depends very much on which theory you subscribe to: monetarist or Keynesian.
b. **Growth-inflation:** Economic growth is likely to put pressure on prices if there is no slack in the economy and more production requires workers to work overtime, machines to be used 24 hours a day etc. Depends also on whether growth is demand led or supply led. If it is the former (as in the example above), then it is the AD curve which is shifting right, given an upward sloping supply curve. If it is the latter, then we are in the realm of AS shifts (due to technology improvements etc.) and given a downward sloping demand curve, prices will fall. The reverse relationship between inflation and growth is almost always negative. An exogenous rise in prices (as caused by the oil price shocks of the 1970s) is equivalent to a leftward shift in the AS curve, which causes equilibrium output to fall. Also, high inflation deters investment through the uncertainty effect. Low investment reduces both the productive capacity of the economy (AS shifts left), and decreases the investment component of aggregate demand (AD shifts left). The combined effect on output is likely to be extremely negative.
c. **Growth-unemployment:** Episodes of high economic growth will usually be characterized by low unemployment, but this is not necessarily true. If growth reflects a switch in production away from agricultural commodities and light manufactures (labour-intensive) to capital intensive goods or to capital-intensive ways of producing agricultural commodities or light manufactures, then unemployment can actually rise, as labour is substituted by capital (machines). By the same logic, it might be that growth is moderate or zero, but a switch towards labour-intensive production causes unemployment to fall considerably. The reverse relationship is obvious. Labour is a resource and when unemployed implies the economy producing much below its potential. Thus high growth is unlikely to be seen in the presence of high unemployment. Also unemployment can affect growth through the former's effects on social stability, crime, law and order. High unemployment is often associated with riots, strikes and other disruptions (esp. if there are no so social safety nets like unemployment benefit) and these seldom help the cause of productive activity or growth, at least in the short-term.
d. **Growth-BOPs:** This depends on whether growth is of the import-substituting industrialization (ISI) sort or export-oriented variety. ISI: If the country (e.g. India from 1947- to the 1980s) imports a lot of capital and machinery in order to set up industries that can produce consumer goods for the home market that were earlier imported form abroad, then this country can

[3] We speak, of course, in the context of mature HICs, although an extension of this to LICs would not be entirely misplaced.

© Copyright Virtual University of Pakistan

experience growth but a high current account deficit initially (because the country produces not for the world market but for the home market, so exports are low while imports of capital are high). Export-led: If a country's growth is mainly attributable to its capture of a larger share of world markets through exports, then that country is more likely to generate current account surpluses as it grows. East Asian countries are prime examples. See also the relationship between higher imports and growth/employment (below) .The reverse relationship is more complicated. On the one hand, we see that a country with a fixed exchange rate will experience a loss in reserves, a monetary contraction and thus a reduction in aggregate demand (and hence growth) when faced with a BOPs deficit. On the other hand, if the current account deficit (or capital account surplus) reflects an underlying private sector resource gap and is financing productive private sector domestic investment, then the long-term growth implications might be positive (due to higher domestic private investment). In a related vein, if the private sector is importing a lot, but the imports are knowledge-intensive and/or have a high technology/skill-content that can further the learning and development of importing country producers then the long-term growth implications might be even more positive.

e. **BOPs-unemployment:** The impact of BOPs deficits on unemployment (though growth) is described above. Another channel could be as follows: If the BOPs deficit largely reflects domestic consumers switching from local goods to imports, then a BOP- could reduce domestic activity, growth and hence employment. The reverse relationship would run as follows: High unemployment means low incomes in the hands of consumers. Low incomes would imply low spending. The cut in spending would also fall partly on imports, and therefore the BOPs would improve.

f. **BOPs-inflation:** Under a fixed exchange rate regime, a BOPs deficit reduces domestic money supply which, as per the quantity theory of money, should reduce prices. With floating exchange rates, a BOPs deficit will cause local currency depreciation, which would make imports more expensive. Since imported goods are also included in the basket of goods used in the consumer price index, inflation would be seen to increase following the depreciation. The reverse relationship works through competitiveness and real exchange rates. Higher domestic inflation (relative to the rest of the world, or our trading partners, to be precise) will lower export competitiveness, causing the current account to worsen. Since higher inflation also reduces the real interest rate (note: real interest rate = nominal interest rate – inflation) or real return on domestic financial assets, the foreign demand for such assets falls, causing the capital account to go into deficit as well. The combine effect on the BOPs can thus be quite negative.

THE SALTER-SWAN DIAGRAM

A framework which allows the relationships between the above macroeconomic problems to be analyzed and appropriate policy prescriptions to be derived is the Salter-Swan diagram. The diagram uses (real) exchange rate–absorption space, where the exchange rate is defined as Rs. per $, and absorption is a term for aggregate demand-injection variables (like government spending, money supply).

The Internal Balance and External Balance:

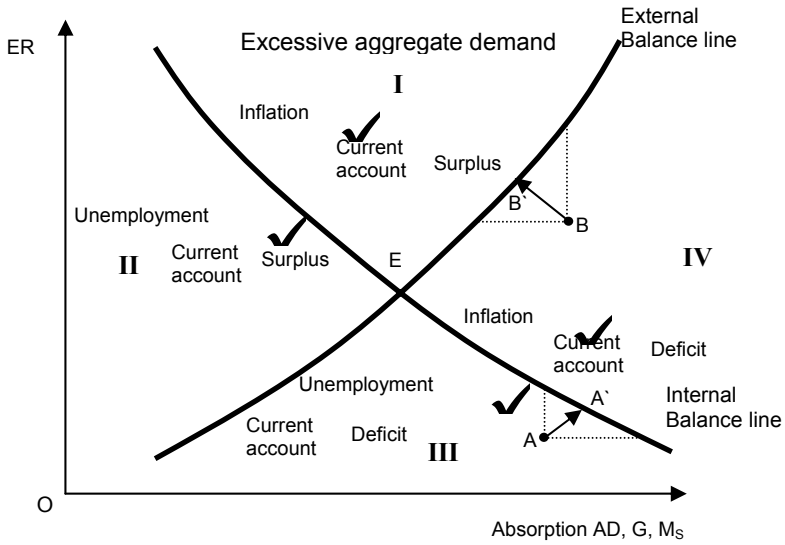
The internal balance (IB) line (combination of points where AD = AS in the economy) slopes downward, explained as follows: Given fixed AS, he more appreciated the exchange rate (the lower it is on the vertical axis), the lower the imports, the lower the AD, and therefore the higher the required level of demand-injection (rightward movement on the horizontal axis) in order to bring AD back up to the level of AS. Thus IB slopes downward. At any point to the right of IB the exchange rate is more depreciated than is consistent with internal balance, and therefore the economy is likely to be experiencing higher AD than AS, and thus inflation. At any point to the left of IB, the economy faces unemployment.

The external balance (EB) line (combination of points where exports = imports), slopes upward, explained as follows: As absorption increases, AD and imports increase, thus requiring a more depreciated exchange rate to bring the current account back to balance (through higher exports and lower imports). Thus EB slopes upward. At any point to the right of EB, the exchange rate is more appreciated than is required for external balance (also called overvalued exchange rate), and therefore

the economy must be facing a current account deficit. To the left of the EB, there is a current account surplus.

The intersection of IB and EB:

The intersection of IB and EB delivers the joint internal and external equilibrium for the economy. The economy may in reality not be at this point but be on only one of the IB or EB lines. In this case it will gradually move to equilibrium along the line it is on. The economy can also be in any of the four quadrants: north (inflation, CA+), west (unemployment, CA+), east (inflation, CA-), south (unemployment, CA-). LICs often find themselves in the east quadrant where there is both inflation and unemployment. A combination of devaluation and lower absorption (tight monetary and fiscal policies) can often do the trick.



FISCAL POLICY

The Govt's income and expenditures policy is known as fiscal policy. It is the use of the federal government's powers of spending and taxation to stabilize the business cycle. If the economy is mired in a recession, then the appropriate fiscal policy is to increase spending or reduce taxes--termed expansionary policy. During periods of high inflation, the opposite actions are needed--contractionary policy. The consequences of fiscal policy are typically observed in terms of the federal deficit.

Government purchases:

Expenditures on final goods and services (that is, gross domestic product) undertaken by the government sector. Government purchases are used to operate the government (administrative salaries, etc.) and to provide public goods (national defense, highways, etc.). Government purchases do not include other government spending for transfer payments. These are expenditures on final goods by all three levels of government: federal, state, and local governments. Government purchases are financed by a mix of taxes and borrowing.

Taxes:

Any sort of forced or coerced payments to government. The primary reason government collects tax is to get the revenue needed to finance public goods and pay administrative expenses. However, the more astute leaders of the first estate have recognized over the years that taxes have other effects, including--(1) redirecting resources from one good to another and (2) altering the total amount of production in the economy. As such, taxes have been used to correct market failures, equalize the income distribution, achieve efficiency, stabilize business cycles, and promote economic growth.

Fiscal policy is the government's program with respect to the amount and composition of (i) expenditure: the purchase of goods and services, and spending in the form of subsidies, interest payments on debt, unemployment benefit, pension and other payments, (ii) revenues, i.e. taxes and non-tax fees (such as license fees etc.) and (iii) public debt: borrowing to cover the excess of expenditure over revenues. Borrowing can be done from three sources: domestic banks and the general public, the central bank (e.g. State Bank of Pakistan), and foreign creditors.

Budget Deficit, Budget Surplus and Balanced Budget:

If i>ii: the government is said to be running a fiscal or budget deficit and so the government must borrow (or raise debt) to cover the deficit; if i<ii: the government is said to be running a fiscal or budget surplus and so the government can pay-off or reduce its debt; if i=ii: the government is said to be running a balanced budget and the government's net debt may remain constant.
Fiscal deficits and debt are often reported as a ratio of GDP. Although, there is no theoretical benchmark for what constitutes a sustainable fiscal deficit or public debt ratio, the Maastricht criteria (for countries in the European Union) is an important practical guide. It stipulates that fiscal deficit to GDP should be less than 3% while public debt to GDP should be less than 60%.

THE CONCEPT OF TAXATION

Taxes are general purpose, compulsory contributions by the people to the public treasury (or national exchequer) to meet the expenditure needs of the government. Without taxes, the government would not be able to deliver services like law and order, public administration, national defense, free or subsidized health and education etc.
Since taxes interfere with the market mechanism, they are considered distortionary, and as such there is a long-standing debate over the desirability of taxes. In a way, the stance over taxation defines the economic "right" and "left" in HICs. The market-friendly rights (like the Republicans in the U.S. or the Conservatives in the U.K.) believe in reducing the size of the government and its spending so that most of the services in the economy are provided by the private sector. As such they can argue for lowering taxes (since government spending is also less) which according to them distort private sector incentives (remember the Monetarist argument for removing income taxes in the context of unemployment). By contrast, the interventionist left (like the Democrats in the U.S. or the Labour in the U.K.) consider that a big and active government essential for the delivery of better public services and therefore are often against cutting taxes and transferring the responsibility of providing these services to the private sector.

THE DEBATE OVER TAXATION

There are two dimensions to the debate over taxation: **equity and efficiency.**

The Concept of Equity:

Equity represents that principle of taxation which emphasizes fairness or just sacrifice, i.e. everyone should pay tax according to his/her ability. So if a person earns higher income, s/he should be subjected to a higher tax rate. Thus, for e.g., a person earning Rs. 2,000 a month should sacrifice 10% of his/her income as taxes (i.e. Rs.200), whereas a person earning Rs. 200,000 should sacrifice 60% of his/her income as taxes (i.e. Rs. 120,000). In the absence of such progressive taxation, the rich person would have also paid a 10% income tax rate (i.e. Rs. 20,000). Progressive taxation, in which the tax rate increases as income increases, is an application of the vertical equity principle which espouses the Robinhood approach of taking money from the rich and distributing it to the poor. While controversial, the vertical equity principle in taxation is applied in one way or another in most countries across the world.

Horizontal Equity:

A less controversial principle relates to horizontal equity which says: identically well-off people should be taxed identically, i.e. no discrimination due to race, gender, caste, religion etc. There are many examples, however, of violation of this principle and often one comes across an individual belonging to a certain community or grouping enjoying certain economic privileges not enjoyed by a similarly endowed individual of another community or grouping.
We now turn to the efficiency dimension, which concerns the distortionary effects of taxation, esp. the possible negative effects on private sector behavior and incentives. The more distortionary a tax, the higher the efficiency concerns surrounding it.

The Concept of Efficiency:

To illustrate the concept of efficiency, it is useful to develop an understanding of what is meant by a Pareto-efficient allocation of economic resources. This is a situation in which it is impossible to move to another allocation which would make some people better off and nobody worse off. In the context of the production possibilities frontier, therefore, points on the frontier are all Pareto-efficient, as it is not possible to move to another point (i.e. produce more of one good) without incurring some opportunity cost (i.e. sacrificing the production of some other good).

© Copyright Virtual University of Pakistan

Economists argue that a free-market perfect competitively economy where P=MC automatically delivers the optimal allocation in the economy (Pareto-efficiency), so any government intervention (like tax) that interferes with that allocation generates efficiency losses. The efficiency (or welfare) loss of a tax can be illustrated by a simple demand supply diagram. It can be seen that the loss in consumer and producer surplus is greater than the revenue gain to government.

Does the above argument mean a tax can never be justified on efficiency grounds?

No. There are two cases in which imposing a tax may actually be better than not imposing it.

i. When there are market failures and a tax is imposed to bring the marginal social cost equal to marginal social benefit.
ii. When there are existing distortions in the economy and taxes are imposed to spread the distortion over many commodities rather than placing the burden on just one commodity. Another way to say it is: it is better to impose a small tax on a number of commodities to raise a certain amount of government revenue, rather than impose one large tax on one or two commodities only.

TYPES OF TAXES

Direct tax

A tax on income, including wages, rent, interest, profit, and (usually) transfer payments is known as direct tax or income tax. **Personal income tax:** A tax on individual income. This is the primary source of revenue for the federal government, a big source for many state and local governments. In principle, personal income taxes are progressive, based on a graduated tax scale. However, it's much more proportional today than it was several decades ago. **Corporate income tax:** A tax on the accounting profits of corporations. This tax is only levied on corporations, and excludes businesses that are proprietorships or partnerships. This tax is often criticized (usually by members of the second estate because corporate dividends are taxed twice -- once as corporate profits, then a second time as income with the personal income tax.

Indirect tax

Sales tax: A tax on retail sales. This is major source of revenue for many state and local governments. Because poorer people tend to spend a larger share of their income on stuff covered by sales taxes, it tends to be a regressive tax. To reduce this regressiveness, some state and local governments excluded items like food and medicine. **Excise tax:** A tax on a specific good. This should be compared with a general sales tax, which is a tax on all (or nearly all) goods sold. The most common excise taxes are on alcohol, tobacco, and gasoline. Excise taxes are used either to discourage consumption of socially undesirable stuff (like alcohol and tobacco) or to raise some easy revenue because the government knows buyers will keep buying regardless of the tax (like alcohol and tobacco). **Value-added tax:** A tax on the extra value added during each stage in the production of a good. Most of the stuff our economy produces goes through several "stages," usually with different businesses. In each stage, resources do their thing to the good to make it a little more valuable. For example, an ice cream store can take 50 cents worth of ice cream, fudge, and whipped topping and turn it into a hot fudge sundae that's valued at $1.50. The efforts of the ice cream resources thus add $1 in value. A value-added tax is based on this extra value.

Regressive tax

Regressive tax is a tax in which people with more income pay a smaller percentage in taxes. For example, you earn $10,000 a year and your boss gets $20,000. You pay $2,000 in taxes (20 percent) while your boss also pays $2,000 in taxes (10 percent). Examples of regressive taxes abound including sales tax, excise tax, and Social Security tax.

Proportional tax

Proportional tax is a tax in which people pay the same percentage of income in taxes regardless of their incomes. For example, you earn $10,000 a year and your boss gets $20,000. You pay $1,000 in taxes (10 percent) and your boss pays $2,000 in taxes (10 percent). While a proportional tax would seem to make a lot of sense, very few taxes are designed to be proportional and even fewer come out that way in practice.

Progressive tax

© Copyright Virtual University of Pakistan

Progressive tax is a tax in which people with more income pay a larger percentage in taxes. For example, you earn $10,000 a year and your boss gets $20,000. You pay $1,000 in taxes (10 percent) and your boss pays $4,000 in taxes (20 percent). Our income tax system is designed to be progressive, but assorted loopholes and deductions keep it from being as progressive in practice as it is on paper.

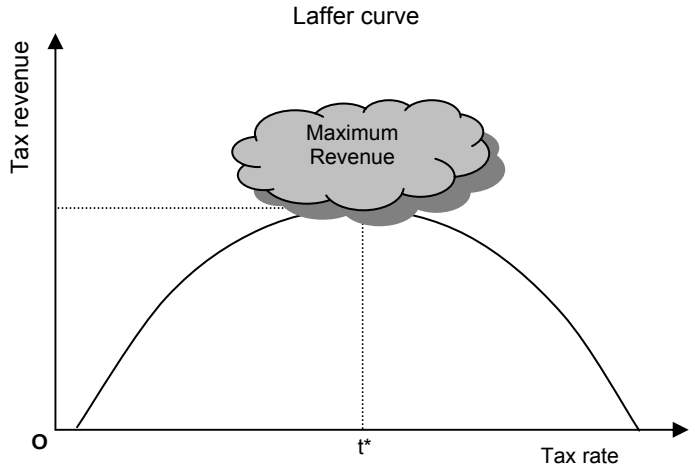
For LICs, income tax collection is very low and indirect taxes often account for more than $2/3^{rd}$ of total revenue as citizens often under-report their incomes in these countries, there is no voluntary tax payment culture, and income tax collection agencies are weak and/or corrupt. By contrast, for HICs, income taxes are much more important, accounting for over $2/3^{rd}$ of total tax revenue.

Disposable income is obtained by subtracting income tax from total income. At the national level, disposable income Y_d is calculated as Y-T, or Y-tY, where t is the net income tax rate.

One important question before governments is determining the optimal tax rate, t, for the average citizen. If t is too low, not enough taxes might be collected to enable the government to run and provide proper services. If t becomes too high, the incentive for citizens to work will be reduced, meaning national income will go down and tax collection will fall. Also at very high levels of t, the incentive to cheat and evade taxes increases and the government, therefore, might face serious enforcement problems.

HOW MUCH TO TAX? LAFFER CURVE

The graphical inverted-U relation between tax rates and total tax collections by government is known as Laffer curve. This curve is developed by economist Arthur Laffer; the Laffer curve formed a key theoretical foundation for supply-side economics of President Reagan during the 1980s. It is based on the notion that government collects zero revenue if the tax rate is 0% and if the tax rate is 100%. At a 100% tax rate no one has the incentive to work, produce, and earn income, so there is no income to tax. As such, the optimum tax rate, in which government revenue is maximized, lies somewhere between 0% and 100%. This generates a curve shaped like an inverted U, rising from zero to a peak, and then falling back to zero. If the economy is operating to the right of the peak, then government revenue can be increased by decreasing the tax rate.



EXPENDITURES AND THE EFFECTS OF FISCAL POLICY

Having concluded the discussion on tax policy and taxation, let us now focus on expenditures and the effects of fiscal policy in aggregate.

Expenditures may be categorized as recurrent and development. The former includes interest payments on debt, salaries and administrative expenses of all government ministries and departments, and other exigent recurrent charges on the exchequer. The latter mainly social sector capital expenditures, esp. those which are expected to yield long-term development benefits. Examples are building a school or hospital, laying down a new railway system, building a motorway etc.

Governments often promise to undertake heavy development and social sector (i.e. health, education etc.) expenditures, but due to scarcity of revenues and borrowing possibilities, can only manage small development expenditures. A large part of the budget in most countries is committed to recurrent charges.

Repayment of debt is reported below the line with other borrowing and debt aggregates, as it is neither strictly recurrent nor development spending.
Revenues – (recurrent + development expenditures) + interest payments on debt] gives the primary surplus, i.e. the amount available to service the burden of public debt.

EFFECT OF TAXATION ON EQUILIBRIUM OUTPUT AND THE BALANCED BUDGET MULTIPLIER

$$k = \frac{1}{1 - MPC}$$

C = a + bYd

Yd = Y – tY = Y(1 – t)

t = net tax rate

Put Yd in C

C = a + b {Y (1 – t)}

C = a + {b (1 – t)} Y

b = MPC

MPC*= b (1 – t)

$$k^* = \frac{1}{1 - MPC`} = \frac{1}{1 - MPC\,(1 - t)}$$

- If MPC = 0.8 & t = 0.2
- MPC` = MPC (1 – t) = 0.8 (1 – 0.2)
- = 0.64

k is multiplier

Therefore $k = \frac{1}{1 - 0.64}$

= 2.77

Taxes act as a drag on the multiplier effect of government spending, since they represent a leakage from the circular flow of incomes. The tax-adjusted multiplier k* is smaller than the basic Keynesian multiplier, k, introduced earlier. k* is given by {1/[1-(MPC)(1-t)]}, where t is net income tax rate, and T = tY. The higher tax rate, the greater the leakage and the smaller the fiscal policy multiplier.
It is interesting to consider the special case of balance budget multiplier. The concept here is that if the government spends Rs.10 bn and finances it by increasing taxes by Rs. 10 bn, the multiplier will not be zero, as one might initially expect. This is because, the higher tax causes disposable income to fall, which in turn causes saving and imports (the other two types of leakages) to fall. Thus the net leakage from the system is less than Rs. 10 and there is a positive multiplier effect, albeit small.

© Copyright Virtual University of Pakistan

EXERCISES

Assume that the government wishes to reduce unemployment in the economy. Assume that every year from year 1 onwards the government is prepared to expand aggregate demand by whatever it takes to do this. If this expansion of demand gives 7 per cent inflation p.a., fill in the table (below) for the first six years. Do you think that after a couple of years people might begin to base their expectations differently?

Year	Actual inflation	=		+	Expected Inflation
1	7%	=	7%	+	0%
2	14%	=	7%	+	7%
3	21%	=	7%	+	14%
4	28%	=	7%	+	21%
5	35%	=	7%	+	28%
6	42%	=	7%	+	35%

After a couple of years, people will realise that inflation is continuing to rise. They will therefore expect this year's inflation to be higher than last year's, not the same.

Will targeting the exchange rate help to reduce inflation? Does it depend on the rate of inflation in the countries to whose currencies the pound is fixed?

It will help to reduce inflation, if the rate of inflation is lower abroad than at home. The main pressure will be on the export and import substitute sectors, which will have to reduce their rate of cost increases in order to remain competitive.

If inflation is higher abroad, then targeting the exchange rate will not reduce domestic inflation: instead, it will probably increase it. The balance of payments surpluses that will arise from the initial lower inflation will have the effect of increasing money supply and hence fuelling inflation.

What is the best way to reduce unemployment when it is above the natural rate level; when it is at the natural rate leve?

The government can use Keynesian type demand-management policies (raise government spending above taxes, adopt expansionary monetary policy) to try to reduce unemployment when the latter is above the natural rate level. However, when the economy is at the natural rate level, the government should focus on supply-side policies to reduce the natural rate level. Demand-increasing policies at this stage are more likely to feed into prices.

What will determine the speed at which inflation accelerates?

The amount by which unemployment is kept below the natural level (a process which is determined by the level of excess demand). The more that unemployment is kept below the natural level, the more will inflation accelerate.

Which electoral system would most favour a government being re-elected: the US fixed term system with presidents being elected every four years, or the UK system where the government can choose to hold an election any time within five years of the last one?

The UK system. This gives a government more flexibility to ensure that the economy is at the politically best point of the business cycle at the time of the election.

If V is constant, will (a) a £10 million rise in M give a £10 million rise in MV; (b) a 10 per cent rise in M give a 10 per cent rise in MV ?

a. No (unless V = 1)
b. Yes

© Copyright Virtual University of Pakistan

If both V and Q are constant, will (a) a £10 million rise in M lead to a £10 million rise in P; (b) a 10 per cent rise in M lead to a 10 per cent rise in P?

a. No (unless V = Q: which it never would)
b. Yes

Can the government choose both the exchange rate and the money supply if it is prepared to use the reserves to support the exchange rate?

Probably, but only for a short time. If the government reduces interest rates to avoid a recession, but at the same time is unwilling to let the exchange rate depreciate, then it can indeed use its reserves to support the currency. If speculators believe that the government can succeed in supporting the exchange rate, then the government may well succeed. The government will be helped in this, if it is supported by other central banks. Thus it was easier for the UK to support a disequilibrium exchange rate when it was a member of the exchange rate mechanism of the European Monetary System than it was before joining, because there was joint support from the member countries to support currencies that were being pushed to the floor of their agreed exchange rate band.

If, however, the government attempts to keep the exchange rate above its equilibrium level over the long term, without correcting the underlying balance of payments problem, then it is likely that the country could be forced to devalue: speculation will become too great. Thus, even within the exchange rate mechanism (ERM), a country could be forced to devalue, despite support from other countries. This was precisely what happened to the UK and Italy in September 1992. Speculation against the pound and the lira became so great that their exchange rates could not longer be maintained. The two countries left the ERM and their exchange rates depreciated.

If importers and exporters believe that the exchange rate has 'bottomed out', what will they do?

Importers and exporters will stop speculating that the currency will fall. Importers will thus cease 'stocking up', and will cut back on imports, waiting for the exchange rate to rise. Exporters will start selling more, to take advantage of the low exchange rate. The combined effect, therefore, could be a substantial boost to aggregate demand.

What adverse internal effects may follow from (a) a depreciation of the exchange rate; (b) an appreciation of the exchange rate?

a. It may fuel inflation by increasing the price of imported goods and reducing the need for export industries to restrain cost increases.
b. It may damage export industries and domestic import-competing industries, which would now find it more difficult remain competitive.

Describe the open market operations necessary to sterilise the monetary effects of a balance of payments surplus. Would this in turn have any effect on the current or financial accounts of the balance of payments?

The balance of payments surplus would lead to an increase in the money supply. To sterilise this the authorities would have to sell securities on the open market. The resulting higher interest rates would tend to lead to a continuing surplus on the financial and current accounts and hence a continuing need to sterilise the resulting increase in the money supply.

Under what circumstances would (a) contractionary and (b) expansionary policies cause no conflict between internal and external objectives?

a. When there was an inflationary gap and a balance of payments deficit.
b. When there was a deflationary gap and a balance of payments surplus.

Making first new classical, and then Keynesian assumptions, trace through the effects (under a fixed exchange rate) of (a) an increase in domestic saving; (b) a rise in the demand for exports.

New classical:

a. A rise in saving will mean a lower level of aggregate demand. This will cause wage rates and prices to fall, and thus cause imports to fall and exports to rise. There will be a current account surplus. At the same time, the increased saving plus a lower transactions demand for money will put downward pressure on interest rates. There will be an outflow of finance and a capital account deficit. Given a high international mobility of finance, the capital account deficit is likely to exceed the current account surplus. This will lead to a contraction in the money supply and hence

ease the downward pressure on interest rates (or even allow them to rise again), thus reducing the size of the financial account deficit, or at least allowing a growing current account surplus to 'catch up' the capital account deficit. Overall balance has been restored.

b. A rise in the demand for exports will cause the current account to move into surplus. At the same time, the resulting rise in aggregate demand will increase the transactions demand for money and put upward pressure on interest rates, causing an inflow of finance and hence a capital surplus too. Money supply will thus rise. But this will then put downward pressure on interest rates, thereby boosting aggregate demand and hence the demand for imports, and also stemming the inflow of finance. The net effect will be an erosion of the current and capital account surpluses until overall balance has been restored. The current account will come back into balance because of flexible prices and wage rates: prices and wage rates will go on rising until the current account surplus has been eliminated.

Keynesian:

a. A rise in savings will cause a multiplied fall in national income and a reduction in the rate of inflation. This will cause a fall in imports and a rise in exports and hence a surplus on the current account. This will lead to a rise in the money supply as the Bank of England sells pounds, but this will be more than offset by an endogenous fall in money supply caused by the reduction in aggregate demand. This will allow the current account surplus to persist. The reduction in money supply will prevent downward pressure on interest rates. There will therefore be no capital account deficit to match the current account surplus. Overall external imbalance will persist.

b. A rise in the demand for exports will cause the current account to move into surplus. The rise in exports (being an injection) will also cause a multiplied rise in national income. This will increase the demand for imports and will thus reduce the current account surplus somewhat (but not completely, given that the rise in exports is partly matched by a rise in other withdrawals too). The effect on the capital account will be relatively small. The current account surplus will reduce the money supply but the rise in aggregate demand will cause an endogenous rise in the money supply. The net effect on interest rates, and hence the capital account, will depend on which of these two effects is the greater.

Suppose that under a managed floating system the government is worried about high inflation and wants to keep the exchange rate up in order to prevent import prices rising. To tackle the problem of inflation it raises interest rates. What will happen to the current and financial accounts of the balance of payments?

The high interest rates will cause a surplus on the capital account. The higher exchange rate will cause a deficit on the current account.

Imagine that there is an inflationary gap, but a balance of payments equilibrium. Describe what will happen if the government raises interest rates in order to close the inflationary gap. Assume first that there is a fixed exchange rate and then that there is a floating exchange rate.

Fixed exchange rate: The higher interest rates will reduce aggregate demand and thus help to close the inflationary gap. The higher interest rates, however, will lead to an increase in the demand for and a decrease in the supply of sterling: the financial account will move into surplus, and external balance will be destroyed. The reduction in inflation will also have the effect of increasing exports and reducing imports, thereby also improving the current account. (As we shall see in section 24.2 and Box 24.2, the effect does not end here. The balance of payments surplus will increase the money supply, which will push interest rates back down again, thus preventing internal balance from being achieved.)

Floating exchange rates: As under a fixed exchange rate, the higher interest rates will reduce aggregate demand and thus help to close the inflationary gap. The higher interest rates will lead to an increase in the demand for and a decrease in the supply of sterling: the financial account will move into surplus, and external balance will be destroyed. The exchange rate will thus appreciate, thereby restoring external balance. The effect of the appreciation will be also to reduce the demand for exports (an injection) and increase the demand for imports (a withdrawal). This will help to reinforce the effect of higher interest rates in dampening aggregate demand and restoring internal equilibrium.

From the above it can be seen that monetary policy has a bigger effect on the domestic economy under floating than under fixed exchange rates.

To what extent do Keynesians and new classicists agree about the role of fixed exchange rates?

They are both critical. They both argue that monetary policy is relatively ineffective under fixed exchange rates, and that overall imbalance on the balance of payments may persist.

What will be the effect of an expansionary fiscal policy on interest rates and national income if there is a perfectly elastic supply of international finance (i.e. perfect capital mobility)? See Lecture 44.

There will be no effect on interest rates. Instead, the money supply will expand fully (from an inflow of finance) to match the rise in aggregate demand, thus giving the full effect on national income with no crowding out.

Are exports likely to continue growing faster than GDP indefinitely? What will determine the outcome?

Yes, so long as a growing proportion of countries' GDP comes from exports. If international trade barriers continue to be eroded, if consumers continue to have a growing demand for imports of goods and services (e.g. foreign holidays) and if firms continue to expand the proportion of their purchases of capital, raw materials, components and semi-finished products that they obtain from abroad, so the exports are likely to continue growing faster than GDP. The growth may well level off over the years, however, as comparative advantage becomes more fully exploited and as services (such as entertainment) account for a larger and larger proportion of GDP.

Why could the world as a whole not experience a problem of a current account balance of payments deficit?

Because every import to one country is an export from another, and every outflow of investment income or transfer of money from one country is an inflow to another. Thus when all the current account deficits and current account surpluses of all the countries of the world are added up, they must all cancel each other out.

What effect will there be on the four objectives of an initial excess of withdrawals over injections?

If withdrawals exceed injections, national income will fall. Other things being equal, this will have the following effects on the four objectives:

- Growth will be negative.
- Unemployment will rise.
- Inflation will fall.
- The current account of the balance of payments will tend to 'improve'. The deficit will be reduced, or eliminated, or be transformed into a surplus. If it was already in surplus, the surplus will increase.

What effects, according to monetarists, would successful supply-side policies have on the Phillips curve?

If the supply-side policies reduced the natural level of unemployment by improving the working of the labour market (e.g. by improving information on jobs), then the (vertical) Phillips curve would shift to the left. If, however, the supply-side policies merely affected output, the Phillips curve would be unaffected.

Two economists disagree over the best way of tackling the problem of unemployment. For what types of reasons might they disagree? Are these reasons positive or normative?

They may disagree over what has caused unemployment. This could be either a disagreement over facts or a disagreement over the way in which these factors operate on unemployment (i.e. a disagreement over the correct model of unemployment). Alternatively they may disagree over the effects on unemployment of particular policies. In each of these cases the disagreement is a positive one.

On the other hand they may disagree over the degree of priority that should be given to tackling unemployment, given that it might be at the expense of some other economic goal (like reducing inflation). In such cases the disagreements are (at least in part) normative.

Make a list of the various inflows to and outflows from employment from and to outside the workforce.

Inflows to employment:

- School/college leavers.
- Immigrants.
- Returners to the labour force: e.g. parents after raising children.

Outflows from employment:

- People who retire.
- People who are made redundant, who are sacked or who resign, and choose not to look for a new job.
- People who temporarily leave their jobs: e.g. to raise a family, or to attend further or higher education
- People who emigrate.
- People who die.

Why have the costs to the government of unemployment benefits not been included as a cost to the economy?

Because unemployment benefit is merely a transfer of money: from the taxpayer to the unemployed. The monetary cost to the taxpayer is exactly offset by the benefit to the unemployed.

If the higher consumer expenditure and higher wages subsequently led to higher prices, what would happen to: (a) real wages; (b) unemployment (assuming no further response from unions)?

a) Real wages would fall back again.
b) The lower real wages would cause consumer demand to fall (assuming that profit earners spend a lower proportion their profits than do wage earners of their wages) and thus shift AD curve back to the left again. But unemployment would fall, because firms could afford to employ more workers at the now lower real wage.

How can a growth in labour supply can cause disequilibrium unemployment.

The AS curve will shift to the right. If wages are inflexible downwards, this will cause an excess supply of labour at the given wage rate.

In what areas of the economy are jobs growing most rapidly in developed countries (and in many fast-growing developing countries as well)? Is this due to a lack of technological innovation in these areas?

In the service sector. It is partly due to a lack of displacement of labour by machines, but also due to a rapid rate of growth in demand. (Note that in some parts of the service sector, there has been a displacement of labour as a result of the information technology revolution.)

Do you personally gain or lose from inflation? Why?

You will have to answer this for yourself! Whether you gain or lose will depend on (a) whether your income tends to go ahead of, or fall behind inflation; (b) whether you are a net borrower or saver, and whether the rate of interest is above or below the rate of inflation (if it is below, then the real rate of interest is negative and thus borrowers will gain and savers will lose); (c) just how inconvenient you find it to update your information on prices so that you can decide whether items are good value for money. If you are in receipt of a student grant, you are probably a loser, given that grants have not risen to compensate for inflation.

Make a list of those who are most likely to gain and those who are most likely to lose from inflation.

Gainers: powerful companies; members of powerful unions; property owners (if property is rising in value more rapidly than prices generally).

Losers: those on incomes fixed in money terms (e.g. savers living on interest on their capital: the real value of their capital will be being eroded by inflation); workers with no bargaining power; people on state benefits, where these benefits do not rise in line with prices; students.

If consumer demand rises and firms respond by raising prices, is this necessarily an example of demand-pull inflation? Could there be such a thing as demand-pull illusion? (Clue: why might consumer demand have risen?)

If the rise in consumer demand were the result of higher wages resulting from trade union or other wage-push pressure, then the rise in demand will be a symptom of these cost-push pressures. To refer to the

outcome as 'demand-pull inflation' would be wrong. It would be a case of demand-pull illusion. In practice, most inflationary episodes have both demand-pull and cost-push elements.

How is the policy of targeting inflation likely to affect the expected rate of inflation?

It is likely to make it approximately equal to the target rate, assuming that people believe that the authorities (e.g. the Bank of England in the UK) will be successful in keeping inflation at approximately its target level. The more successful the authorities are in keeping to the target, the more will people's expectations help to guarantee that this success will continue. If, however, people believe that the authorities will not be able to keep inflation down to the target rate, then the expected rate will be above the target rate, making it more difficult for the authorities to meet the target.

Why is the US current balance approximately a 'mirror image' of the Japanese current balance?

Because the USA and Japan have a high proportion of their trade with each other. Many US imports are Japanese exports and many Japanese imports are US exports. Thus a Japanese trade surplus is quite likely to correspond to a US trade deficit. Similarly, many of the income flows into and out of each country are from the other. Thus Japanese investments in the US lead to income flowing from the US (a debit on the US current account) to Japan (a credit on the Japanese current account). Clearly, however, the current accounts are only an approximate mirror image of each other, given each country's trade with other countries.

Where would interest payments on short-term foreign deposits in UK banks be entered on the balance of payments account?

As a debit on the investment income part of the current account. Payments of interest, profits and dividends are all elements in this part of the balance of payments account.

How did the British pound 'fare' compared with the US dollar, the Italian lira and the Japanese yen from 1980 to 2001? What conclusions can be drawn about the relative movements of these three currencies?

Taking the period as a whole, the pound depreciated against the US dollar and substantially against the Japanese yen, but appreciated against the Italian lira. There were, however, fluctuations around this trend. There was, for example, an appreciation against the dollar between 1993 and 1998 and against the yen between 1995 and 1998.

The movements mean that over the period as a whole there was a decrease in demand for the pound relative to the dollar and yen, but an increase in demand for the pound relative to the lira. This in turn would suggest, other things being equal, that the rate of inflation was higher in the UK than in Japan and the USA but lower than in Italy.

Assume that an American firm wants to import cars from the UK. Describe how foreign exchange dealers will respond.

The firm will want to purchase pounds with dollars. It will thus ask banks' foreign exchange departments for a $/£ quote. The dealers will thus be put in competition with each other, trying to offer the lowest $ price for pounds in order to obtain the business. But they must be careful not to offer so low a $ price that they will be unable to buy the necessary pounds at an even lower $ price from UK importers wanting dollars.

Go through each of the above reasons for shifts in the demand for and supply of rupees and consider what would cause an appreciation of the rupee.

- A rise in Pakistan's interest rates relative to those abroad.
- A lower rate of inflation in Pakistan than abroad.
- A fall in Pakistan's incomes relative to those abroad.
- Better investment prospects in Pakistan than abroad.
- Speculators believe that the rate of exchange will appreciate.
- Pakistani goods become more competitive (in terms of quality, etc.) than imported goods.

If the Malaysian ringgit is undervalued by 47 per cent in PPP terms against the US dollar, and the Swiss franc overvalued by 53 per cent, what implications does this have for the interpretation of Malaysian, Swiss and US GDP statistics?

The GDP figures understate the purchasing value of Malaysian national income by 47 per cent relative to US national income, and overstate the purchasing value of Swiss national income by 53 per cent relative to

US national income. In other words, at the exchange rates in question, Malaysian national income seems 47 per cent lower relative US national income than it really is in purchasing terms, and Swiss national income seems 53 per cent higher relative to US national income than it really is in purchasing terms.

Can growth go on for ever, given that certain resources are finite in supply?

Yes, provided that technical progress continues to allow output be produced with declining amounts of resources.

For what reasons might the productivity of land increase over time?

Because of the increase in quantity and quality of complementary factors. Thus a hectare of land yields more agricultural output today than 100 years ago because of the increased mechanisation of agriculture and the increased amount of chemicals used.

What would be the rate of economic growth if 20 per cent of national income were saved and invested and the marginal efficiency of capital were $^2/_5$?

Given the formula: $g = i \times MEC$, the rate of economic growth will be:

$$20\% \times {}^2/_5$$
$$= 8\%$$

If there were a gradual increase in the saving rate over time, would this lead to sustained economic growth?

Yes, but the rate of economic growth would gradually slow down, given that the Y curve gets less and less steep. If, however, the extra saving were invested in research and development, with the result that the Y curve shifted upwards, this would allow a higher output to result from the extra saving and hence a faster rate of economic growth as saving increased over time.

If this is true, why do people not increase their rate of saving?

Because people generally have a preference for spending their money sooner rather than later. Saving entails sacrificing present consumption for future consumption, and the cost of waiting has to be offset against any increased consumption (from earning interest) in the future.

If there were a higher participation rate and GDP per capita rose, would output per worker also have risen?

Not necessarily. GDP per capita will still rise if a greater proportion of the population work and there is the same output per worker.

If people worked longer hours and, as a result, GDP per capita rose, how would you assess whether the country was 'better off'?

The country would be better off if the benefits from the extra consumption exceeded the costs of working more. Calculating such costs and benefits is fraught with difficulties, however. For example, just because people do work longer hours, it cannot be assumed that for them the benefits outweigh the costs: the may have little choice over the number of hours worked, and even if they did, they may not realise the full costs to them (in terms of lost leisure opportunities, diminished family and social interactions and possibly poorer health). Also, some of the costs and benefits are external to the people working the longer hours (e.g. costs and benefits to other family members), and thus may well not be fully taken into account.

Identify some policies that a government could pursue to stimulate productivity growth through each of the above means.

- Giving firms grants and/or tax relief for investment; reducing delays in hearing planning applications.
- Putting more public money into education, training, R & D and infrastructure; better auditing to ensure that such money is used efficiently.
- Reducing barriers to trade and outlawing various anti-competitive practices.

If tax increases are 'phased in' as the economy recovers from recession, how will this affect the magnitude and timing of the recovery?

It would have a similar effect to automatic fiscal stabilisers. It would reduce the rate of growth of aggregate demand and thus dampen and slow down the recovery. The hope of the government was that this would make the recovery more sustainable and would create confidence in the financial community

© Copyright Virtual University of Pakistan

that the budget deficit would be significantly reduced over the longer term. As the budget deficit fell, so the hope was that this would allow interest rates to fall. The danger, of course, was that the tax increases might totally halt the fragile recovery.

At lot depended on confidence. The more that investors believed that the policy would help to make the recovery more sustainable, the more they would invest and, therefore, the more sustained the recovery would be. On the other hand, if investors believed that the tax increases would kill off the recovery, the less they would invest, and therefore the more likely the recovery would peter out.

If tax cuts are largely saved, should an expansionary fiscal policy be confined to increases in government spending?

Ricardian equivalence states that when a governemnt cuts taxes (and finances the resulting fiscal deficit from borrowing), taxpayers will not spend the higher disposable incomes they are left with as a result of the lower taxes, because they will expect government to raise taxes in the future in order to pay the higher interest cost of debt incurred today. Under these conditions, increases in government spending, provided they are direct expenditure on output-generating activities, will be more effective than tax cuts in stimulating the economy.

Could you drive the car at a steady speed if you knew that all the hills were the same length and height and if there were a constant 30-second delay on the pedals?

Yes. You would simply push on the accelerator (or brake) 30 seconds before you wanted the effect to occur. You would do this so that the car would end up braking as you went down hill and accelerating as you went up hill.

The lesson for fiscal policy is that if forecasting is correct, if you know the precise effects of any fiscal measures, and if there are no random shocks, then fiscal policy can stabilise the economy.

How can a government finance its fiscal deficit?

By borrowing locally (i.e. issuing bonds), foreign financing (including non-relpayable grants) or printing money (i.e. borrowing from the central bank). The first of these methods is least inflationary while the last one is most inflationary.

Are all taxes distortionary?

A naïve but not incorrect answer is “Yes”. Indeed all taxes are distortionary, “but”, given existing distortions, imposing some taxes can actually reduce the distortion in the economy. This is the theory of the second best.

Why is the “without tax” multiplier smaller than the “with tax” multiplier?

Because taxes are a leakage from the circular flow, and the multiplier measures the impact of an injection onto the circulr flow. The more avenues for leakages, the less will be this impact.

How is a sales tax different from a graduated income tax?

The sales tax is a direct and progresisve tax. It’s direct because it is a deduction from the net income of an individual. It is progressive because the graduated levy ensures the burden of tax reduces for poorer people (this is consistent with the equity principle that the tax burden should be commnsurate with “ability to pay”). A sales tax is an indirect tax because it indirectly taxes people’s incomes. What it taxes directly is people’s consumption expenditure. Naturally, the sales tax is regressive; a poor person pays the same percentage of the retail price as tax as a rich person.

© Copyright Virtual University of Pakistan

FISCAL POLICY, MONEY & BANKING

FINANCING OF DEFICIT

Since the size of the balanced budget multiplier is small, it is not always possible to get the required demand expansion by raising expenditures and taxes symmetrically. Thus, the case of deficit spending and financing must be considered. Here the government spends more than its revenues, and raises debt to finance the excess of expenditures over revenues. The three borrowing options were mentioned earlier:

i. Borrow from domestic banking system or general public through a sale of treasury bills and bonds. Bills are short-term debt instruments (< 1 year) and bonds are long-term bond instruments (> 2 years).[4] The major disadvantage of this type of borrowing is that it can lead to crowding out of private sector activity. How? Consider the market for loan able funds. An increased demand for funds by the government will cause interest rates in the economy to rise (making loans more expensive for everybody, including the private sector) as well squeeze the quantity of credit available for lending to the private sector.

ii. Borrow from the central bank by ordering the latter to print money and lend it to the government (free or at an interest cost) for onward spending. All governments would love to do this, except that this type of "apparently free" financing is highly inflationary. You can easily imagine why. An increased supply of money given a fixed supply of gods will naturally cause prices of those limited goods to rise.

iii. Borrow from foreign sources either through bonds floated on international capital markets or bilateral, multilateral or commercial loans. The advantage of this type of borrowing is that it does not lead to crowding out and is not immediately inflationary, especially if some of the loan helps finance import expenditure. If all the borrowed money is spent locally given a fixed exchange rate, the monetary effects of foreign borrowing might become very similar to those of borrowing from the central bank.

SHOULD THE FISCAL POLICY BE ACTIVE OR PASSIVE?

In view of the above complications, there is a long-standing debate on whether fiscal policy should be active or passive. Note that in a Keynesian context; even a passive fiscal stance will produce an automatic stabilizer effect on aggregate demand. How? If AD falls, Y falls; tax collection falls, the net income tax rate falls, which is equivalent to a passive fiscal policy expansion. Also, when AD and Y fall, unemployment rises; which means more people become eligible for unemployment benefit, which in turn causes government expenditure to rise, which is again equivalent to a passive fiscal policy expansion. It is easy to derive the reverse situation: in which AD rises and fiscal policy becomes passively contractionary.

In addition to the above, there is an argument that active fiscal policy cannot be changed without a time lag. The government passes its budget on an annual basis, and thus a mid-year change in AD which warrants a fiscal policy response must wait till the start of the next fiscal year. Unfortunately, the demand conditions might have changed by that time!

1. Other arguments against active fiscal policy-led demand-management include the effects of a fiscal expansion on interest rates and subsequently the exchange rate. As mentioned in the discussion on BOPs, a rising domestic interest rate will cause the exchange rate to appreciate in real terms (due to the interest parity condition). This, however, will cause competitiveness to decline will drive down exports and lead to BOPs problems.
2. Finally, expansionary fiscal policies can raise the national debt (as you know, national debt is simply an accumulation of past fiscal deficits) which would have to be paid off by future generations, possibly through a painful increase in their tax contributions.

[4] Bills and bonds can be thought of as certificates that the government gives to its lenders in exchange for cash. The terms on the certificate stipulate when the government will repay the cash and what interest rate it will pay till maturity. Thus if the government sells you a 10% 10-year WAPDA bond worth Rs. 1000 today, it means you will give the government Rs. 1000 today and receive the Rs. 1000 from government after a period of 10 years. In the meantime, however, the government will pay you interest at 10% (or Rs. 100 per year).

© Copyright Virtual University of Pakistan

THE CONCEPT OF MONEY

Money or paper currency serves at least three functions: it is a medium of exchange, a store of value and a unit of account. Before paper money (and we are talking of not so long ago!), people used coins which had intrinsic value (gold, silver, bronze). Before that (and now we are talking of very long ago!) there was barter trade, where goods and services were exchanged for goods and services and there was no monetary medium of exchange, per se.

Money Supply and Its Various Definitions:

There is a process by which money is created – the money supply process, and there are ideas about why people hold money – money demand theories. We'll tackle these in order and then develop an understanding of money market equilibrium.

Before getting a handle of the money supply process, we must understand the various definitions of money supply (denoted by Ms). At this introductory stage, we'll introduce only three definitions:

a. **M0:** also called base money, high powered money or the monetary base. M0 is the value of all the currency notes and coins that are in circulation in the economy. Note that any currency or coins lying with the central bank (which in Pakistan's context, would be the State Bank of Pakistan) does not count as M0, as it is not in circulation.
b. **M1:** is M0 + all current (or checking) deposits held with commercial banks. Checking deposits are accounts from which the holders can withdraw money at any time.
c. **M2:** is M1 + all time deposits. Time deposits are accounts from which holders can withdraw money only after giving the banks some notice (usually a few months). When talking about money supply, this is the measure we often refer to. The relationship between M2 and M0 is the key to unraveling the money supply process. If you are wondering how money supply can be greater than M0, consider one simple answer (in QTM vein). A 100 rupee note counts as Rs. 100 only for M0; but if that note goes round the economy and changes hands 5 times in a year, then the value of that 100 rupee note is Rs. 500 in an M2 context. From the definition of M2 and M0, however, it is clear that there is something commercial banks do which causes the value of that 100 rupee note to rise from Rs. 100 to Rs. 500.

WHAT DO COMMERCIAL BANKS DO?

They take deposits (i.e. borrow money) and make loans (i.e. lend money). The interest rate they pay on deposits is lower than the interest rate they charge on their loans. The difference covers their overhead costs and profits.

If banks on-lend all the money they receive as deposits, they would not be able to give any money back to depositors who come to withdraw money from their accounts. On the other hand, if banks on-lent nothing and kept all the money they receive as deposits in a locked safe, then there is no profit they will make. There is thus a trade-off between liquidity (having cash at hand) and profitability. Banks often resolve this trade-off by maintaining cash reserves which are a small ratio of total deposits. Thus if deposits are Rs. 100, banks might decide to keep Rs. 10 of that money in the form of a liquidity reserve (to meet the needs of depositors who might come to withdraw money on any particular day) and lend the remaining Rs. 90 as loans to businesses. In this case the reserve ratio is 10% (i.e. 10/100). Sometimes this reserve ratio is imposed as a central bank requirement that commercial banks must fulfill.

THE MONEY CREATION PROCESS

We can now study the money supply or creation process. Imagine the government wishes to buy pencils worth Rs. 10 for its officials. The supplier firm is called S and has a deposit account with Bank A. In order to buy the pencil, the government asks the central bank to print a 10 rupee note and give it to the government.[5] This action causes M0 to expand by Rs. 10. Now the government pays this amount to S

[5] Note that we use the terms government and central bank to mean two distinct entities. By government, we mean the Ministry of Finance, or the Treasury. The central bank, although a part of the broader definition of government, is a separate entity in an accounting and administrative sense. As such, in this discussion of the monetary sector, we consider the central bank as an entity separate from, and lying outside, the government.

© Copyright Virtual University of Pakistan

(in exchange for the pencils) who in turn deposits the money into his account in Bank A. What does A do? Assuming it operates a safety cushion or reserve ratio (RR) of 10%, with initial deposits of Rs. 100 million. Its balance sheet will be as follows:

Balance sheet of bank A (Initial condition)	
Assets	**Liabilities**
Loans = 90	Deposits = 100
Reserves = 10	
Total assets = 100	Total liabilities = 100

After that person deposits Rs. 10 in bank A, the new balance sheet of bank A will appear as:

Balance sheet of bank A (After the deposit of Rs. 10)	
Assets	**Liabilities**
Loans = 90	Deposits = 100+10 = 110
Reserves = 10+10= 20	
Total assets = 110	Total liabilities = 110

Bank wants to maintain its RR at 10%.
RR = Reserves / Deposits = 20/110 = 18.20% this is higher than the 10%. So bank issue loans of this extra amount. The new balance sheet of bank A will appear as:

Balance sheet of bank A (After issue of new loans)	
Assets	**Liabilities**
Loans = 90+9 = 99	Deposits = 110
Reserves = 20-9 = 11	
Total assets = 110	Total liabilities = 110

The firm who receive this loan will deposits its amount in bank B. Bank B will do the same actions as that of bank A. Lets the initial balance sheet of bank B be as follows:

Balance sheet of bank B (Initial condition)	
Assets	**Liabilities**
Loans = 90	Deposits = 100
Reserves = 10	
Total assets = 100	Total liabilities = 100

After the firm deposits extra Rs. 9 in bank B, the balance sheet of bank B will appear as:

Balance sheet of bank B (After deposits of Rs. 9)	
Assets	**Liabilities**
Loans = 90	Deposits = 100+9 = 109
Reserves = 10+9 = 19	
Total assets = 109	Total liabilities = 109

RR= 19/109 = 17.4%. This is higher than the 10% so bank B will issue loans of this extra amount and its balance sheet will appear as:

Balance sheet of bank B (After issue of new loans)	
Assets	**Liabilities**
Loans = 90+8.1 = 98.1	Deposits = 109
Reserves = 10.9	
Total assets = 109	Total liabilities = 109

Thus, Bank A will add Rs. 1 to its liquidity reserve and lend Rs. 9 to firm T. Firm T, takes the Rs. 9 and deposits it in another Bank B. B acts in a similar way: it adds 90 paisa (10% of Rs. 9) to its existing liquidity reserve and lends the remaining Rs. 8.1 to firm Z. The process goes on; the amount lent falling each time by a factor of 10%.

© Copyright Virtual University of Pakistan

If the money creation process is set up as an infinite series (starting from the central bank printing the ten rupee note), we will have

- Increase in Bank A's Balance sheet
- 10 x (0.9)0 = 10
- Increase in Bank B's Balance sheet
- 10 x (0.9)1 = 9
- Increase in Bank C's Balance sheet
- 10 x (0.9)2 = 8.1
- Increase in Bank D's Balance sheet
- 10 x (0.9)3 = 7.3

10 + 10× (90%) + 10× (90%) × (90%) + 10× (90%) × (90%) × (90%) + …….
This is an infinite converging series with a first term of 10 and a convergence factor of 0.9 (or 90%).
= 10 (10 + 0.91 + 0.92 + 0.93 + …..)
Now $S = \frac{a}{1 - r}$
The sum to infinity of this series is
10/ (1-0.9) = 100.
Thus, an initial M0 expansion of Rs. 10 has a total money supply (or M2) impact of Rs. 100, thanks to the intermediation of commercial banks. There is a money multiplier (MM) at play of magnitude 10.
M0 × MM = M2

THE MONEY MULTIPLIER

If you look carefully, the money multiplier is nothing but the inverse of the reserve ratio. Thus, we can write MM = 1/rr, where rr is reserve ratio. Generally, in stock terms we can write, M2 = MM*M0 = (1/rr)*M0; and in flow terms we can write, ΔM2 = (1/rr)*ΔM0. The higher the reserve ratio, the higher will be the leakages and thus the lower will be the money multiplier. In the extreme, when rr = 100%, MM is 1, and M2 = M0.

BALANCE SHEET OF A CENTRAL BANK

To complete our understanding of the money supply process let us now zoom in on the central bank's balance sheet. To keep things simple, we'll consider the balance sheet of the State Bank of Pakistan, SBP, abstracting from the more complicated ones held by the U.S. Federal Reserve Bank, the European Central Bank or the Bank of England. The choice of SBP is, however, for illustration purposes only and does not reflect on SBP's actual financials.

Balance sheet of a central bank	
Assets	**Liabilities**
Loans to Govt	Notes, coins & currency in circulation
Forex reserves	Govt & commercial bank deposits
Loans to private sector	Liquidity paper issued

Lesson 42

MONEY, CENTRAL BANKING AND MONETARY POLICY

BALANCE SHEET OF STATE BANK OF PAKISTAN (SBP)

Any balance sheet has two sides: assets and liabilities, and the totals of the two must balance.

Balance sheet of SBP	
Assets	**Liabilities**
1- Forex reserves	**4-** Notes, coins & currency in circulation: M0
2- Loans/Credit to Govt	**5-** Govt & commercial bank deposits
3- Loans/Credit to private sector	**6-** Liquidity paper issued

On the assets side of SBP's balance sheet, we have (1) the country's foreign exchange reserves (foreign currencies, gold and silver reserves; either held domestically or invested abroad); (2) credit to government: this would include any SBP lending to government, including in the form of any outstanding (i.e. yet to mature) treasury bonds and bills lying with the SBP; and (3) credit to banks: this would include any advances (another name for loans) extended by SBP to commercial banks. On the liabilities side, we have (4) notes and coins in circulation (i.e. M0). Note that for a currency-issuer (SBP in our case), the currency is a liability, not an asset; (5) government or banks' deposits: these would include any positive account[6] balances held by commercial banks and/or the government; (6) outstanding liquidity paper issued: this would include any bills issued by the central bank for the purpose of mopping up liquidity from the financial system.

Given the accounting requirement of **(1)+(2)+(3) = (4)+(5)+(6)**, we can easily how any increase on the LHS must be reflected by an increase on the RHS. However, only an increase in (4) will cause the money supply (M2) to expand.

Let's simulate **the effect of an increase in** (1), caused by SBP's purchase of dollars from the foreign exchange market. As we discussed before, when the government buys foreign exchange, it must inject an equivalent amount of local currency liquidity into the economy. This means an increase in (4). Thus, the size of balance sheet grows symmetrically on both sides. Note, however, that SBP could technically issue liquidity paper (6) to help sweep up the liquidity it injected when purchasing dollars from the market. If this is done, then the rise in (6) will be mirrored by a fall in (4) and therefore the monetary implications of the foreign exchange market intervention would stand neutralized. This process, by which the increase in (4) is substituted by an increase in (6), is called sterilization, and is one of the policies resorted to by countries facing large foreign exchange inflows while maintaining a fixed exchange rate.

This point in the discussion offers a natural launch pad for defining the instruments of monetary policy available to a central bank. Earlier we talked about monetary policy but never quite got round to defining the instruments thereof. Having developed an idea of the central bank balance sheet, this is now straightforward to do.

MONETARY POLICY

Monetary policy is the process by which the government, central bank, or monetary authority manages the supply of money, or trading in foreign exchange markets. Monetary policy is generally referred to as either being an expansionary policy, or a contractionary policy, where an expansionary policy increases the total supply of money in the economy, and a contractionary policy decreases the total money supply. Expansionary policy is traditionally used to combat unemployment in a recession by lowering interest rates, while contractionary policy has the goal of raising interest rates to combat inflation (or cool an otherwise overheated economy). Monetary policy should be contrasted with fiscal policy, which refers to government borrowing, spending and taxation.

[6] All licensed commercial banks and the government maintains accounts at the central bank which can be credited (replenished) or debited (depleted) depending on the transaction. If a commercial bank withdraws cash from its account with the central bank and lends that cash to some firm operating in the economy, then this transaction would be a debit one, i.e., it will cause deposits to fall. You can predict the effect on M0. Yes, it will rise by the same amount.

© Copyright Virtual University of Pakistan

TOOLS / INSTRUMENTS OF MONETARY POLICY

Monetary policy can be defined as the central bank's Programme, often changing on a daily basis, regarding the direct or indirect control (through interest rates) of monetary conditions in the economy with a view to managing aggregate demand and inflation. There are four major instruments of monetary policy:

I. **Reserve ratio and SLRs:** the central bank can impose and alter a mandatory reserve ratio for commercial banks, and through that, affect the money multiplier. By extension, the central bank can force commercial banks to comply with additional statutory liquidity requirements (SLRs) that work similarly to a the reserve ratio. SLRs require commercial banks to invest in a certain quantity of T-bills and T-bonds. Since a large stock of these is often held by the central bank as assets (credit to government), the central bank can use SLRs to increase or run-down its holding of this stock, and thus cause M0 to increase or decrease directly.

II. **Discount rate:** As mentioned earlier, the central bank sometimes extends credit to commercial banks on their request to meet their exigent liquidity needs.[7] Such borrowing is called borrowing from the discount window and the rate the central bank lends at the discount window is called the discount rate. If the central bank increases this rate, banks would be inclined not to borrow from the central bank and instead keep a large reserve ratio as a cushion against a possible liquidity crunch. A higher discount rate thus causes banks' voluntary reserve ratio to increase and the size of the money multiplier to reduce.

III. **Open market operations (OMOs):** Central banks conduct OMOs on a frequent basis. An OMO typically involves the central bank buying or selling government securities (T-bills and bonds) to commercial banks. As mentioned in i) above, the central bank can build or run-down its stock of government securities and affect M0. In contrast to i, however, it is not implemented as a mandatory requirement, rather the central bank conducts an OMO in auction style in which all banks are free to bid. The price of the securities (and therefore the yield or interest rate they offer) is determined by the degree of interest in the auction. If for instance, the central bank wants to buy securities and there are very few willing sellers, then the sellers will demand a higher price for the securities. This will push the yield (or return) on the securities down. By contrast, if there were a large number of willing sellers, they would compete ferociously with each other to sell their stock to the central bank. In this case, the securities' prices are likely to be bid down, to the advantage of the central bank. In both cases, however, the money supply will expand, as the central bank injects new currency into the economy in exchange for the securities. In the reverse case, when the central bank sells securities in the market, the money supply contracts.

IV. **Foreign exchange market interventions:** As discussed earlier in the context of balance of payments, a purchase or sale of foreign exchange by the central bank has an ipso facto effect on the money supply – because the central bank has to pay local currency in order to buy the foreign currency. In balance sheet language, it can be seen that a central bank purchase of foreign exchange, will cause the bank's foreign exchange reserves (item 1 on the balance sheet) to increase. Unless sterilized (by issuing central bank liquidity paper or OMOs) such an increase will cause an increase in M0, which through a multiplier effect causes M2 (or money supply) to increase.

FUNCTIONS OF CENTRAL BANK

Let us conclude our discussion here with a word about the functions of the central bank. Monetary policy is just one of the functions of the central bank. There are at least three more functions central banks serves:

a. As lender of last resort, it must bail (or help) out commercial banks facing temporary liquidity shortfalls;

[7] The central bank is obliged to provide such credit in its capacity as *lender of last resort*. Any bank in trouble (i.e. in need of cash) can go to the central bank discount window and borrow. As such the central bank provides an extra cushion to the banking system, whose stability is essential for a smooth payments system in the economy.

© Copyright Virtual University of Pakistan

b. As supervisor of the financial system, it must ensure its good health by monitoring commercial banks' lending (risk-taking), capital adequacy, and liquidity positions. The central bank is also a monitor of the management and governance of financial institutions and of any other threats to the stability of the financial system;
c. As the biggest intervener in the foreign exchange market (and/or setter of the exchange rate), it is responsible for exchange rate policy and the balance of payments, per se.

Whether the central bank fulfils these functions independently and autonomously or under instruction by the government (Minster of Finance) depends very much on whether the central bank is de facto autonomous or not. In most HICs, central banks enjoy a fair degree of autonomy (and this is cited as one reason for the stability of their monetary and financial sectors) but in LICs, governments often intervene heavily in the functions of the central bank preventing it from achieving its mandated objectives of financial sector health, monetary and BOP stability, and low inflation.

WHY PEOPLE HOLD MONEY?

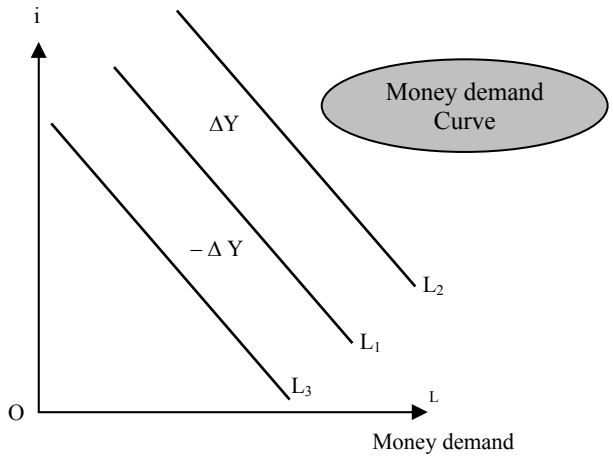
We can now move on to money demand (denoted by Md or L), and the question of why people hold money? Economists have identified three broad motives:

a. **The transactions motive:** People need to make day-to-day transactions (buy food, clothes etc.) and therefore need to hold cash in their hands. Of course, the increasing spread of plastic money (credit cards) has considerably reduced the transactions incentive for holding money. Assuming no plastic money, an individual's transactions demand for money is likely to increase with his/her income, as s/he is more likely to make more transactions if he feels richer.
b. **Precautionary motive:** In addition to money held for making transactions, people sometimes hold money for precautionary purposes as well: i.e. to meet any urgent or unexpected expenditure needs, or to "snatch a bargain" that might be taken by someone else. Again, precautionary demand for money is likely to increase with income
c. **Assets motive (also called speculative or investments motive):** In addition to a and b, people might wish to keep some cash to switch between various investments. So consider a person who owns some land, holds some bonds, and has some stock market investments. Let's say he spots a good investment opportunity on the stock market but doesn't have instant buyers for the land or bonds he holds. In this situation some spare cash in hand would have helped him acquire the equity asset. The assets demand for money is likely to increase with income (for reasons similar to those for a and b) and decrease with interest rates (because the interest rate is the opportunity cost of holding cash in your hands).

DEMAND FOR MONEY

Generally, then, money demand Md increases with income levels and falls with interest rates. Note that we refer to real income (which measures purchasing power) and real interest rates (which measure real return on invested money), and not their nominal counterparts. Thus the demand for money we refer to is the demand for real money. Contrast this with what have been talking about earlier: nominal money supply – i.e. what the central bank controls through its various instruments. Whether nominal and real money supply is equal or not depends much on the assumption regarding prices. If prices are assumed fixed, then the two are equal, otherwise not.

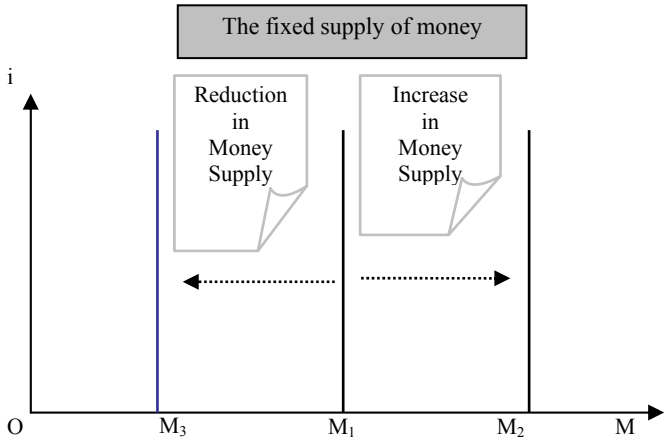
© Copyright Virtual University of Pakistan


i
Money demand Curve
ΔY
– Δ Y
L2
L1
L3
O
L
Money demand

Lesson 43

MONEY & GOODS MARKET EQUILIBRIUM: IS-LM FRAME WORK

MONEY SUPPLY



So far we have talked about macroeconomic equilibrium either in the context of the goods market (AS-AD), the labour market, or the loan able funds market. We now enrich our notion of equilibrium with the money market and see what the conditions are for an economy to strike joint equilibrium in the goods and money markets. The framework within which this is done is called the IS-LM framework. The exact meaning of the letters is perhaps not so important as their meaning. IS actually refers to a curve drawn in i-Y space capturing all the points at which the goods market is in equilibrium. LM is similarly, a curve also drawn in i-Y space, but capturing all the points at which the money market is in equilibrium. We look at how these curves are derived, in reverse order, i.e. staring with the LM curve.

MONEY MARKET EQUILIBRIUM

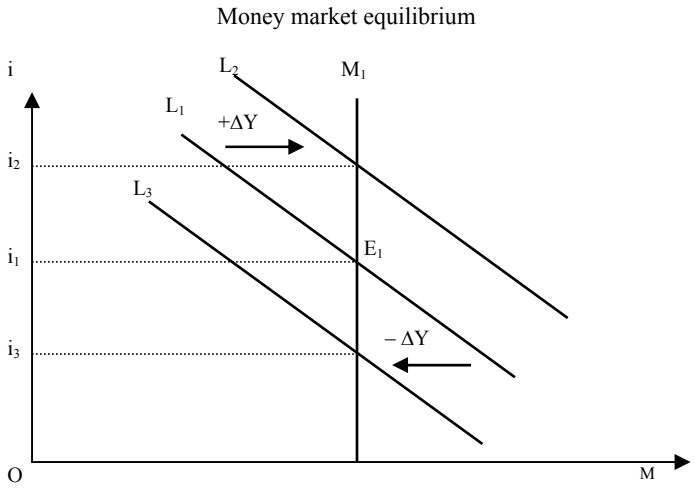
We start from where we left our discussion of the monetary sector. We noted that money demand increased with income and decreased with interest rates. Now plotting the money demand function (we'll call it L) in i-M space (where M denotes real money), we get a downward sloping line. The slope of L depends on the sensitivity of money demand to changes in the interest rate, or the interest elasticity of money demand ($i\epsilon_L$).

An increase in real income (Y) causes a rightward shift in the L curve while a fall in income causes a leftward shift. The amount by which L shifts in response to a given change in income depends on the sensitivity of money demand to income changes, or the income elasticity of money demand ($Y\epsilon_L$).

By introducing money supply at this stage, we can develop a notion of **money market equilibrium**. As mentioned earlier, the nominal money supply is controlled (directly or indirectly) by the central bank. Given a certain level of prices (P), and sticking with I-M space, real money supply (i.e Ms/P) will plot as a vertical line intersecting the M axis at a finite point determined by Ms (determined by the central bank) and the price level. Given constant prices, an increase in Ms will cause Ms/P to shift to the right, and a decrease in Ms will cause Ms/P to shift to the left. Similarly, given a constant Ms, an increase in P will shift Ms/P to the left, while a decrease will have the opposite effect.

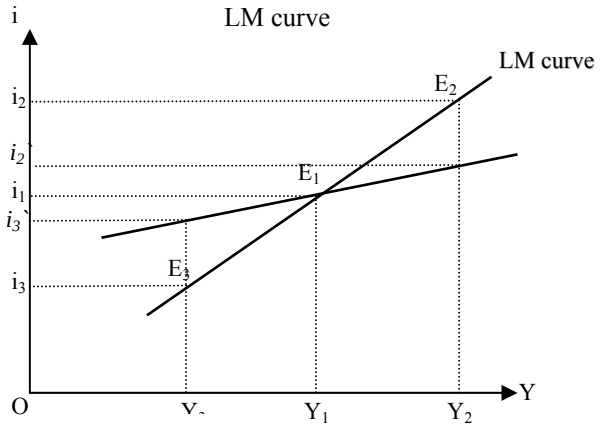
The intersection point of the L and Ms/P lines delivers money market. To see how this equilibrium responds to changes in income (Y), we can see that with a fixed Ms/P, increases in income will cause L to shift to the right, causing the equilibrium interest rate to rise. It is obvious that if we were plotting the equilibrium relationship in the money market in i-Y space, we would get an upward sloping line, since a rise in income causes a rise in interest rates. Again, the slope of this line would depend on the two elasticize mentioned above. If $Y\epsilon_L$ is small then even a large change in Y will cause only a small change in money demand. Now if $i\epsilon_L$ is large, only a small change in i will be required to bring money demand back to equilibrium levels (i.e. equal to the fixed Ms/P). In this case, the LM curve will be relatively flat (large changes in Y associated with small changes in i). LM will be steeper the bigger is $Y\epsilon_L$ and the smaller is $i\epsilon_L$.

© Copyright Virtual University of Pakistan



THE LM CURVE

LM curve sows the combinations of real output and real interest rate at which money market is in equilibrium.



SHIFTS IN THE LM CURVE

It is also useful to think about factors that will cause shifts in the LM curve. Ms/P is one such factor. How? Simulate the effect of an increase in Ms/P in i-M space. The vertical Ms/P curve shifts to the right causing the equilibrium interest rate to fall. Thus for an unchanged income level (since we have not assumed anything about income changes causing shifts in the L curve), the interest rate falls. The way this translates in i-Y space is simple. Every point on the LM curve will shift vertically downwards. Why vertically downwards, because income has not changed. Thus, it is clear: an increase in real money supply (Ms/P) will cause LM to shift down (or the right), while an decrease in Ms/P will cause in LM to shift up (or to the left).

GOODS MARKET EQUILIBRIUM: THE IS CURVE

This is much simpler. We start with the loan able funds or (saving-investment) market (with i on the vertical axis and S & I on the horizontal axis) where the investment schedule plots as a downward sloping curve. Now consider what happens to investment demand (I) when there is a fall in i (due, say to a rightward shift in the saving function). I will increase, as it is now cheaper for firms to borrow money and invest. How would a higher I affect income Y in the context of the 45 degree line diagram introduced earlier in the course. Clearly, the AD curve would shift upwards by +ΔI (the increase in I induced by a fall in i). This would cause a multiplied rise in income, raising the latter by k*ΔI, where k is the Keynesian multiplier.

Clearly then, a fall in interest rates is associated with a rise in equilibrium national income Thus the IS curve, which captures goods market equilibrium is downward sloping in i-Y space. The lower the interest rate, the higher the income; the higher is interest rate, the lower the income.

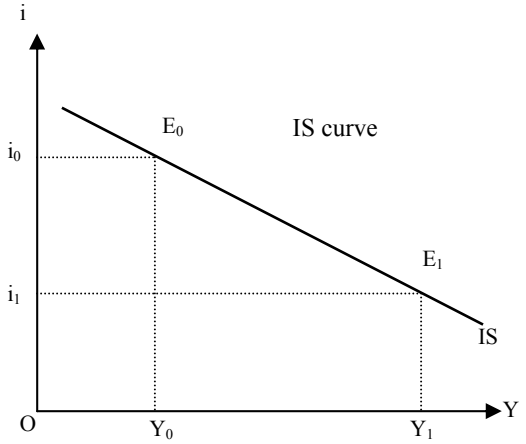
Goods market is in equilibrium when

AD & Y (AS) are equal

- AD = C + I + G + NX
- Income Y = C + S + T

When the two are equal

- AD = Y or
- C + I + G + X – M = C + S + T
- (G – T) + (X – M) + I = S
- Assuming G = T & X = M
- *I = S for equilibrium*



THE SLOPE OF THE IS CURVE

The slope of the IS curve, as you may have already guessed, depends on two factors:

a. The sensitivity of investment demand to the interest rate (i.e. how flat the investment curve is in i-S space) or the interest elasticity of investment ($i\epsilon_I$). The higher the $i\epsilon_I$, the greater the increase in I for any given $-\Delta i$.
b. The Keynesian multiplier (k): the higher is k, the greater the increase in Y given a certain increase in I.

Combining the two then, we can say, the higher is k and the higher is $i\epsilon_I$, the flatter will be the IS curve. Intuitively it makes sense as well. A flat IS curve relates a small decrease in i with a large increase in Y. Now with a high $i\epsilon_I$, a small $-\Delta i$ will cause a large $+\Delta I$, which, given a large k, will cause a very high $+\Delta Y$. Conversely, the IS curve is steep when $i\epsilon_I$ and k are small.

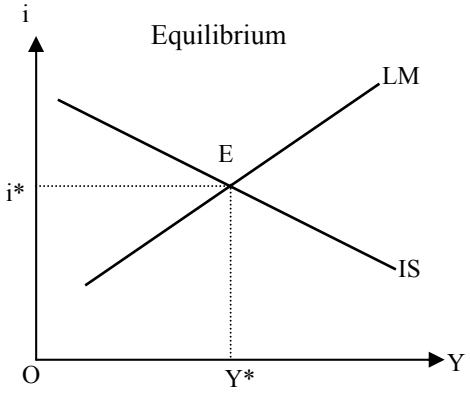
SHIFTS IN THE IS CURVE

Shifts in the IS curve are also easy to understand. Any injection into the circular flow: e.g. autonomous changes in C, G or X-M, which are not caused by an interest rate change, but which do cause an increase in AD and Y, will cause the IS curve to shift to the right. Similarly, IS shifts the left when there is a decrease in these injections.

JOINT EQUILIBRIUM IN GOODS AND MONEY MARKET: THE IS-LM FRAMEWORK

An upward sloping LM curve and a downward sloping IS curve is bound to provide an intersection point which represents joint equilibrium in the money and goods markets. Since the advent of the IS-LM framework in the 1940s, as an extension of Keynesian ideas, macroeconomists have been interested in studying how this joint equilibrium can be affected and brought in line with the full-employment equilibrium (remember the two may not necessarily be the same in a Keynesian world). In particular, their interest has lay in what the government can do, by way of fiscal and monetary policies to guide the economy towards such equilibrium.

© Copyright Virtual University of Pakistan



Expansionary monetary policy:

As mentioned earlier, a real money expansion [i.e. $+\Delta(Ms/P)$] can be produced by either a reduction in P or an increase in Ms (the nominal money supply). Let's assume for the time being that P is fixed and the central bank increase Ms. Ms/P rises. This will cause the LM curve to shift to the right with the effect that interest rates fall and equilibrium income or output will rise. Should the economy operating below the full-employment level, such a policy can clearly help. The reverse process would apply if the central bank reduced money supply in a bid to relieve inflationary of excess demand pressures.

Expansionary fiscal policy:

Similarly, an increase in government spending (G), will cause a rightward shift in the IS curve causing both equilibrium interest rate and income to rise. There is an important intuition as well behind why interest rates would rise in this case (apart from the fact that it is graphically the case). The intuition is related the crowding out effect of government spending.

a. **Crowding out of investment demand:** When the government spends and finances that spending through borrowing from banks or the general public (i.e. does not resort to money-supply expanding means of financing the fiscal deficit), the demand for loan able funds is driven up, causing interest rates to rise and private sector ability to borrow funds to fall. This acts as a drag on AD and Y which consequently do not rise as much as they would have in the absence of crowding out.
b. **Crowding out of net exports demand:** Given that higher government spending causes interest rates to rise one can also see why net exports demand would suffer from such high interest rates as well. As we discussed earlier, higher interest rates would cause the exchange rate to appreciate (interest-parity condition), which in turn would cause competitiveness to fall – thus the negative effect on net exports. As such, high interest rates induced by higher government spending can crowd out both net exports and investment, thus preventing AD and Y to rise as much as they would have had interest rates remained the same.

This takes us to the natural question: what if the government financed higher spending by either asking the central bank to print more money for it, or by borrowing from abroad? This is just another way of stating the question: "what if a government fiscal expansion and a monetary expansion were implemented simultaneously, i.e. the IS and LM curves both shifted to the right?" It is clear that in this case, the negative effects of higher interest rates can be eliminated. Thus, if the economy is in deep recession, the policy prescription should naturally be to simultaneously effectuate both fiscal and monetary expansions.

FISCAL – MONETARY POLICY INTERACTION

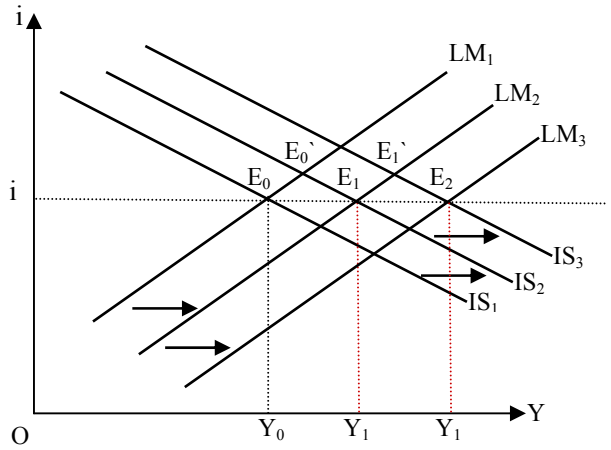
However, if the economy is not in recession and does not, per se, have excess capacity or slack, the above prescribed simultaneous fiscal and monetary expansions cannot succeed in increasing income or output. Why? The reason is prices, which we have so far assumed as constant. However, in reality prices respond readily to demand pressures and as the economy approaches the full employment level, expansionary monetary and fiscal policies will increasingly put pressure on prices to rise (recall the AD-AD diagram).

Now assuming we are in such a situation, i.e. the economy is at its full-employment equilibrium level and the government implements a joint fiscal- monetary expansion, we can trace the effect of rising

© Copyright Virtual University of Pakistan

prices on equilibrium. An increase in P will cause real money supply (Ms/P) to fall, which means the LM curve will shift back. In the goods market, on the other hand, rising prices cause aggregate demand to fall due to wealth, interest-rate, and the international purchasing power effects, we studied earlier. Thus, the effects of expansionary fiscal policy will be reversed as well. The net result is that there is no positive impact on equilibrium income; in fact there might even be a negative impact if inflation becomes very high and starts hurting long-run business confidence and hence investment.

Interaction of the monetary & fiscal policy



A final point about the comparison between the effectiveness of fiscal policy vs. monetary policy is: Which is better and when?

Drawing the IS-LM curves, it is easy to see that when the LM curve is relatively flat, any given fiscal expansion will cause a large effect on income and a relatively small effect on i. Thus, fiscal policy is more effective (desirable) in this setting. On the other hand, when the IS curve is relatively flat, any given monetary expansion will produce a larger impact on income. Monetary policy is more effective in this situation.

EXERCISES

Assume that the government cuts its expenditure and thereby runs a public-sector surplus.

a) What will this do initially to equilibrium national income?
b) What will it do to the demand for money and initially to interest rates?
c) Under what circumstances will it lead to (i) a decrease in money supply; (ii) no change in money supply?
d) What effect will (i) and (ii) have on the rate of interest compared with its original level?

a) Injections will fall. The J line would shift downwards, causing a multiplied fall in national income.
b) This will cause a reduced transactions demand for money. The L curve will shift to the left, causing a fall in interest rates.
c) If the reduced expenditure causes a reduction in government borrowing from the banking sector in such a way as to cause a reduction in banks' liquidity, there will be a multiple contraction of credit. If, however, the government simply reduces the total number of outstanding bonds, then money supply will be little affected.
d) If money supply is reduced, then interest rates will fall less than in (b) above.

Would it matter if it was easy to forge a £10 note but cost £15 to do so?

No. It would not be 'profitable' for forgers to produce such notes.

Why may money prices give a poor indication of the value of goods and services?

- Money prices may be distorted by monopoly power.
- They ignore externalities.
- Simply adding up the money incomes of individuals in order to get a measure of their total incomes ignores questions of the distribution of income.
- The value of money is eroded over time by inflation. Thus nominal prices would have to be converted to real prices in order to compare the values of goods at different points in time.

What effects do debit cards and cash machines (ATMs) have on (a) banks' prudent liquidity ratios; (b) the size of the bank multiplier?

Debit cards: (a) Reduce it (there is less need for cash); (b) Increase it (the liquidity ratio is smaller).
Cash machines: (a) Increase it (there is a greater need for cash); (b) Reduce it (the cash ratio is larger).

If the government borrows but does not spend the proceeds, what effect will this have on the money supply if it borrows from (a) the banking sector; (b) the non-bank private sector?

a) Little or no effect, if it simply replaces one liquid asset by another; but reduce it, if it involves reducing the liquidity of the banking sector (e.g. by the sale of bonds).
b) Reduce it. The liquidity of the banking sector will be reduced (when people pay for the securities with cash withdrawn from the banks, or cheques drawn on the banks).

Under what circumstances are cheques more efficient than cash and vice versa? Would you get the same answer from everyone involved in transactions: individuals, firms and banks?

Cheques are more efficient than cash for large transactions, or when there is a danger of theft of the cash. Cheques are less efficient than cash for small transactions: these have a low value relative to the cost of processing a cheque; also cash transactions are quicker than transactions by cheque.
The above points apply generally, but sometimes, what may be in the interests of one party to a transaction may not be in the interests of the other(s). For example, a shop may prefer to receive cash on occasions where it is more convenient for a customer to write out a cheque (because that saves a visit to the bank or cash machine).

Buying something like a car is at the other end of the spectrum from holding cash. A car is highly illiquid, but yields a high return to the owner. In what form is this 'return'?

The utility per period of time from using it.

Would the demand for securities be low if their price was high, but was expected to go on rising?

No. The demand would be high. People would want to hold the securities, so that they could benefit from the anticipated capital gain.

© Copyright Virtual University of Pakistan

Which way is the L (money demand) curve likely to shift in the following cases?

a) The balance of trade moves into deficit.
b) People anticipate that foreign interest rates are likely to rise relative to domestic ones.
c) The domestic rate of inflation falls below that of other major trading countries.
d) People believe that the rupee is about to depreciate.

a) To the left. A deficit on the balance of trade will cause the exchange rate to depreciate. People, anticipating this, will want to hold smaller rupee balances.
b) To the left. People will want to switch to holding the other currencies where interest rates are expected to rise.
c) To the right. People will expect an appreciation of the rupee as the lower inflation causes the balance of payments to move into surplus. They will therefore want to hold larger rupee balances.
d) To the left.

Trace through the effects on the foreign exchange market of a fall in the money supply.

- The shortage of money balances will lead to a reduction in the purchase of foreign assets and hence a reduction in the supply of the domestic currency on the foreign exchange market.
- The fall in money supply can be represented by a leftward shift in the M_s curve. This will cause a rise in the rate of interest.
- The higher rate of interest will lead to a reduction in the supply of the domestic currency on the foreign exchange market as people prefer to keep their deposits within the country and earn the higher rate of interest. This effect will reinforce the first effect.
- The higher rate of interest will also increase the demand for the domestic currency on the foreign exchange market as people abroad deposit more in this country to take advantage of the higher interest rate.
- The increased demand for and reduced supply of the domestic currency will cause the exchange rate to appreciate. This effect will be reinforced by speculation.

What effect would a substantial increase in the sale of government bonds and Treasury bills have on interest rates?

It would drive them up. In order to sell the extra bills, the government would have to accept a lower discount price (a higher rate of discount). In order to sell the extra bonds, governments would have to offer them at a higher rate of interest, or at a lower price for a given interest payment (which amounts to a rise in the interest rate). These higher rates of interest on government securities would have a knock-on effect on other rates of interest.

If banks choose to operate a 20 per cent liquidity ratio and receive extra cash deposits of Rs.10 million:

a) How much credit will ultimately be created?
b) By how much will total deposits have expanded?
c) What is the size of the bank multiplier?

a) Rs. 40m
b) Rs. 50m
c) 5 (= 1/0.2)

If banks operated a rigid 5 per cent cash ratio and the government reduced the supply of cash by Rs.1 million, how much must credit contract? What is the money multiplier?

Assuming that this resulted in Rs.1 million less cash being held in the banking system (i.e. that the proportion of cash in circulation did not fall), then credit must contract by Rs.19 million, giving an overall reduction in money supply of Rs.20 million (of which the Rs.1 million cash is 5 per cent). The money multiplier is therefore 20 (i.e. 1/5%).

Explain how open-market operations could be used to increase the money supply.

The central bank could buy back bonds from the banking system before they reached maturity. The banks' balances in the central bank would be credited, allowing the banks to create more credit.

Why would it be difficult for a central bank to predict the precise effect on money supply of open-market operations?

a) Banks may vary their liquidity ratio.

b) It is difficult to predict how much the holding of Treasury bills by the banks will vary, and how much the banks will take this into account when deciding how much credit to grant.

Assume that the central bank of UK (called the Bank of England) wants to reduce interest rates. Trace through the process during the day by which it achieves this.

The BoE's Monetary Policy Committee will announce a reduction in the rate of interest. BoE will then conduct open market operations to back this up. This will entail making more liquidity available to banks through gilt repos. Assuming that the reduction in the rate of interest was announced the previous day, then early in the morning the BoE will forecast the day's shortage of liquidity in the banking system (at the new lower interest rate) and will offer assistance to banks through repos and rediscounting in order to meet the shortfall. By making additional assistance available at further points during the day, the Bank can adjust liquidity as necessary to maintain the rate of interest at the new level.

In what ways is the US Fed's operation of monetary policy (a) similar to and (b) different from the Bank of England's?

a) The Fed, like the Bank of England, uses open market operations to influence the money supply and thereby to make the announced discount rate the equilibrium rate. If the discount rate is raised (just as when the Monetary Policy Committee of the bank of England raises the rate of interest) then open market sales of bands and Treasury bills are used to back this up.

b) Unlike the Bank of England, however, the Fed also from time to time alters the minimum reserve ratio as a means of influencing bank lending.

If the Bank of England issues £1 million of extra bonds and buys back £1 million of Treasury bills, will there automatically be a reduction in credit by a set multiple of £1 million?

No. It depends on the proportion of the £1 million of bills that were held by the banks (since only by reducing these will there be a reduction in banks' liquidity). It also depends on banks' willingness to vary their liquidity ratio. Finally, it depends on banks' use of repo and rediscounting facilities available through the Bank of England (if these are used by the banks as a means of maintaining short-run liquidity, there is less pressure on them to reduce credit).

Trace through the effects of a squeeze on the monetary base from an initial reduction in cash, to banks' liquidity being restored by the rediscounting of bills. Will this restoration of liquidity by the Bank of England totally nullify the initial effect of reducing the supply of cash? (Clue: what is likely to happen to the rate of interest?)

Banks, short of cash, will, in the last resort, acquire money from the Bank of England through gilt repos or the rediscounting of bills. But the Bank of England will only do this at a penal rate, thereby driving up interest rates (to its announced level, assuming that it has raised the rate of interest) and thereby reducing the demand for money, and hence the quantity of credit supplied.

If the central bank wanted to achieve a lower rate of inflation and also a higher exchange rate, could it under these circumstances rely simply on the one instrument of interest rates?

A higher interest rate would help both to reduce inflation and push up the exchange rate. The problem is that the desired magnitude of these effects may require a different sized increase in interest rates. If this were the case, then again relying on one instrument alone would not be sufficient.

Why does an unstable demand for money make it difficult to control the supply of money?

Because the supply of money depends in part on the demand for money.

Assuming that real national output, Q, rises each year as a result of increases in productivity, can money supply rise without causing inflation? Would this destroy the validity of the quantity theory?

Yes. If V does not change, then for every one per cent that output (Q) rises, so M can also rise by one per cent without causing the price level (P) to rise.

This does not destroy the validity of the quantity theory. Although the theory states that changes in money supply will not cause changes in output, it still allows for changes in output occurring independently of changes in money supply, in which case there can be an accommodating rise in the money supply without it being inflationary.

Could production and consumption take place without money? If you think they could, give examples.

Yes. People could produce things for their own consumption. For example, people could grow vegetables in their garden or allotment; they could do their own painting and decorating. Alternatively people could engage in barter: they could produce things and then swap them for goods that other people had produced.

If we would all like more money, why does the government not print a lot more? Could it not thereby solve the problem of scarcity 'at a stroke'?

The problem of scarcity is one of a lack of production. Simply printing more money without producing more goods and services will merely lead to inflation. To the extent that firms cannot meet the extra demand (i.e. the extra consumer expenditure) by extra production, they will respond by putting up their prices. Without extra production, consumers will end up unable to buy any more than previously.

What do you know about the leads and lags associated of monetary and fiscal policy?

Lead time, or the minimum time the government needs before invoking the policy. This is obviously negligible for monetary policy, as the central bank can instantly take action to affect money supply (either through direct or indirect means). Lead times for fiscal policy invocation, however, can be quite substantial. Consider an economy where aggregate demand falls in September, and the next budget is not due till June the following year. Here fiscal policy requires a lead time of about 9 months! (a long enough time period for demand conditions to have changed or evern reversed).

Lag time, or the time period taken for a policy change to have an impact, is quite small for fiscal policy. Thus an increase in taxes will usually have an immediate demand-dampening effect, as consumers feel the pinch on their disposable income. By contrast, a change in the money supply takes a long time to have a demand impact. This is because the credit/investment channel for monetary policy transmission takes about two years to act. For e.g., if money is tightened today and interest rates rise, firms' response will be reflected in lower investment outlays in about two years' time. The projects already underway or likely to come online inside two years cannot usually be reversed and hence current investment spending will remain unaffected.

What would be the effect on interest rates of a contractionary monetary policy combined with a contractionary fiscal policy (lower spending, lower borrowing from the central bank)..

Both IS and LM would shift to the left. The impact on equilibrium income is obvious (it will fall), but nothing immediately can be said about interest rates, as the two policy changes have opposite effects on the interest rate. However, it should be ntoed that since the fiscal policy contraction is also causing the monetary base (and henc emoney supply) to contract – "credit to government" and "M0" both fall on the central bank balance sheet due to the government reducing its borrowing therefrom. There will be thus be an additional monetary contraction, which makes a rise in interest rates more likely.

On an IS-LM diagram, trace through the effects of (a) a fall in investment and (b) a fall in the money supply. On what does the size of the fall in national income depend?

a) The IS curve will shift to the left. There will be a resulting fall in the rate of interest and a fall in national income. The fall in national income will be greater, (i) the flatter the LM curve – i.e. the less the rate of interest has to fall to bring equilibrium in the money market; (ii) the steeper the IS curve – i.e. the less will any fall in the rate of interest help to boost investment again (after its initial fall).
b) The LM curve will shift to the left. There will be a resulting rise in the rate of interest and fall in national income. The fall in national income will be greater,(i) the flatter the IS curve – i.e. the more investment is reduced by the rise in interest rates; (ii) the steeper the LM curve – i.e. the more interest rates will have to rise (and hence the more investment and national income will fall) in order to restore equilibrium in the money market..

Explain what could cause a downward shift in the LM curve and how this would affect the AD curve.

The LM curve would shift downwards if either of the following occurred: (a) an increase in the supply of money; (b) a fall in the demand for money, other than as a result of a rise in interest rates (this could occur, for example, if people relied more on credit and less on cash).

The effect of the downward shift in the LM curve is a fall in the real rate of interest and a rise in national income. The rise in national income causes an increase in aggregate demand at any given price

level: i.e. the AD curve shifts to the right. (Whether the price level will rise and hence nominal interest rates, will depend on the shape of the AS curve.)

Why do 'ever more rapid financial flows across the world that are unpredictable and uncertain' make Keynesian discretionary fiscal (and monetary policy) less suitable?

Because the interest-rate and exchange-rate effects of fiscal policy changes will cause crowding out. Also, the unpredictability of international financial flows makes the effects of fiscal (and monetary policy) changes less predictable.

Show what will happen if there is (a) a rise in business confidence and a resulting increase in investment; (b) a rise in the demand for money balances (say for precautionary purposes).

a) The IS curve will shift to the right. The effect is the same as with an expansionary fiscal policy.
b) A rise in the demand for money will shift the LM curve to the left. The effect will be the same as with a contractionary monetary policy.

Compare the relative effectiveness of fiscal and monetary policies as means of expanding aggregate demand under a system of floating exchange rates.

Monetary policy would be relatively effective. An expansion of the money supply will reduce interest rates. This will increase aggregate demand directly; lead to a depreciation in the exchange rate, which will increase exports and reduce imports, thereby further stimulating aggregate demand; cause initial exchange rate overshooting, reinforcing the boost to demand from increased exports and reduced imports.

Fiscal policy will be relatively ineffective. A cut in taxes and/or an increase in government expenditure will increase the transactions demand for money and thus increase interest rates. The exchange rate will appreciate. This will have the effect of dampening the rise in aggregate demand.

Under what circumstances would an expansionary fiscal policy have no effect at all on national income?

(i) The greater the degree of capital mobility, the bigger will be the balance of payments surplus resulting from the expansionary fiscal policy (and the higher interest rates it produces), and the more the exchange rate will appreciate, and hence the more aggregate demand will be reduced again through exports. (ii) The greater the price elasticity of demand for imports and exports, the more the appreciation will reduce aggregate demand again. The bigger these two effects, the more likely it is that fiscal policy will have no effect on national income under floating exchange rates.

How would a monetarist answer the Keynesian criticisms given below?

1. 'The time lag with monetary policy could be very long.' Monetarists do not claim that monetary policy can be used to fine tune the economy. It is simply important to maintain a stable growth in the money supply in line with long-term growth in output.
2. 'Monetary and fiscal policy can work together.' onetarists would argue that it is the monetary effects of fiscal policy that cause aggregate demand to change. Pure fiscal policy will be ineffective, leading merely to crowding out.
3. 'The velocity of money is not stable, thus making the predictions of the quantity theory of money – i.e. that monetary growth must necessarily lead to inflation – is unreliable.' Monetarists would accept that the velocity of money circulation fluctuates in the short term, but they will argue that there is still a strong correlation between monetary growth and inflation over the longer term.

'Changes in aggregate demand cause changes in money supply and not vice versa.' Monetarists would argue that if governments respond to a rise in aggregate demand by allowing money supply to increase, then that is their choice to expand money supply. If they had chosen not to and had pursued a policy of higher interest rates, then money supply would have thereby been controlled and aggregate demand would soon have fallen back again.

© Copyright Virtual University of Pakistan

Lesson 44

INTERNATIONAL TRADE AND FINANCE

INTERNATIONAL TRADE

By international trade, we mean the exchange of goods and services between different countries. For any individual country, trade is important for several reasons: the trade balance drives the BOPs and deeply influences foreign exchange reserves and the exchange rate; trade helps determine the overall production and consumption possibilities in the economy (both in the static and dynamic contexts, as we shall see below); net exports are an important component of aggregate demand, and hence income and employment; and so on.

Interesting Facts about the World Trade:

Four interesting facts about world trade help place it in perspective:

i. The value of world trade has increased 20 fold over the 1930-2000 period
ii. On average, the contribution of a country's exports to its GDP has doubled from about 30% to 50% over the same period
iii. Over the last 50 years, the share of world exports has changed from 50%-50% between manufactured goods and primary products to 75%-25% in favor of manufactures.
iv. 50% of world trade happens between HICs, 14% happens between LICs and the rest involves both HICs and LICs.

Why do countries trade?

Countries involve in trade because there are mutual gains from trade. But then, what are these gains, and how are these realized? Comparative advantage theory provides the first answers to such questions. The theory says that countries will gain by specializing in and then exporting the good they have a comparative advantage (or lower opportunity cost advantage) in.

THE CONCEPT OF COMPARATIVE ADVANTAGE

To illustrate the concept of comparative advantage, we take the example of two equi-sized equi-endowment countries, US and UK. US produces 40 and 60 units of cotton and food p.a. respectively (using all available resources), while the UK produces 30 and 20 units of cotton and food p.a. respectively (using all available resources). Clearly, the US has an absolute advantage in the production of both cotton and food. By absolute advantage it is meant that the US is more efficient at producing both food and cotton than the UK. However, upon computing the opportunity costs of producing cotton and food in either country, is revealed that the opportunity cost of producing one unit of cotton in the US is 1.5 units of food, whereas the opportunity cost of producing one unit of food in the US is 0.67 units of cotton. By comparison, the opportunity cost of producing one unit of cotton in the UK is 0.67 units of food, whereas the opportunity cost of producing one unit of food in the UK is 1.5 units of cotton. Thus, the US has a lower opportunity cost (comparative advantage) in the production of food while the UK has a lower opportunity cost (comparative advantage) in the production of cotton. By specializing in the goods they have comparative advantage in and then trading between them, both two countries can enhance their consumption possibilities beyond those implied by autarky (i.e., a situation of no trade where the PPF and CPF are the same).

THE SOURCE OF COMPARATIVE ADVANTAGE

The source of comparative advantage can be productivity differentials (Ricardo) or differences in factor endowments (Hechshcer-Ohlin). In the latter case, given two countries (one abundant in labour and one abundant in capital), and a labour-intensive good and a capital intensive good, the labour abundant country will have comparative advantage in the production of the labour-intensive good while the capital abundant country will have comparative advantage in the capital-intensive good.

A natural policy prescription emanating from the above argument was that LICs which are often abundant in labour should produce primary products while rich countries alone should produce capital-intensive goods.

CRITICISM AGAINST HECHSHCER-OHLIN TYPE TRADE THEORIES

The major criticism leveled against Hechshcer-Ohlin type trade theories are that they views comparative advantage in an essentially static sense; i.e. if Pakistan is better at producing cotton and Japan better at

© Copyright Virtual University of Pakistan

producing, then this situation will always prevail. Critics argued that comparative advantage can and should be viewed in a dynamic (time-varying) sense, and that it was not wise to rule out the possibility of Pakistan developing comparative advantage in cars at some future point in time.

Naturally, the policy advice of such dynamic comparative advantage theorists was very different from 6 above. These people argued that countries build comparative advantage in capital-intensive goods by protecting their domestic industries against cheap manufactured imports from abroad. The protection is operationalised through tariffs (tax on imports) or outright quota restrictions. The output from the local infant industries (protected in this way) then be used to substitute imports of manufactures. Many LICs (e.g. Mexico, India) religiously followed this policy prescription in the mid-20th century, but with mixed results.

While it is true that many countries pursued, fully or partly, the policy prescription suggested by dynamic comparative advantage theories, only a handful of them were genuinely successful in changing their comparative advantage: Korea developed comparative advantage in the auto industry, Taiwan in microchips, Malaysia in shipbuilding and consumer electronics, Brazil in light aircraft. Of these, most countries (like the East Asian tigers) had a marked export orientation in their industrialization and trade policies. This is what set them apart from the failures, which had a more import-substituting approach to industrialization. These issues are taken up again in lecture handout 45.

WELFARE EFFECTS OF TARIFF

It is important to understand what the welfare effects of a tariff are. While a tariff may seem desirable because it generates revenue, and may help protect domestic producers, it can often leave domestic consumers quite worse off. This is because domestic producers only have to compete with the higher (tariff-inclusive) price of imported goods, not with the actual price those goods are being produced at. Thus domestic consumers in a way are forced to consume goods produced by less efficient domestic producers.

OPTIONAL: It is instructive to place trade theories in the context of the actual history of the international trading system. In particular, it is useful to see:

i. How trade liberalization efforts have proceeded under the GATT/WTO[8] framework?
ii. If the recent rise in regionalism a threat to multilateral trade liberalization and the WTO system?

INTERNATIONAL FINANCE

International finance is concerned with, among other thing, the mobility of financial capital across countries, and the problems and opportunities this mobility presents individual countries with. It would not be too inaccurate (in present day context) to say that while international trade deals with the current account, international finance deals with the capital account of the BOPs. That said, issues like the choice of exchange rate regime and of modern-day balance of payments crises also fall firmly within the purview of international finance.

Types of Transaction on the Capital Account:

It is useful to recall the major types of transactions recorded on the capital account: foreign direct investment, foreign portfolio investment, debt flows and aid flows. FDI and FPI are examples of essentially private capital flows. Debt flows could be official (involving multilateral agencies or other country governments) or private (commercial). Aid flows are almost always official.

Growth in Private Capital Flows:

There has been a phenomenal growth in private capital flows since the 1990s. To give an example, the value of capital flow transactions has risen to about 100 times the value of trade transactions. This was not always so, as until a long time after the start of the 20th century, trade flows remained either equal to or greater than private capital flows!

The rapid rise in private capital flows highlights the speed of integration of financial markets across the world. Innovations in communications technology and financial market engineering today permit cross-country transactions worth billions of dollars to be executed in real-time. At the same time, capital account liberalization in many countries, rich and poor, has played an important role in boosting these flows.

[8] GATT stands for the General Agreement on Tariffs and Trade; WTO stands for World Trade Organization.

© Copyright Virtual University of Pakistan

INTERNATIONAL CAPITAL MOBILITY

The case for international capital mobility was most clearly articulated by MacDougal in 1960. He presented a framework involving two countries, one abundant in financial capital and one scarce in financial capital. As has been discussed earlier, the abundance of money within an economy leads to low interest rates, whereas its scarcity causes interest rates to be high. Thus, the capital-rich country has low interest rates, while the capital-scarce country has high interest rates. As a result, there is over-investment in the former, and under-investment in the latter.

If both countries could jointly liberalize their capital accounts, some of the capital would fly from the capital-rich countries to the capital-scarce countries to take advantage of the higher interest rates prevailing there. This would equalize the supply of capital in both countries causing their interest rates to equalize. Thus, desirably, interest rates in the formerly capital-rich country rise (causing over-investment to disappear), while interest rates in the formerly capital-scarce country fall (causing under-investment to disappear). Another way to state this is that capital would flow to (or be allocated to) its most productive uses.

BENEFITS OF INTERNATIONAL CAPITAL MOBILITY

People have suggested other benefits of international capital mobility:

i. **Consumption smoothing:** the ability to borrow from the international capital market allows a country to sustain a higher level of expenditures in times of recession or current account difficulties, than would be possible if the economy were not integrated into the international financial market.

ii. **Risk diversification:** given international investors' ability to invest in other the assets (bonds, stocks, property etc.) of countries other than their home countries permits them to diversify their investment risks. Similar benefits may also accrue to issuers of debt (or borrowers of capital) who now enjoy a more diversified creditor pool. This enables them to bargain down their borrowing rates as well as cushions them in the face of any one of the funding sources drying up.

iii. **Fiscal policy becomes more effective:** Given fixed exchange rates, expansionary fiscal policy would not have any crowding out effects if the capital account is open. This is because as soon as interest rates begin to rise due to higher government borrowing (to finance the higher spending), capital flows in through the capital account, which given a fixed exchange rate, expands the foreign exchange reserves and hence the money supply. This is tantamount to the LM curve to shifting to the right. As such, given excess capacity in the economy, income and output rises by much more than would have been possible without an open capital account. By similar logic, the effects of a fiscal contraction on income become more pronounced given a fixed exchange rate and open capital account.

DISADVANTAGES OF INTERNATIONAL CAPITAL MOBILITY

As with everything else in economics, there is another side to the story as well; i.e. there are disadvantages of free capital mobility as well, and it is important to understand them in order to form an informed view on the issue.

i. **Monetary policy becomes ineffective:** Given fixed exchange rates, imagine what would happen if the central bank tried to increase money supply. LM would shift down putting downward pressure on the interest rates. However, as soon as domestic interest rate falls below the world interest rate, the capital account starts experiencing a deficit (outflows). This outflow is mirrored by a fall in foreign exchange reserves which causes a money supply contraction. Thus the effects of the initial expansion are totally undone. The inability of a country to retain monetary policy autonomy, at the same time as a fixed exchange rate and an open capital account is called the unholy trinity principle. The unholy trinity principle simply says that the three things above cannot coexist; one must be sacrificed. It can be monetary autonomy or capital account openness or fixed exchange rates.

ii. **Capital flows are pro-cyclical and therefore exacerbate boom-bust cycles:** One of the criticisms of global capital is that it moves in sync with countries' business cycles, thus

magnifying economic fluctuations (rather than smoothing them out); e.g.: more foreign money would flow to a country when it is experiencing a capital inflow boom (i.e. exactly the time when it does not need more money, per se) often leading to credit booms, property bubbles, inflationary pressures, loss of competitiveness and BOPs problems. Conversely, when conditions are tight, and countries are need foreign capital, the latter is not available, as all foreign investors "want out."

iii. **Global capital is highly volatile, making countries targets of speculation:** Some types of capital flows are more volatile than others. For example, foreign direct investment, official concessional aid etc. is more stable than foreign portfolio investment, and commercial bank lending, which are immediately reversible. The recent rise in capital flows reflects an asymmetric increase in this highly reversible and short-term type (also called hot money). Capital follows short term rates of return (1-6 month interest rates for e.g.) in the world, and as soon as this rate falls in one country, it exits that country and enters another with a higher rate, with no regard for the effects on the economy left behind (stock market crash, recession, financial crisis). Also, due to this inherent volatility, the timing and volume of these flows is often determined by financial speculators, increasing the likelihood that any BOPs difficulties and financial or currency crises will be attributable more to a reversal in such investors' preferences and attitudes than to a weakening of the affected country's macroeconomic and financial sector fundamentals (healthy financial system, low inflation, stable real exchange rate, absence of unholy trinity etc.). There is agreement that the recent spate of financial crises in Latin America, East Asia and Russia was at least partly due to such speculation activity (and subsequent herding behavior of investors[9]).

SUGGESTIONS TO CURE THE PROBLEMS OF GLOBAL CAPITAL MOBILITY

Given these problems with global capital mobility, there are three major cures suggested. The first focuses on recipient countries and the importance of these countries to further strengthen their financial and macroeconomic fundamentals. The second focuses on reforming the international financial architecture in a way that speculators and irresponsible herding behavior can be discouraged (through a threat of penalty). Also this approach argues for the setting up of an international lender of last resort which could lend to countries in dire need of foreign exchange, so that full-blown crises can be avoided. The third approach stresses the use of tax-like controls on capital movements, structured so as to penalize round-trippers more heavily.[10] This approach recognizes that the main culprit in modern day financial crises is often foreign investors, and therefore host countries themselves should find ways to control (and tame) them. Supporters of this policy route also point out the difficulties, or lack of international willingness to, reforming the international financial architecture.

OPTIONAL: For a detailed discussion on crises, and also on how exchange rate policy can help avert them.

[9] Herding is a term used to describe how investors enter and exit countries, i.e. all at once. Thus, if foreign investors have invested money in a country and some of them (and these are usually the ones with greater speculative tendencies) think the economy is going down and it's time to take their money out, and they act on their expectations, the other investors will all follow their lead. This is because the other investors would not want to take the chance of staying behind and suffer through either a devaluation of the currency of a BOPs crisis. However, by acting together, they often lead to greater losses for both themselves and the host country. Importantly, herds are often defined in regional terms, i.e. if investors take their money out of one economy in a region, foreign investors in the other regional economies will join the herd as well, plummeting the whole region into crisis. In the very recent crises of the late 1990s, such crisis contagion was also seen between regions, i.e. an *exit Asia* strategy being followed by an *exit all emerging markets* strategy (irrespective of whether those markets are in Asia or in Latin America or in Central or South Asia).

[10] Chile, for e.g., imposed an unremunerated reserve requirement on all foreign capital coming in. The requirement essentially was that 10% of any individual investment inflow would have to be deposited with the Chilean central bank for a fixed period of one year. For long-term investors, the implied tax of such a requirement would be small, but for round-trippers who wish to bring money in and out of Chile several times within a year, the tax would be huge.

© Copyright Virtual University of Pakistan

Lesson 45

PROBLEMS OF LOWER INCOME COUNTRIES (LICs)

There are huge income and wealth disparities in the world we live in. Roughly one-fourth of the world's population accounts for on three-fourths of the world's resources and consumption. The per capita income in the world's poorest countries is $330 per year whereas in the richer countries, is $24,000 a year – about 70 times higher!

More worryingly, contrary to expectations and wishes, these disparities have not gone away since the 1950s – the time when many of the world's poorest countries (colonies) got independence. In some cases (e.g. Africa), disparities appear to have actually increased, widening the living standards gap between the first and third worlds. Many people in the Third World live in extreme poverty beyond the wildest imagination of the people living in HICs.

THEORIES ABOUT THE PROBLEMS OF LICs

In order to explain this huge problem of poverty and of the asymmetric ownership of wealth and income in the world, economists have come up with many theories.

1- Poverty trap theories:

Poverty trap theories explained the relative poverty of the Third World in the context of the twin gaps: foreign exchange gap (exports being less than required imports) and an underlying savings gap (domestic savings being less than required investment).[11] As a result, the LICs' economies were caught in the vicious cycle of low saving, low scale of investment, low productivity gains (due to the absence of scale economies), low per capita growth (remember productivity and technological progress were the engines of PCI growth), low savings …….

2- The Prebisch-Singer Hypothesis (PSH):

A rival theory was the Prebisch-Singer Hypothesis (PSH), which located the reasons for this persistent poverty in the structure of trade between the rich and poor countries. The PSH maintained that that LICs were stuck in the production of primary products (as prescribed by static comparative advantage theories like Hechshcer-Ohlin prescribed) which were subject to both volatility and declining prices relative to manufactures and capital goods.[12]

Some economists pointed out the **lack of human, social and public capital in LICs** as the single most important factor distinguishing them from, say, post-WW2 Germany and Japan, countries which were able to rebuild themselves from total destruction to great economic prosperity on the back of a strong and skilled workforce (human capital), well-developed institutions like trust, meritocracy and accountability (social capital), and elaborate communications, energy and housing infrastructures (public capital).

Others drew attention to the **very fast rising populations in LICs,** and the particular social and economic pressures created thereby. Coupled also with disease and severe ethnic and regional conflicts, some saw the situation in LICs as virtually ungovernable.

Lack of precious natural resources (like oil, gold, gas, iron, copper etc.) was also cited by some as the reason for LICs' continued poverty, and examples were given of South Africa and the OPEC countries, many of whom were able to raise living standards solely on the back of natural resource exports. Strong counter-argument exist against this theory, for e.g., the LICs which registered the highest rates of industrialization and GDP growth during the last four decades, namely: Korea, Taiwan, Hong Kong, Singapore, did not possess any significant natural resources. The same is true for Japan in the 20th century and the European countries in the 18th and 19th centuries.

[11] Recall from the discussion under BOPs that M-X = I-S + G-T, and thus, for a given G-T, I-S and M-X go hand in hand.

[12] Refer also to the micro lectures on elasticity where the BOPs problems of LICs are explained in the context of income price and substitution elasticity's.

© Copyright Virtual University of Pakistan

DEVELOPMENT STRATEGIES

Keeping the reasons for persistent poverty in LICs aside, there are three broad development strategies that have been adopted to address the situation.

1- DEVELOPMENT THROUGH TRADE

Up till the 1970s, it was thought that LICs needed to develop their import competing industries (import-substituting industrialization), reduce their dependence on consumer goods imports by switching to domestically produced goods, and hence gradually attain self-sufficiency and foreign exchange adequacy. Inspired by dynamic comparative advantage theories and the massive Soviet industrialization drive launched under Stalin, this model was passionately followed by many South Asian, African and Latin American countries. The results were not very positive, unfortunately. For one, the nationalization policies that often accompanied the pursuit of the ISI model led to a crowding out of private entrepreneurship (and with it, the spirit of competition), and the birth of highly inefficient public enterprises, which later became a breeding ground for corruption, nepotism and labour dumping (excess hiring). Second, the huge savings expected on imports never quite materialized. Given the large current account deficits delivered by weak exports and stubbornly high imports, therefore, many of these countries went into BOPs crises after the 1970s.

The East Asian Model:

A rival trade model which proved very successful was the East Asian one. These countries (Korea, Indonesia, Taiwan, Hong Kong, Singapore, Malaysia and to a lesser extent Thailand, Indonesia and The Philippines) were industrialized not to produce for the local markets (i.e. to substitute their imports) but to produce for the international market (competing with foreign producers). As a result they had a focus, from the very start, on productive efficiency and did not rely on high tariff protection for very long and therefore attained a sustainable ascent on the comparative advantage ladder (from primary products to high tech goods). These are the countries which have been the fastest growing (or miracle) economies of the last quarter of the 20th century.

The success of the East Asian model, notwithstanding, there is **major criticisms** that are leveled against richer countries with respect to their double standards on trade. The criticism is that, while supporting free trade internationally and whenever it suits their interests, many of these countries impose quotas, tariffs, subsidies and indirect restrictions (environmental and labour standards etc.) to prevent poor countries from selling their primary products and light manufactures to the rich country markets. One example is the agricultural sector, where the wealthy west gives lavish subsidies to its farmers, enabling the latter to out-compete LIC farmers who are not receiving any subsidies form their governments. One argument, therefore, is to require rich countries to open their markets to exports from poor countries.

2- DEVELOPMENT THROUGH RESOURCE TRANSFER

The main idea here was that (as mentioned earlier) poor countries suffered from savings and foreign exchange gaps that could not be filled domestically, and needed to be funded by some sort of international resource transfer from the rich countries (former colonial powers called "donors") to the poor countries (those which got independence in the mid-20th century). Supporters of the model were basically those who felt that the colonizing west needed to take responsibility for the exploitation of the colonized Third World. The best way to do it was to give aid: both grants (which never had to be repaid) and concessional loans (which had to be repaid on very soft terms) to poor countries to help them in their initial years and to facilitate their entry into the group of prosperous nations.[13] For this reason, the UN charter of 1948 prescribed an annual 0.7% (of GNP) contribution by all rich countries to poor countries.

However, aid has not generally been successful in lifting former colonies out of poverty. Living standards in many of the aid-receiving countries have actually fallen, indicating a clear failure of aid. There are many reasons why this could have happened, but the most important ones are perhaps the misuse of aid proceeds by recipient country governments through misallocation, embezzlement and

[13] An early example of the success of aid was post-World War II Germany, which received a lot of financial assistance from the U.S. (Marshall Plan) and managed to become an economic giant inside 2 decades after the end of the war. It was hoped that by giving aid to other poor countries, the same result would obtain.

© Copyright Virtual University of Pakistan

corruption; the negative role of donors in forcing recipient countries to use aid proceeds for importing the goods and services from only the donor country; the politicizing nature of aid and its associated conditional ties[14]; aid fatigue on the part of donors (i.e. tiredness resulting from having to give aid year after year without any concrete benefits), the inadequacy of aid (the aid given has never quite been enough, and only about 0.35% of rich country GNP has been allocated as development aid); the crowding out of domestic savings (that is, as aid comes into the country the incentive for local citizens to save reduces, thereby compounding the low saving rate problem of poor countries).

Official aid is not the only type of resource transfer. There are private capital flows (portfolio investments and bank lending) that can also fill resource gaps in LICs. However, the experience with these has not been successful either. The debt crisis of the 1980s in Latin America, Africa and Asia, and the recent spate of financial crises in Mexico, East Asia, Russia, Brazil and Argentina have all testify to the dangers of modern day private capital flows. Such flows are highly reversible and often pro-cyclical accentuating boom-bust cycles in recipient countries.

Due to the failure of the above alternative types of resource flows, attention has, of late, shifted to foreign direct investment (FDI). This type of resource transfer has been deemed more successful than others due to its ability to relieve three constraints simultaneously: the foreign exchange and savings constraints (mentioned earlier), the skills constraint (the fact that LICs do not have the skills – managerial or technical – for industrial upgrading and export market tapping). FDI had been unwelcome in many LICs in the 1950s and 60s as it was seen as a continuation of colonialism. Foreign money coming into one's country was one thing, foreign firms coming, operating and taking control quite another! Indeed there was the perceived risk that foreign firms would take over the strategic sectors of society – financial services, communications and power. Over time, LICs' aversion to FDI has decreased considerably. Many now recognize the benefits of irreversible FDI and its skill-transfer related advantages for countries lacking in stability and human capital, respectively. Indeed, countries which have relied on FDI more than debt and portfolio investments to integrate into the global economy (China, Chile and many of the East Asian tigers), have been the most successful development examples of the last 25 years.

OPTIONAL: For a detailed review of the alternative forms of resource transfer and their relative merits.

3- DEVELOPMENT THROUGH STABILISATION AND REFORM

The reasoning here was that trade and resource transfer could not, by themselves, lift LICs out of poverty. Unless LICs' macroeconomic imbalances (high inflation, current account deficits etc.) were removed (stabilization), and the structural impediments to their growth relieved (structural reform), trade and resource transfer could not translate into long-term improvement in living standards. This became particularly obvious after the 1980s debt crisis that swept across Latin America, Africa and Asia. It is at this point in time that the two international financial institutions (IFIs) – the International Monetary Fund (IMF) and the World Bank (WB) – became involved in macroeconomic stabilization and structural reform, respectively. Importantly, the countries in which the IFIs got involved, did not have much bargaining power vis-à-vis the IFIs, because the latter had bailed out these countries (by offering them soft multilateral loans) out after their debt defaults. As a result, the IFIs were able to determine the pace and direction of macroeconomic policy reform in these countries. For a summary of the origins of the IMF and the World Bank and their structure and ownership, please see IFIs.ppt.

IMF'S STABILIZATION POLICIES

Most of the IMF'S stabilization policies (and indeed WB's reform ones) were derived from neo-classical economics, known since 1990 as the "Washington Consensus". IMF's main stated objective was to ensure both through internal balance (supply=demand, i.e. low inflation, full employment) and external balance (sustainable BOP and external debt position). The approach was "stabilization" through "demand" management, the three tools of the latter being:

[14] These conditional ties are often perceived as an infringement of the freedom of the recipient country, making the pursuit of *donor-prescribed* policies politically unviable.

- **Tight monetary policy:** "demand reducing"; expected to work via higher interest rates which reduced private sector consumption and investment demand, suppressed inflation and boosted domestic savings. High interest rates also caused higher capital inflows (lower capital flight) and helped restore external balance via the capital account.
- **Tight fiscal policy:** also "demand reducing"; worked via higher revenues (increased taxation and broader tax base) and reduced expenditure on subsidies, public sector corporations etc. There was also reduced demand (including, for imports) and government's borrowing requirement (boosted the creditworthiness of the government as a borrower making borrowing cheaper).
- **Devaluation:** produced "demand switching" from imports to home produced tradable goods. Worked via increased competitiveness, export diversification, reduced need for export subsidies (as exporters became competitive), and increased investor confidence in the local currency (preventing dollarisation by people fearing an impending devaluation).

LICs' experience with IMF policies has generally not been successful: The above policies have drawn heavy & wide-ranging criticism. Critics have drawn attention towards

- **Short-term policy conflicts:** demand management policies compromise internal balance – esp. Income & employment; lower government expenditure means less output, jobs. Higher interest rates can lead to corporate bankruptcies, bad debts and financial sector crises.
- **Devaluation** can raise prices of imports, including necessities, raw materials and investment goods. Also, devaluation translates into inflation when there is real wage resistance; i.e. when a devaluation-induced rise in import prices feeds fully into the domestic price level through wages.
- **Demand-reduction policies** are anti-growth: increased taxation can stifle the productive sector, as widening the tax net proves difficult and most of the burden falls on a few taxpayers; cutting government expenditure can cause reduced public investment in infrastructure, education and health; higher interest rates can discourage private investment.
- **Stabilization hurts the poor:** expenditure cuts almost always fall partly on the social sectors most relevant to the poor (health, education, food/fertilizer subsidies etc.). This can lead to political instability, jeopardize economic stabilization and delay or reverse "reform". Esp. difficult for democratic governments to push the harsh stabilization measures through.

It is now recognized that these policy conflicts need to be integrated into the Programme in advance through the institution of proper safety nets for the poor, and assurances that all "IMF-induced" aid (or debt relief) is channeled strictly to poverty reduction programmes.

WORLD BANK'S STRUCTURAL REFORM POLICIES

The World Bank's structural reform policies have usually involved the following:

- Liberalization of prices, removal of subsidies
- Deregulation involving dismantling of licensing systems and red-tape
- Privatization of state-owned enterprises (SOEs). SOEs were usually considered inefficient due to political interference, and a lack of competition, cost awareness and fear of bankruptcy
- Trade liberalization, including tariffication of non-tariff-barriers, harmonization of tariffs and an eventual reduction thereof
- FDI liberalization, to create a transparent, predictable environment for foreign investors to operate in
- Financial liberalization, involving ending of financial repression policies (artificially low interest rates, credit rationing, restrictions on banking competition) and government involvement in investment allocation
- Capital account liberalization, i.e. removing controls on capital flows
- Governance and administrative reforms: reducing waste in, and improving reliability/quality of, pubic services; strengthening tax administration; fiscal decentralization; elimination of corruption; enhancing predictability of legal and regulatory framework; reducing over-employment in public sector

© Copyright Virtual University of Pakistan

While most of the policies prescribed by the World Bank appeared desirable, some of them came with conditional ties that were perceived as politically sensitive, "patronizing", and involving dismantling of strong entrenched interest (like domestic industrialists). Predictably, therefore, non-compliance was a major feature of such programmes.

Even in cases where the domestic government intended to implement the prescribed reforms, compliance problems occurred due to poor sequencing and/or bad timing. Example 1: relaxing capital controls given a poorly regulated domestic financial system exposed countries to increased risk of financial crisis. Examples 2: Trade liberalization (reducing tariffs) or financial liberalization (raising interest rates) before achieving fiscal consolidation (i.e. rationalization of government expenditures and widening of tax base), caused borrowing costs to balloon and fiscal deficits to widen (Zambia, Zimbabwe, Pakistan).

Insistence on rapid liberalization of all sectors has over-stretched many LICs' institutional capacities.

SO WHAT ARE THE PROPOSED SOLUTIONS?

- Some Left-leaning critics totally reject the globalization doctrine and want the free-market model dumped in favor of a more interventionist set-up. Japan and East Asia are presented as examples of countries which witnessed tremendous growth despite having serious market-unfriendly "distortions" in their economies. The argument these critics present is that, in a second-best world, certain distortions may be desirable.
- Many NGOs, and LICs themselves, argue for the reform of the global trading system to open up rich country markets and address commodity price instability.
- Right-leaning groups (including the US Treasury and the Republican Party) which wish to see the withdrawal of the IMF from development finance in favor of the World Bank; they would like to see the IMF focusing only on crisis-prevention and providing short-term liquidity to countries facing BOPs problems. Many NGOs agree that IMF's development finance policies have failed but are unclear on whether or not the IMF should totally withdraw. They fear that in the absence of alternatives (like grants etc.), overall aid to LICs may fall.
- The IMF and World Bank themselves want to improve the quality of conditional ties while reducing their quantity, encourage government participation in policy design and the setting of these conditional ties so as to encourage ownership of the Fund and Bank programmes.
- NGOs and rich country government, of late, have stressed the need to integrate poverty reduction objectives and sustainable development into IMF/World Bank programmes: Poverty Reduction Strategy Papers have been written in this context to ensure sustainable development with a human face.
- Rich country governments also emphasize the importance of good governance in public policy, better management of public resources, greater transparency, active public scrutiny, and generally increased government accountability in fiscal management.

© Copyright Virtual University of Pakistan

EXERCISES

Why does the USA as a whole not specialise as much as General Motors or Texaco (individual US companies)? Why does the UK not specialise as much as ICI? Is the answer to these questions similar to the answer to the questions, 'Why does the USA not specialise as much as Luxembourg?', and 'Why does ICI or Unilever not specialise as much as the local butcher?'

There are two elements to the answer. One concerns costs, one concerns demand and revenue.
In terms of costs, as a firm or country specialises and increases production, so the opportunity costs of production are likely to fall at first, due to economies of scale, and then rise as resources become increasingly scarce. The butcher's shop may not have reached the point of rising long-run opportunity costs. Also it is too small to push up the price of inputs as it increases its production. It is a price taker. ICI and Texaco, however, probably will have reached the point of rising opportunity costs. Countries certainly would have if they specialised in only one product. Thus the larger the organisation or country, the more diversified they are likely to be.
Turning to the demand side: the butcher's shop supplies a relatively small market and faces a relatively elastic demand. It is therefore likely to find that complete specialisation in just one type of product is unlikely to lead to market saturation and a highly depressed price. Large companies, however, may find that complete specialisation in one product restricts their ability to expand. The market simply is not big enough. Countries would certainly find this. The USA could hardly just produce one product! The world market would be no where near big enough for it. The general point is that overspecialisation would push the price of the product down and reduce profits.

If Parvez took two minutes to milk the sheep and Tauqeer took six, how could it ever be more efficient for Tauqeer to do it?

Because Tauqeer might take more than three times longer than Parvez to do other jobs, and thus Tauqeer would have a comparative advantage in milking the sheep.

Country L can produce 6 units of wheat or 2 units cloth using X amount of resources in a year; Country D can produce 8 units of wheat or 20 units of cloth using X amount of resources in a year. What are the opportunity cost ratios and which country has comparative advantage in what?

The opportunity cost of wheat in terms of cloth is 2/6 in L and 20/8 in D (i.e. 7.5 times higher in D).
The opportunity cost of cloth in terms of wheat is 6/2 in L and 8/20 in the D (i.e. 7.5 times higher in L).
Thus L has a comparative advantage in wheat production while D has comparative advantage in cloth production.

Under what circumstances would a gain in revenues by exporting firms not lead to an increase in wage rates?

When there is such surplus labour (e.g. through high unemployment or the firms being legally required to pay minimum wages) that an increase in demand for labour will not bid up the wage rate. At least, however, unemployment will probably fall, unless new workers flood in from the countryside to take advantage of new jobs created in the towns.
Two countries produce televisions and exchange with each other. If 4 units of one country's TV exports exchange for 3 TV sets imported from the other country, the terms of trade are:

3/4

If the terms of trade are 3, how many units of the imported good could I buy for the money earned by the sale of 1 unit of the exported good? What is the exchange ratio?

If $P_x/P_m = 3/1$, then 3 units of imports can be purchased with the money earned by the sale of 1 unit of the exports. The exchange ratio is 1x:3m.

Why will exporters probably welcome a 'deterioration' in the terms of trade?

Because a fall in the price of exports relative to imports would probably be the result of a depreciation in the exchange rate. This would mean that exporters could now reduce the foreign exchange price of their exports and hence sell more, without reducing their price in domestic currency. They would therefore end up earning more.

Is it possible to gain from trade if competition is not perfect?

Yes. Production would not initially take place at the Pareto optimum position (i.e. "on" the PPF), but it is quite likely that trade would lead to a consumption on a higher indifference curve, and that therefore there would be some gain: a Pareto improvement.

© Copyright Virtual University of Pakistan

Is it possible to gain from trade if it is already producing on the PPF?

Yes. When trade happens, there are both production and consumption gains by expanding the production and consumption possibilities frontiers respectively. Thus even if production is already Pareto efficient, trade will open up possibilities for higher consumption at the lower world prices; this might require a slight movement along the PPF as well however.

Would it be possible for a country with a comparative disadvantage in a given product at pre-trade levels of output to obtain a comparative advantage in it by specialising in its production and exporting it?

Yes, if the country has potential economies of scale in producing that good (which it had not yet exploited). Specialisation could then reduce the opportunity costs of that good below that of the same good in other countries. (This assumes that the other country does not have potential economies of scale in that good or does not exploit them if it does.)

Should the world community welcome the use of tariffs and other forms of protection by the rich countries against imports of goods from lower income countries that have little regard for the environment?

There is no simple answer to this question. In terms of social efficiency, trade should take place as long as the marginal social benefit was greater than the marginal social cost (where environmental benefits and costs are included in marginal social benefits and costs). The problem with this approach is in identifying and measuring such benefits and costs. Then there is the problem of whether a social efficiency approach towards sustainability is the appropriate one. Then there is the issue of the response by lower income countries to the protection. Will they respond by introducing cleaner technology? This may prove difficult to predict.

How would you set about judging whether an industry had a genuine case for infant/senile industry protection?

Whether it can be demonstrated that, with appropriate investment, costs can be reduced sufficiently to make the industry internationally competitive.

Does the consumer in the importing country gain or lose from "dumping"?

Dumping happens when an exporter sells its products in another country (the importing country) at an extremely low price (sometimes below cost). The purpose of dumping is often to capture a monopoly position in the importing coountry market and drive other competitors (including local) out.

In the short run the consumer in the importing country may gain from the cheaper prices of the dumped product. In the long run the consumer could lose if domestic producers were driven out of business, which then gave the foreign producer a monopoly. At that point, it is likely that prices would go up above the pre-dumping levels.

In what ways may free trade have harmful cultural effects on developing countries?

The products and the lifestyles which they foster could be seen as alien to the values of society. For example, many developing countries have complained about the 'cocacolonisation' of their economies, whereby traditional values are being overcome by Western materialist values.

Go through each of these four arguments and provide a reply to the criticisms of them.

- 'Imports should be reduced since they lower the standard of living. The money goes abroad rather than into the domestic economy.' Imports are not always matched by exports. If imports exceed exports, then the resulting trade deficit has to be matched by a surplus elsewhere on the balance of payments account, which might bring problems (e.g. short-term financial inflows leading to exchange-rate volatility). A rise in imports, being a withdrawal from the circular flow of income, will tend to reduce income unless matched by a corresponding rise in exports. Sometimes imports may influence consumer tastes, and this may be seen as undesirable. For example, imports of soft drinks into poorer developing countries has been criticised for distorting tastes.
- 'Protection reduces unemployment.' The greater competition from free trade will provide a permanently less certain market for domestic producers and possibly a permanently higher rate of structural unemployment, given the greater rate of entry and exit of firms from markets.

© Copyright Virtual University of Pakistan

- 'Dumping is always a bad thing, and thus a country should restrict subsidised imports.' The gain to consumers may be short-lived, and if more efficient domestic firms have been driven from the market, there will be a long-term net welfare loss to the country.

What would be the 'first-best' solution to the problem of an infant industry not being able to compete with imports?

If the problem is a lack of domestic infrastructure, then the first-best policy is for the government to provide the infrastructure. If the problem is a lack of finance for the firms to expand (due to imperfections in the capital market), then the first-best solution is for the government to remove imperfections in the capital market, or to lend money directly to the firm. In other words, the first-best solution is to get to the heart of the problem: to tackle imperfections at source.

Airbus, a consortium based in four European countries, has received massive support (protection) from European country governments, in order to enable it to compete with Boeing (a US company), which until the rise of Airbus had dominated the world market for aircraft. To what extent are (a) air travellers; (b) citizens of the four European countries likely to gain or lose from this protection?

a) To the extent that the resulting competition reduces the costs of aircraft and hence air fares, the traveller will gain.
b) Whether citizens of the EU as a whole gain depends on whether the costs of the support (including external costs), as are recouped in the benefits of lower fares to travellers, profits to Airbus Industries and external benefits (such as spillover research benefits to other industries). Of course, the costs and benefits will not be equally distributed to EU citizens and thus there will be redistributive effects of the policy, effects which may be considered to be desirable or undesirable.

Can the US action of early 2002 to protect its steel industry be justified on economic grounds?

In terms of economic efficiency, then probably not, unless the protection was temporary while the industry was given the opportunity to invest to allow it to realise a potential comparative advantage (assuming that an imperfect capital market failed to lend it the requisite funds). But given that the industry almost certainly does not have a potential comparative advantage, there would be no efficiency gains: rather, there would be net loss in efficiency.

The main argument, then, would have to be in terms of distributive justice: that giving the industry protection helps save US jobs and the livelihoods of people working in the industry. From a US perspective, there is some justification here. In world terms, however, the gain to US jobs could well be at the expense of jobs elsewhere, causing a net loss, as production was diverted from lower-cost producers in other countries to higher-cost producers in the USA.

What alternative economic strategy might the US government have adopted to improve the competitiveness of steel producers?

Encouraging investment in new efficient plants by giving tax breaks or grants. Again, unless these plants had a comparative advantage, this would still be regarded as unfair protection. Even if they did have a potential comparative advantage, any such support would have to be purely temporary to be justified on efficiency grounds.

Outline the advantages and drawbacks of adopting a free-trade strategy for lower income countries. How might the Doha Development Agenda go some way to reducing these drawbacks?

There are two main advantages:

a. The developing countries can gain from specialisation in goods in which they have a comparative advantage. Other things being equal, this increases national income in these countries.
b. It can encourage inward investment into these countries.

The disadvantages are as follows::

a. Developed countries may continue to protect their industries. This makes free trade a risky strategy for developing countries, which might find the market for key exports suddenly cut off.
b. Freely allowing imports into developing countries may mean that developed countries dump surplus products on them (especially agricultural surpluses), with damaging consequences for producers within the developing countries.
c. It may encourage developing countries to use low-cost, dirty technology, with adverse environmental consequences.

© Copyright Virtual University of Pakistan

d. Multinational investment in developing countries, encouraged by an open trade policy, may lead to culturally damaging influences (the culture of McDonald's and Coca-Cola) and political control over the developing countries.

To the extent that the Doha Development Agenda focuses on sustainable development, fair access for developing countries to the markets of rich countries and maintaining justifiable protection by the developing countries for specific sectors, then some of these drawbacks will be reduced. How much they will be reduced, however, depends on the terms of any agreement and how rigorously they are enforced.

What would be the economic effects of (a) different rates of VAT, (b) different rates of personal income tax and (c) different rates of company taxation between member states of a regional union (or single market like EU) if in all other respects there were no barriers to trade or factor movements?

a) Consumers would buy items in those countries that charged the lower rates of VAT. This would push up the prices in these countries and thus have the effect of equalising the tax-inclusive prices between member countries. This effect will be greater with expensive items (such as a car), where it would be worthwhile for the consumer to incur the costs of travelling to another country to purchase it.
b) Workers would move to countries with lower income taxes, thus depressing gross wage rates there and equalising after-tax wages. This effect would be greater, the greater is the mobility of labour between member countries.
c) Capital would move to countries with lower rates of company tax, thus depressing the rate of profit in the low tax countries and equalising the after-tax rate of profit. This effect will be greater, the greater is the mobility of capital between member countries.

Would the adoption of improved working conditions in poor countries necessarily lead to higher labour costs per unit of output?

No. They could lead to an increase in labour productivity which more than offset the cost of the improved working conditions.

When the UK joined the exchange rate mechanism ERM in 1990, it was hoped that this would make speculation pointless. As it turned out, speculation forced the UK to leave the ERM in 1992. Can you reconcile this with the argument that fixed rates discourage speculation?

As long as speculators believe that the fixed rate can be maintained, there is no point in speculation. Thus when the UK first joined, there was little speculation. But later, when there was a clear tension between the German desire to keep interest rates high and the UK desire to reduce interest rates in order to help lift the economy out of recession, speculators began to believe that rates might have to be realigned. The more they became convinced of this, the more the speculative pressures mounted.

If speculators on average gain from their speculation, who loses?

People buying or selling internationally traded goods who are not themselves speculating. For example, if speculation drives the exchange rate below what it would otherwise have been, then purchasers of imports will be paying a higher price than they otherwise would.

Why would the adjustable peg system have been less suitable in the world of the mid-1970s than it was back in the 1950s?

Because the world economy was in much more of a state of turmoil than in the previous two decades. The amount of adjustment required was therefore much greater. Under an adjustable peg system, pegged exchange rates would much more rapidly have become disequilibrium rates. This would have necessitated more severe stop–go policies and/or more frequent devaluations/revaluations, with the disruption that such adjustments entail. What is more, with much of the increased oil revenues of OPEC being placed on short-term deposit in Western banks, the size of short-term financial flows had increased substantially and this worsened the problem of currency instability.

Why do high international financial mobility and an absence of exchange controls severely limit a country's ability to choose its interest rate?

Because if its interest rate were lower than international rates, there would be a massive outflow of finance if international finance were highly mobile and there were an absence of exchange controls. The resulting fall in the money supply would push the interest rate up to the international level. Similarly if its interest

rate were higher than international rates, the resulting massive inflow of finance would increase the money supply and drive its interest rate down to the international level. These effects are stronger if the country is attempting to peg its exchange rate.

Would any of these problems be lessened by the world returning to an adjustable peg system? If so, what sort of adjustable peg system would you recommend?

No. All these problems would have existed with an adjustable peg. Predicting the appropriate rate at which the currency should be pegged would have been a problem. Speculative financial movements would still have been a problem as long as speculators believed that there was a possibility of devaluation or revaluation. There would still have been a conflict with internal policy given that interest rates would have been used to maintain a pegged rate. There could still have been competitive pressures to raise interest rates. Just how bad these problems would have been would have depended on (a) the determination of countries to defend the pegged rate, and (b) the amount of support given by the IMF, or central banks collectively, to maintain pegged rates.

A return to an adjustable peg system is best when the required adjustments are easily made, without building up large deficits or surpluses, and most importantly, when countries pursue consistent policies: when their economies are harmonised.

What will be the effect on the UK economy if the European Central Bank cuts interest rates?(The European Central Bank is the central bank for the Euro zone; this currently excludes Britain)

There will an outflow of funds from the euro-zone and the euro will probably depreciate. Funds will flow to the UK and sterling will probably appreciate. UK exports will become less competitive and there will probably be a rise in imports. UK aggregate demand will fall. This will put downward pressure on inflation. (To some extent the downward pressure on aggregate demand in the UK will be offset by a rise in aggregate demand in the euro-zone and hence a boost to the UK economy via the international trade multiplier.)

The net result of a forecast of lower inflation in the UK and a worsening balance of trade may encourage the Monetary Policy Committee to lower the rate of interest. If this happened, it could neutralise the balance of payments effect of the ECB's interest rate cut. In fact, if rates of interest in the UK fell by the same amount as in the euro-zone, the UK's balance of trade would probably improve, as sterling depreciates against the dollar, the yen and other currencies other than the euro.

Why did 'contagion' spread to countries outside south-east Asia after the latter region experience currency crises in 1997-98?

Having witnessed the power of speculative flows to undermine relatively strong countries of south-east Asia, speculators turned their attention to other economies perceived as having weaknesses. The speculation against these economies then considerably worsened their position, causing their currencies and stock markets to fall dramatically. The speculation was worsened by the perceived inability (or unwillingness) of institutions such as the IMF to provide rapid support for these economies.

What policy measures could the south-east Asian countries have adopted before the crisis to prevent it occurring?

Tighter controls over their banking and financial systems, with better regulation and monitoring by the authorities and higher minimum reserve requirements; greater exchange rate flexibility; more rigorous attempts to reduce government debt over a long period of time (so as to avoid the shock of sudden deflation); controls over the financing of corporate debt (so as to reduce the levels of corporate debt held overseas).

George Soros, multi-millionaire currency speculator, has referred to global capital markets as being like a wrecking ball rather than a pendulum, suggesting that such markets are becoming so volatile that they are damaging to all concerned, including speculators. What might lead Soros to such an observation?

Because financial movements are so vast that they are largely beyond the control of governments or international agencies. Once the sentiment of currency traders and speculators is affected in a particular direction (e.g. losing confidence in a particular economy, such as Argentina in late 2001/early 2002) currency movements can become large and very damaging. Such short-term movements may bear little relation to long-term fundamentals.

© Copyright Virtual University of Pakistan

Why may inflows of short-term deposits create a problem?

Because they may be very rapidly withdrawn again and thus can contribute to instability of the exchange rate. To prevent sudden outflows of deposits (arising, say, from a fear by depositors that the exchange rate is about to fall) governments may be forced to raise interest rates: something they may otherwise prefer not to do.

The Human Development Index is a measure of well-being that is based on three equally weighted indexes: per capita GDP, educational attainment and life expectancy. Dr Mahboob-ul-Haque (who also served as Pakistan's Foreign Minister in the 1980s) was the main force behind this idea. For what reasons are HDI and per-capita GDP rankings likely to diverge?

When the other two elements of HDI – educational attainment and like expectancy – diverge from per capita income in the rank order. One of the main reasons for this divergence is inequality. Thus a country with a high GDP per capita, but which is very unequally distributed, may have a large proportion of the population which is poor, with relatively little access to education and with a relatively low life expectancy. This is the reason why countries like Qatar and Saudi Arabia despite being very high on the per cpaital GDP ranking, appear quite low on the HDI ranking list.

If a disastrous harvest of rice were confined to a particular country, would (a) the world price and (b) its own domestic price of rice fluctuate significantly? What would happen to the country's export earnings and the earnings of individual farmers?

a) The world price would not rise significantly as a result of its poor harvest. In the extreme case of a small country facing a perfectly elastic demand for its rice exports, the world price would be unaffected by its bad harvest.

b) If rice were a significant proportion of its total exports, the fall in rice production, and hence sales, would cause the current account to deteriorate and the exchange rate to depreciate (assuming a flexible exchange rate). This would increase the domestic currency price of its rice exports.

The country's foreign exchange earnings would fall. Individual farmers' earnings would also fall, unless, the rise in price from the exchange rate depreciation were sufficient to offset the fall in output and sales (which is unlikely, unless rice exports constitute a major portion of total exports).

Why is an overvalued exchange rate likely to encourage the use of capital-intensive technology?

Because it reduces the price of imported capital equipment (assuming that such equipment has low or zero tariffs imposed on it).

Would the use of import controls (tairffs or quotas) help or hinder a policy of export-orientated industrialisation?

In the early stages of industrialisation they may help a country build up its infant industries – industries that later could become export orientated. If protection is maintained for too long, or is too distorting, however, such industries could well remain inefficient and find it difficult to compete internationally.

Will the adoption of labour-intensive techniques necessarily lead to a more equal distribution of income?

Not if the amount of investment varies significantly from one sector of the economy to another. If it did, then those working in sectors with new efficient labour-intensive technology would gain, while the poor, the dispossessed, and those working in old inefficient industries would not. Income distribution could become less equal.

Consider the arguments from the perspective of an advanced country for and against protecting its industries from imports of manufactures from lower-income countries.

Consumers will lose from such protection, because they will be denied access to lower-income countries' products at such low prices. Workers and employers in the industries threatened by cheaper imports from lower-income countries will gain from the protection. Nevertheless there will be a net welfare loss to the country. A better solution to the problem of those in the industries threatened by the imports might for the government to help in the redeployment of labour.

What is the difference between mechanical efficiency and economic efficiency?

Mechanical efficiency is where there is a low energy loss from a machine. For example, if a machine has an 80 per cent mechanical efficiency, this means for every 100 units of energy used to power the machine,

it produces 80 units of energy output. In the context of the internal efficiency of a firm, economic efficiency involves producing a given output with the least costly combination of factors.

Why may governments of lower income countries be less strict than developed countries in controlling pollution?

Reasons include:

a. Given the much lower average levels of income, there is a higher level of marginal utility from increased output relative to the marginal pollution costs.
b. There is often less political pressure on governments to reduce pollution.
c. Possible greater ignorance of the full extent of the harmful effects of the pollution.

What difficulties is a government likely to encounter in encouraging the use of labour-intensive technology?

Difficulties include:

a. Bias of firms towards using capital-intensive technologies which they see as 'modern'.
b. Lack of efficient labour-intensive techniques available (due to a lack of research and development).
c. Multinationals' preference for using techniques with which they are familiar. Such techniques, having been developed in advanced countries, are likely to be capital intensive.
d. Labour-intensive technology may require a higher level of skills from the operatives.

What would be the effect on the levels of migration and urban unemployment of the creation of jobs in the towns?

Urban employment would rise with the additional jobs. But if each job created in the towns encourages more than one person to migrate from the countryside, the level of urban unemployment will also increase.

Is there any potential conflict between the goals of maximising economic growth and maximising either (a) the level of employment or (b) the rate of growth of employment?

a) Maximising growth may involve using more capital-intensive techniques, because they create a greater surplus for reinvestment. But the adoption of more capital-intensive techniques will reduce the level of employment.
b) There is less likely to be a conflict here. If capital-intensive techniques lead to a faster growth in output, they will tend to lead to a faster growth in employment, albeit from a lower level. (This conclusion will not follow, however, if there is a continuous switching to more capital-intensive techniques as profits are reinvested.)

What is the relationship between unemployment and (a) poverty; (b) inequality?

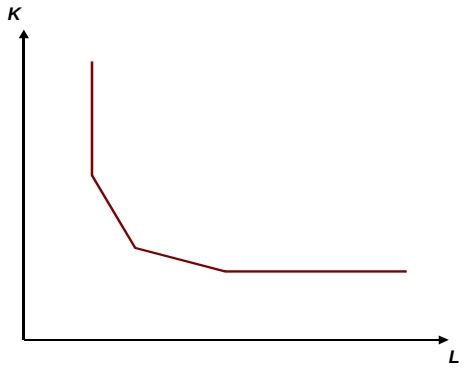
a) The greater the unemployment, the greater will tend to be the level of poverty, given that in most lower-income countries there is little or no state financial support for the unemployed.
b) The greater the unemployment, the greater will tend to be the level of inequality. Society will become increasingly polarised into those with and those without jobs.

If there were three techniques available, what would the isoquant look like? Would it make any difference to the conclusions of this model?

The isoquant would have four straight-line sections. One vertical; then two downward-sloping sections, the higher one steeper than the other; then a horizontal section. This is illustrated in the diagram opposite. Each of the three 'corners' of the isoquant would be at the capital/labour ratio of one of the three techniques.

An isoquant like this would make no difference to the conclusions of the model. A capital-intensity bias could still lead to a more capital-intensive technique being chosen from the three available, than that warranted by questions of cost alone.

© Copyright Virtual University of Pakistan



If more jobs were created in the towns, how, in the rural–urban migration model, would this affect (a) the level of urban unemployment; (b) the rate of urban unemployment?

If more jobs were created in the towns, L_m would rise. This would cause W_u^e to rise.

a) If W_u^e rises, more people will migrate and thus the level of urban unemployment will rise.

b) If the urban wage (W_u), the rural wage (W_r) and the cost of migration (α) are unaltered, then migration will take place until $W_u.L_m/L_u$ has returned to its original level, with L_m/L_u the same as before. Thus although the level of unemployment has risen, the rate of unemployment has stayed the same.

What common ground is there between structuralist and monetarist explanations of inflation and lack of growth in lower-income countries?

Structuralist economists generally accept that high inflation is accompanied by high rates of growth in the money supply, even though they see monetary growth as a symptom of the problem rather than its basic cause.

Both structuralists and monetarists accept the importance of supply-side policies to relieve bottlenecks, increase growth and reduce unemployment. Monetarists, however, generally see the means of achieving this to be a liberating of market forces, whereas structuralists generally advocate interventionist policies.

One solution proposed to help solve Argentina's weak financial position is that it should abandon the peso as its unit of currency and replace it with the US dollar (i.e. "dollarise"). What advantages and drawbacks might such a solution have for the Argentine economy both in the short and the long term?

The advantages are that there would be much greater currency stability and a more stable macroeconomic environment, with inflation more under control. In the short-term this would help to restore confidence in the economy and encourage people to save. In the longer term it would encourage inward investment and trade. The disadvantage is that interest rates would be determined in the USA, and they might not be suitable for the Argentine economy at any given time: in other words, Argentina would lose control over monetary policy. The arguments here are similar to those concerning whether the UK should adopt the euro. The main difference is that the UK would have considerable input into eurozone macroeconomic policy, whereas Argentina would have no input into US macroeconomic policy.

What are the relative advantages and disadvantages to a lower-income country of rescheduling its debts compared with simply defaulting on them (either temporarily or permanently)?

Default is a high-risk strategy. The benefits are an immediate wiping out of debt. The potential costs are great, however. Its assets in foreign institutions may be confiscated, as too may its ships and merchandise in transit. Once having defaulted, it will be virtually impossible to raise future loans to rebuild the economy. The threat of default, however, especially if made by several debtor countries acting together, could force creditor institutions to offer lower interest rates or more generous rescheduling programmes, or even to write off a certain portion of the debt.

© Copyright Virtual University of Pakistan

If reductions in lower-income countries' debt are in the environmental interests of the whole world, then why have developed countries not gone much further in reducing or cancelling the debts owed to them?

Because it would not be in the private interests of the banks concerned. Even in the case of official government loans, individual developed countries may be reluctant to cancel debts on their own, feeling that it is not their specific responsibility.

Would it be possible to devise a scheme of debt repayments that would both be acceptable to debtor and creditor countries and not damage the environment?

A longer period to pay would reduce the pressure on lower-income countries to exploit their environment. Also direct financial help to lower-income countries to protect the environment would be in the global interest and could also help to reduce lower-income countries' debt burden.

Would the objections of lower-income countries to debt-equity swaps be largely overcome if foreign ownership was restricted to less than 50 per cent in any company? If such restrictions were imposed, would this be likely to affect the 'price' at which debt were swapped for equity?

To some extent, yes. Lower-income countries would be able to retain the controlling interest in their companies within their borders. There would still be foreign influence in the running of the companies, however, but this may not be wholly unwelcome with the expertise that advanced countries can bring.

Restricting ownership to less than 50 per cent would reduce the benefits to the developed-country banks or companies. They would therefore be unwilling to pay such a high price for equity than if they had been able to acquire a controlling share.

Imagine that you are an ambassador of a lower-income country at an international conference. What would you try to persuade the rich countries to do in order to help you and other poor countries overcome the debt problem? How would you set about persuading them that it was in their own interests to help you?

You could try to persuade them to reschedule your debts and to grant new loans on more concessionary terms. This would be in their interests if it enabled you to give a firmer guarantee that the loans would be repaid.

You might also try to encourage them to sign trade deals with you or companies in your country, in order to improve your balance of payments. This would again be in their interests in that it would enable you more easily to service any loans they had made to you.

You might also try to persuade them to reduce interest rates, both to make it easier for your country to service its debts, and to give a boost to world demand and hence to the demand for your exports. You could try to show them that a growing world economy was in everyone's interests.

To what extent can international negotiations over economic policy be seen as a game of strategy? Are there any parallels between the behaviour of countries and the behaviour of oligopolists?

There is a collective gain to countries from agreement over harmonisation and the greater international macroeconomic stability that would result. Each individual country, nevertheless, would have to agree to take decisions which might be directly against its short-term national interests. Each country may therefore be tempted to break the agreement.

Clearly there is a parallel with oligopoly. Collusion is in the collective interests of oligopolists, but each will be tempted to cheat.

The greater the number of countries/oligopolists in an agreement, and the more divergent their individual economic circumstances, the greater the likelihood of one country/oligopoly breaking the agreement, and the less the commitment, therefore, of countries/oligopolists in general to the agreement.

----------THE END----------

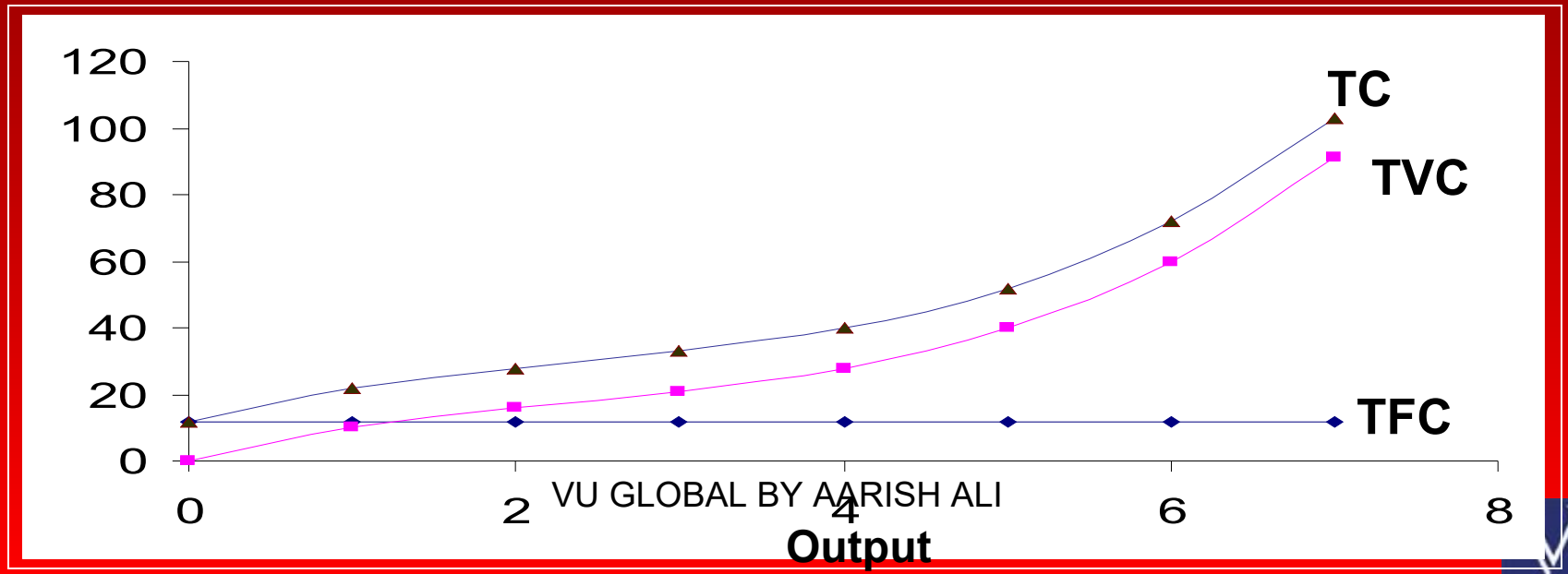
PPTS
Lecture # 16-22, 24-38
FINAL TERM FALL2021

VU GLOBAL BY AARISH ALI (+96569002641)

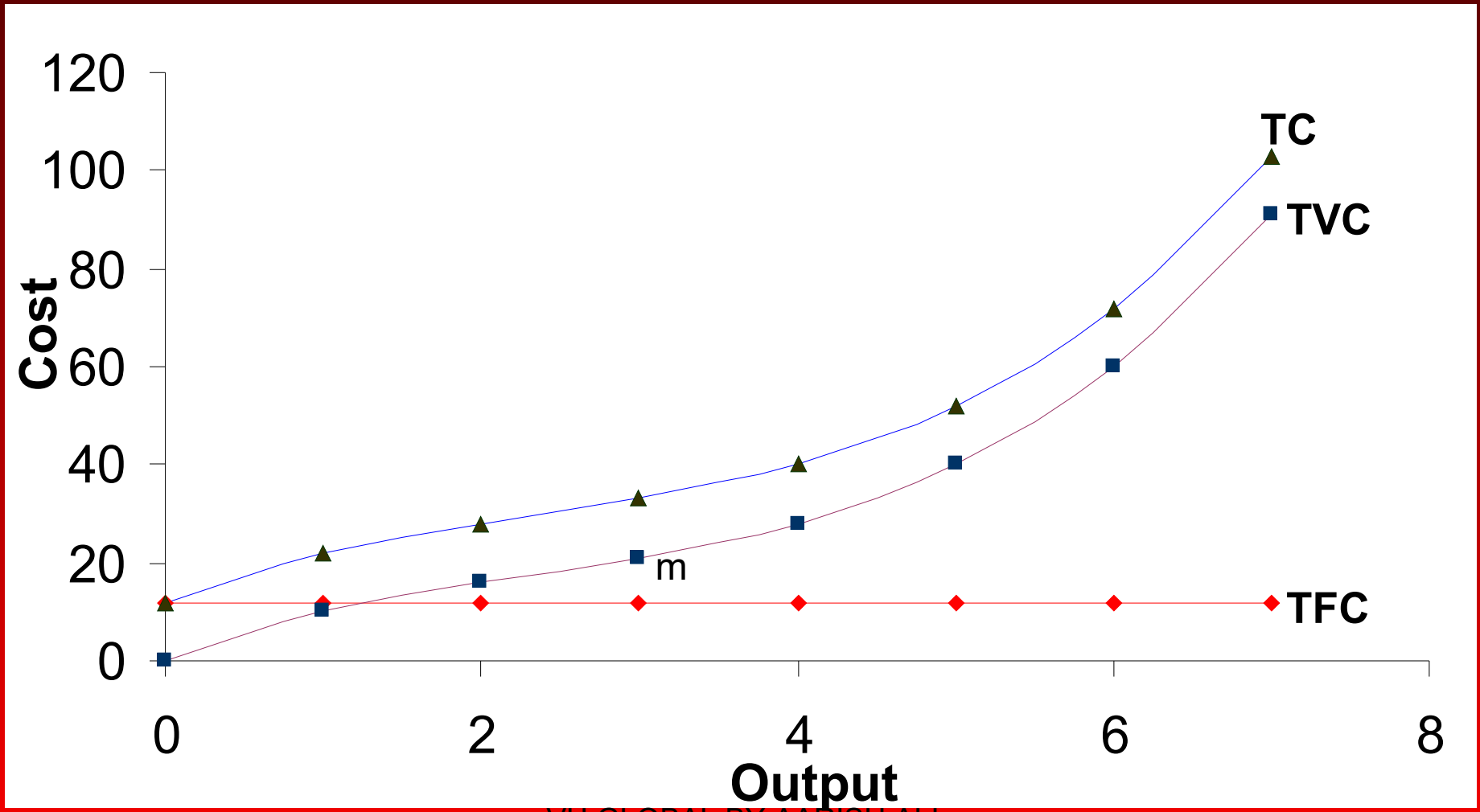
Introductory Economics
Lecture 16

VU GLOBAL BY AARISH ALI

TC = TVC + TFC			
Output (Q)	TFC	TVC	TC
0	12	0	12
1	12	10	22
2	12	16	28
3	12	21	33
4	12	28	40
5	12	40	52
6	12	60	72
7	12	91	103



Cost Curves

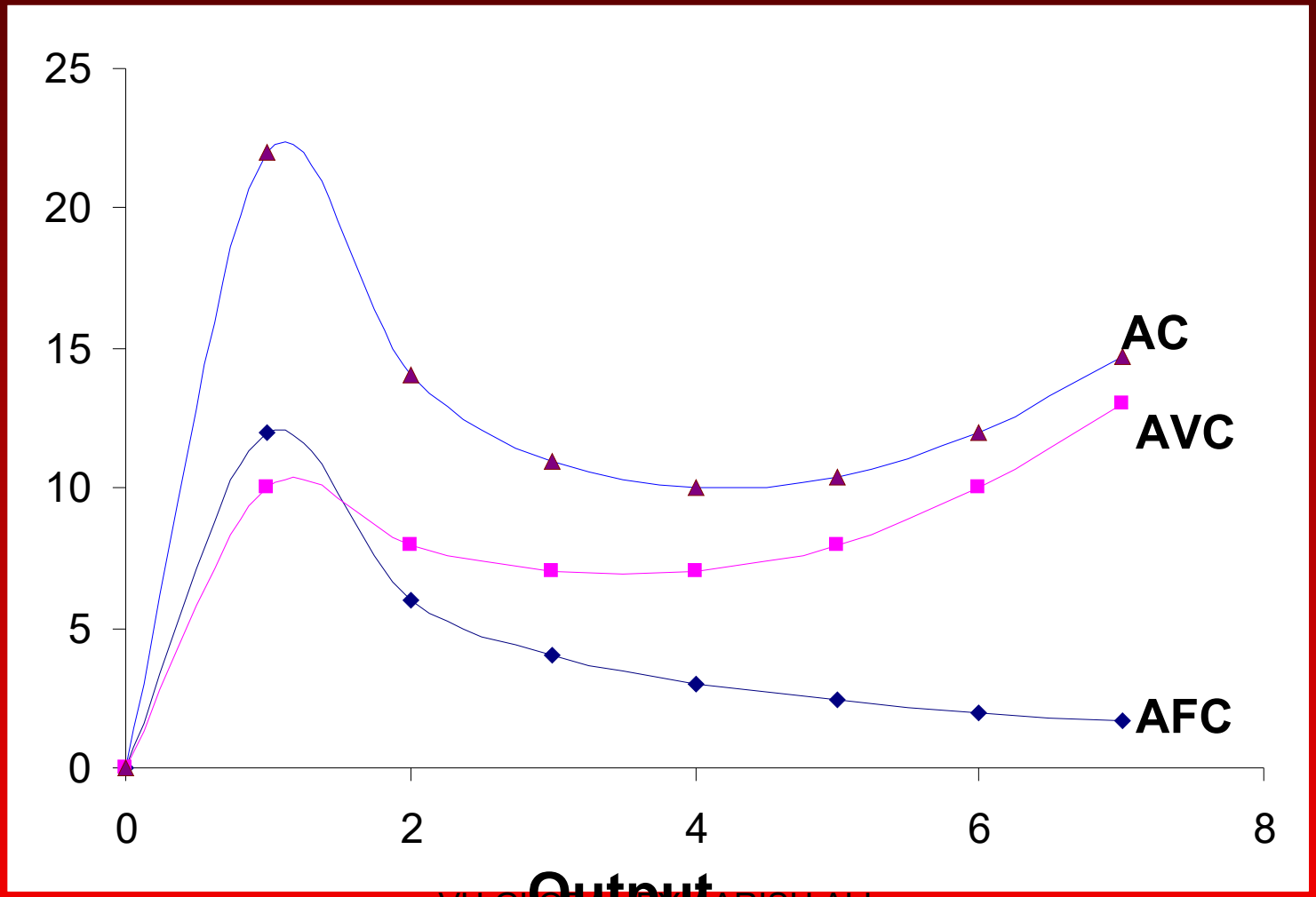


TC = TFC + TVC			
Output (Q)	TFC	TVC	TC
0	12	0	12
1	12	10	22
2	12	16	28
3	12	21	33
4	12	28	40
5	12	40	52
6	12	60	72
7	12	91	103

Output (Q)	TFC	TVC	TC	AFC =TFC/Q	AVC =TVC/Q	AC = TC/Q
0	12	0	12	0	0	0
1	12	10	22	12	10	22
2	12	16	28	6	8	14
3	12	21	33	4	7	11
4	12	28	40	3	7	10
5	12	40	52	2.4	8	10.4
6	12	60	72	2	10	12
7	12	91	103	1.7	13	14.7

Variable and Fixed Costs

Average cost curves



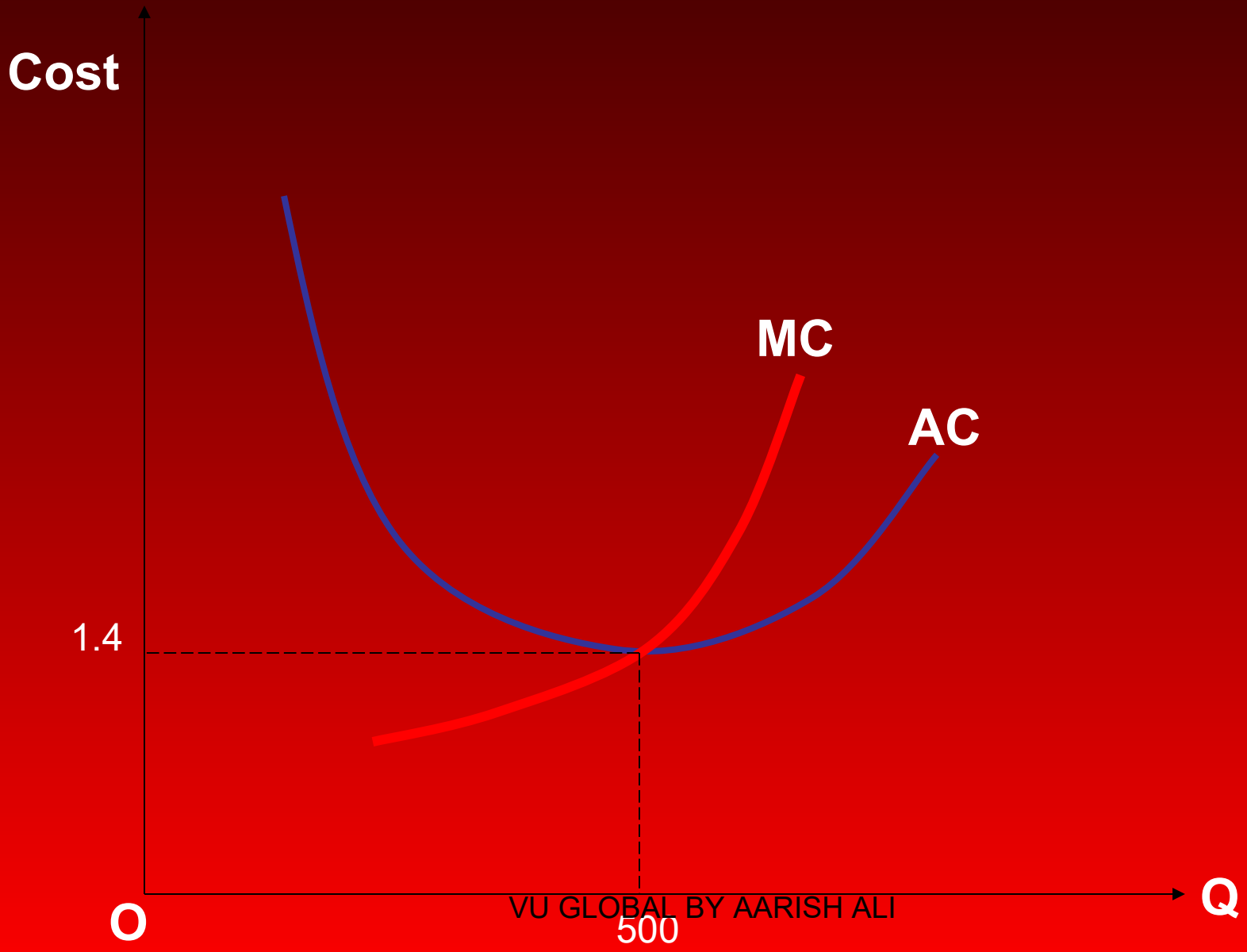
Inputs		Output			
Capital Col_1	Labor Col_2	Total physical product (TPP) Col_3	Marginal physical product (MPP) Col_{3a}	Average physical product (APP) Col_{3b}	TFC C1 x 60 Col_4
5	1	100	100	100	300
5	2	250	150	125	300
5	3	400	150	133	300
5	4	500	100	125	300
5	5	560	60	112	300

Inputs		Output	Total costs		
Capital C1	Labor C2	(TPP) C3	TFC C1 x 60 C4	TVC C2 x 100 C5	TC C4 + C5 C6
5	1	100	300	100	400
5	2	250	300	200	500
5	3	400	300	300	600
5	4	500	300	400	700
5	5	560	300	500	800

Inputs		Average costs			Marginal cost
Capital Col_1	Labor Col_2	AFC C4 ÷ C3 Col_7	AVC C5 ÷ C3 Col_8	AC C6 ÷ C3 Col_9	MC ΔC6 ÷ ΔC3 Col_{10}
5	1	3.00	1.00	4.00	0.67
5	2	1.20	0.80	2.00	0.67
5	3	0.75	0.75	1.50	1
5	4	0.60	0.80	1.40	1.67
5	5	0.54	0.89	1.43	

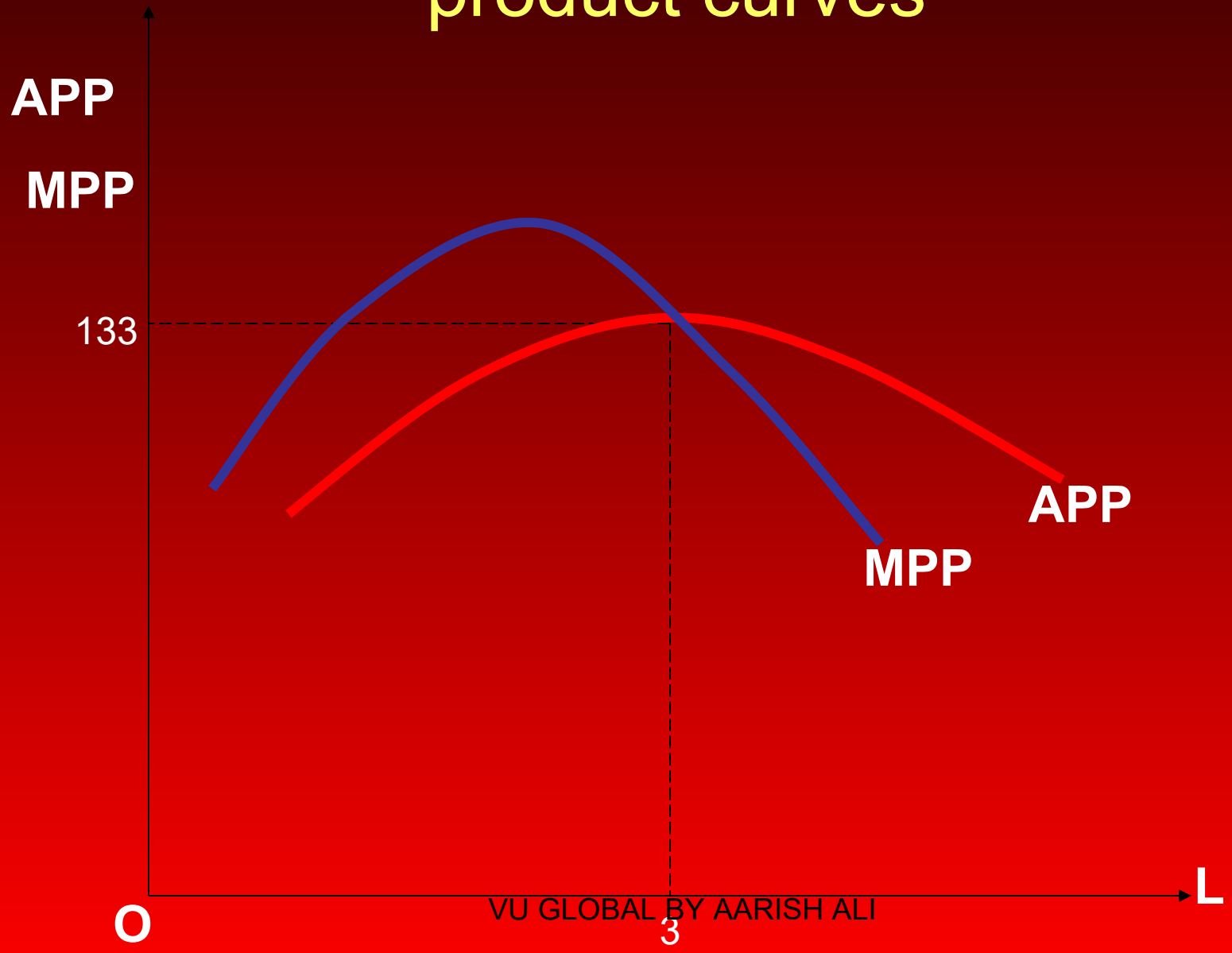
VU GLOBAL BY AARISH ALI

Average and marginal cost curves

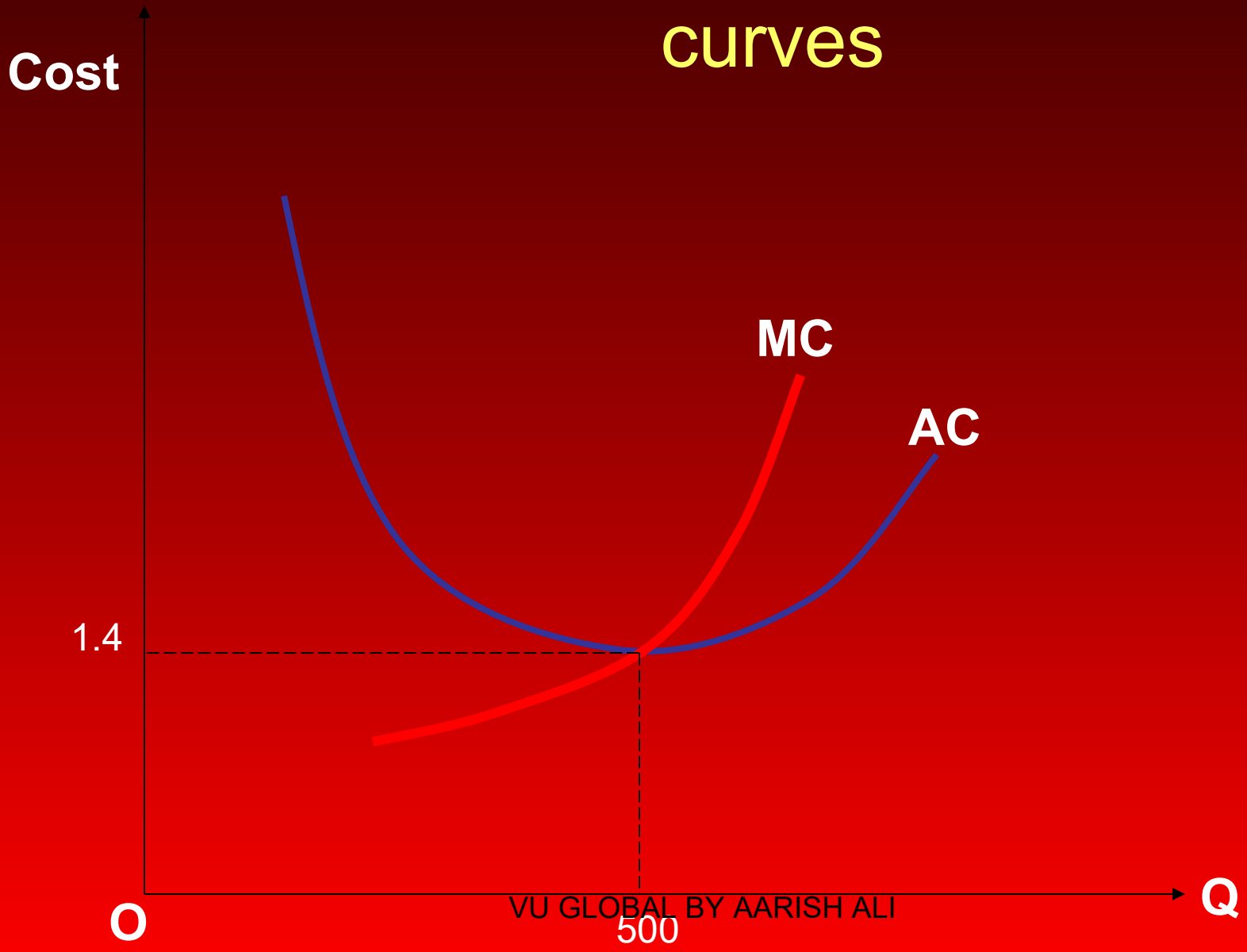


VU GLOBAL BY AARISH ALI

Average and marginal physical product curves

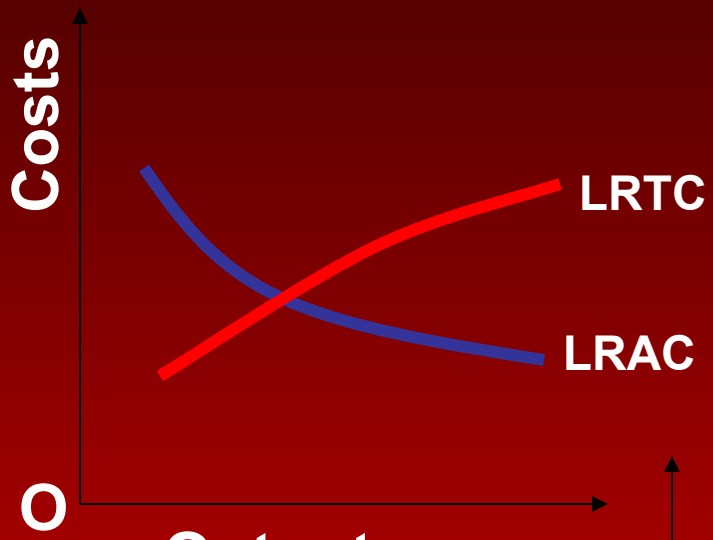


Average and marginal cost curves

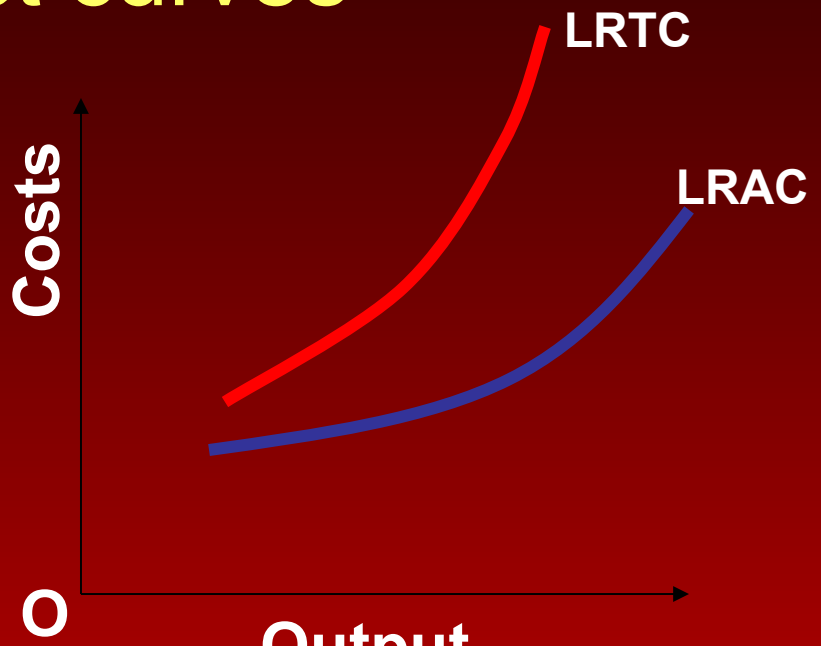


VU GLOBAL BY AARISH ALI

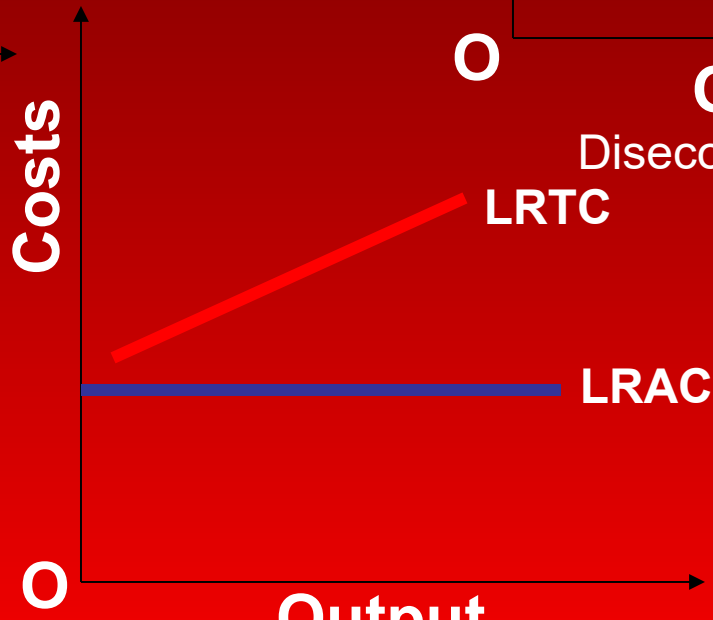
Long run cost curves



Economies of scale

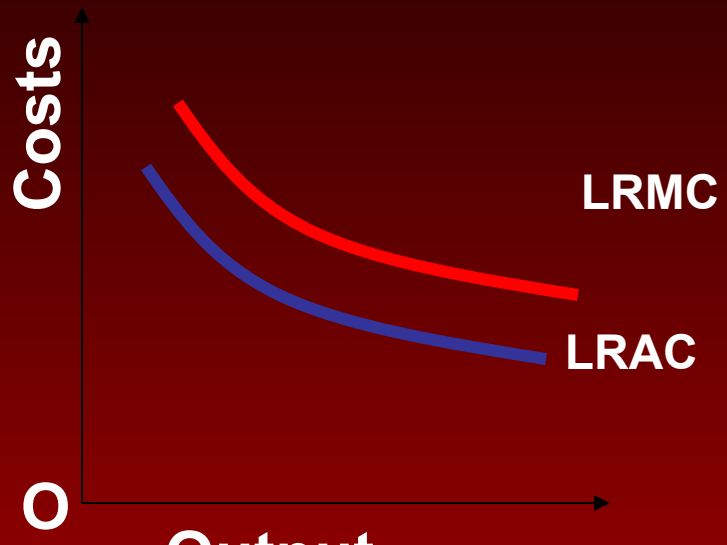


Diseconomies of scale

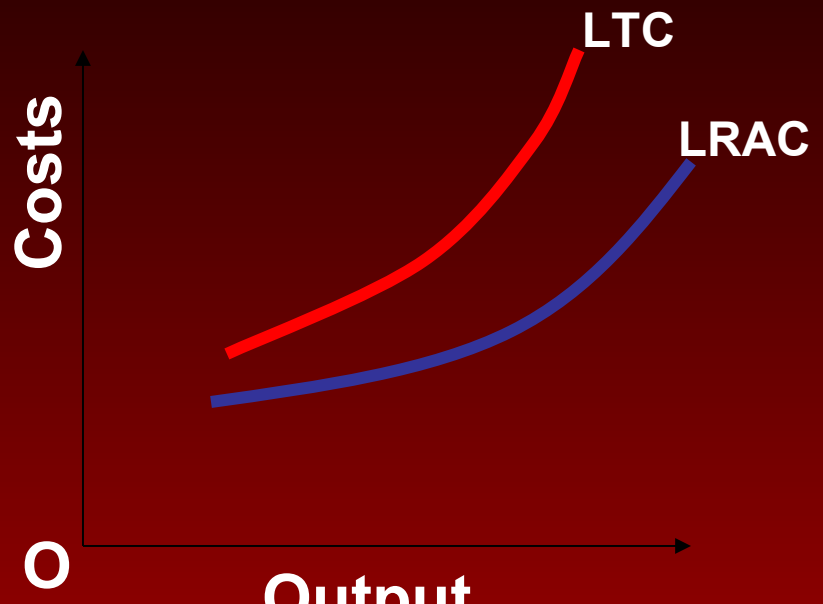


Constant Cost

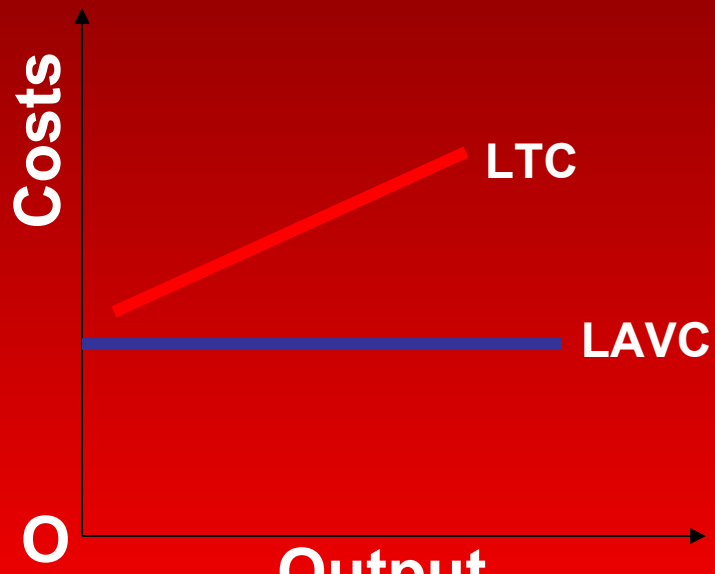
VU GLOBAL BY AARISH ALI



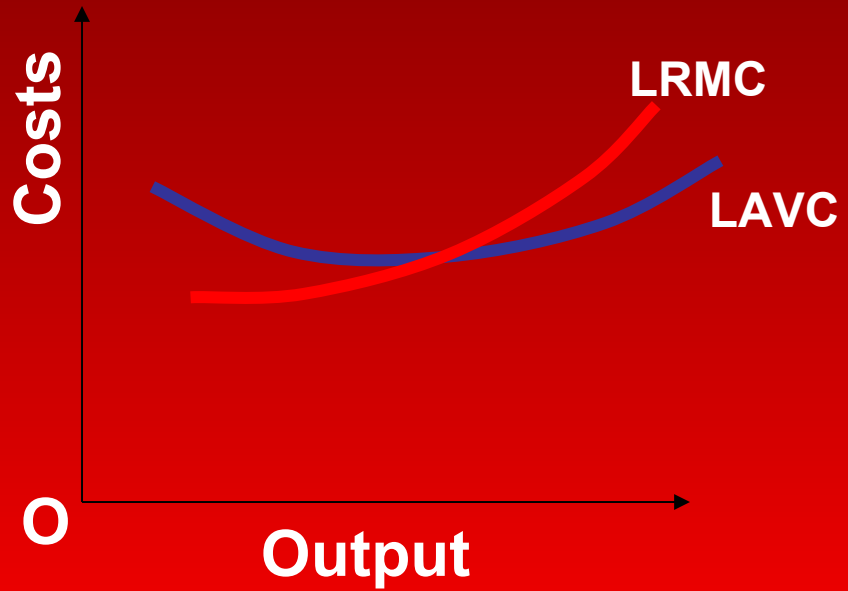
Economies of scale



Diseconomies of scale



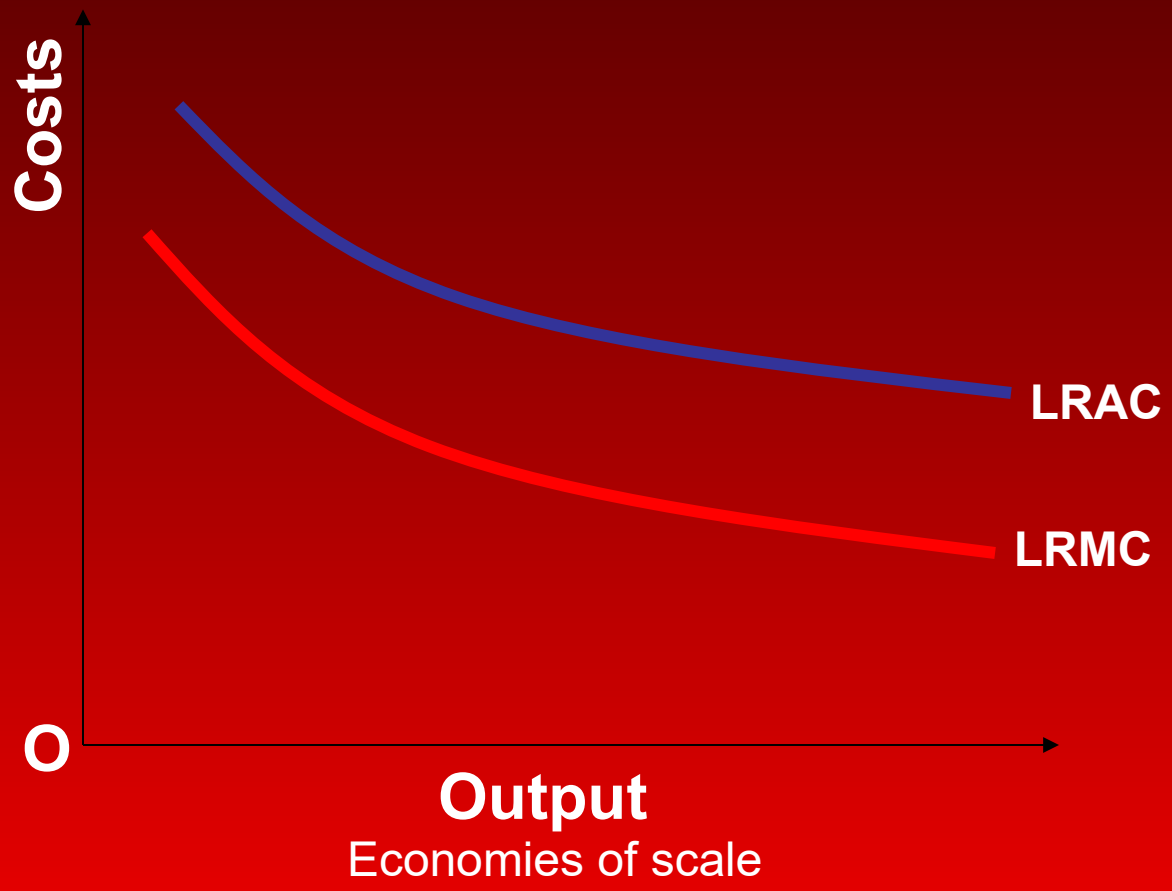
Constant Cost



Initial economies of scale then diseconomies of scale

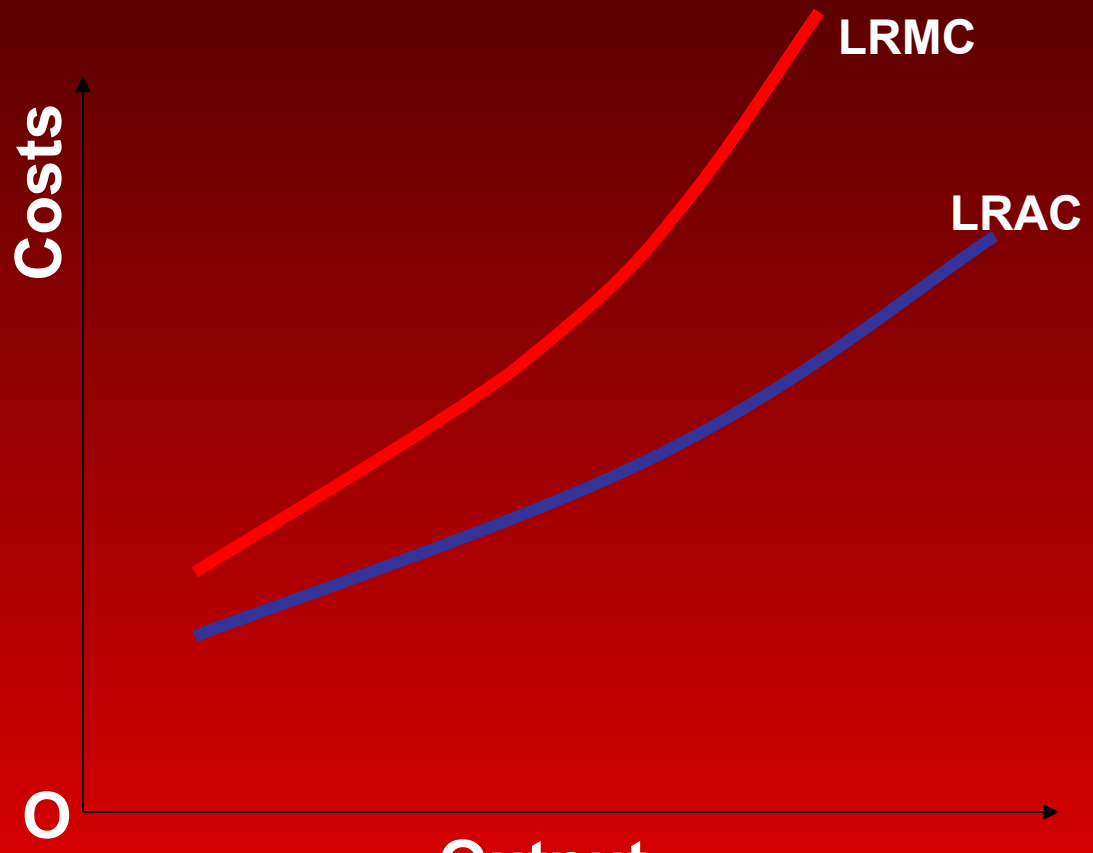
VU GLOBAL BY AARISH ALI

(a) Economies of scale



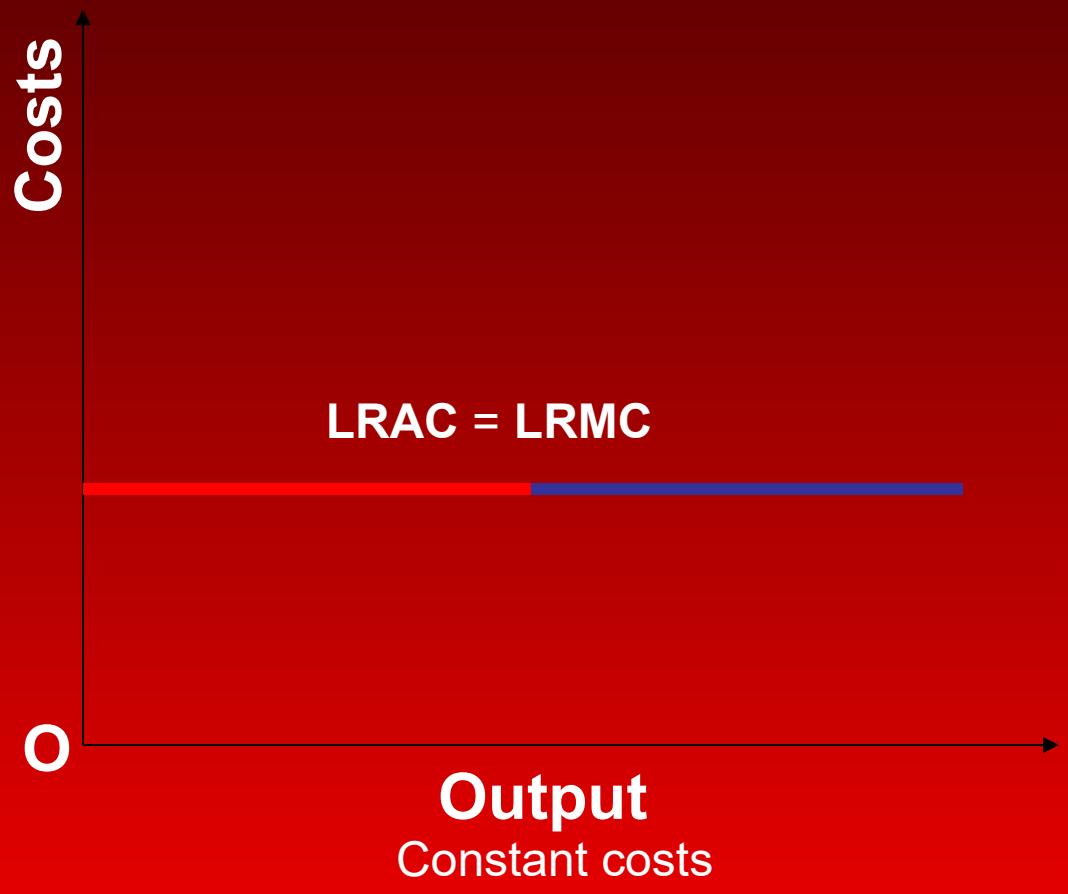
Economies of scale

(b) Diseconomies of scale



Diseconomies of scale

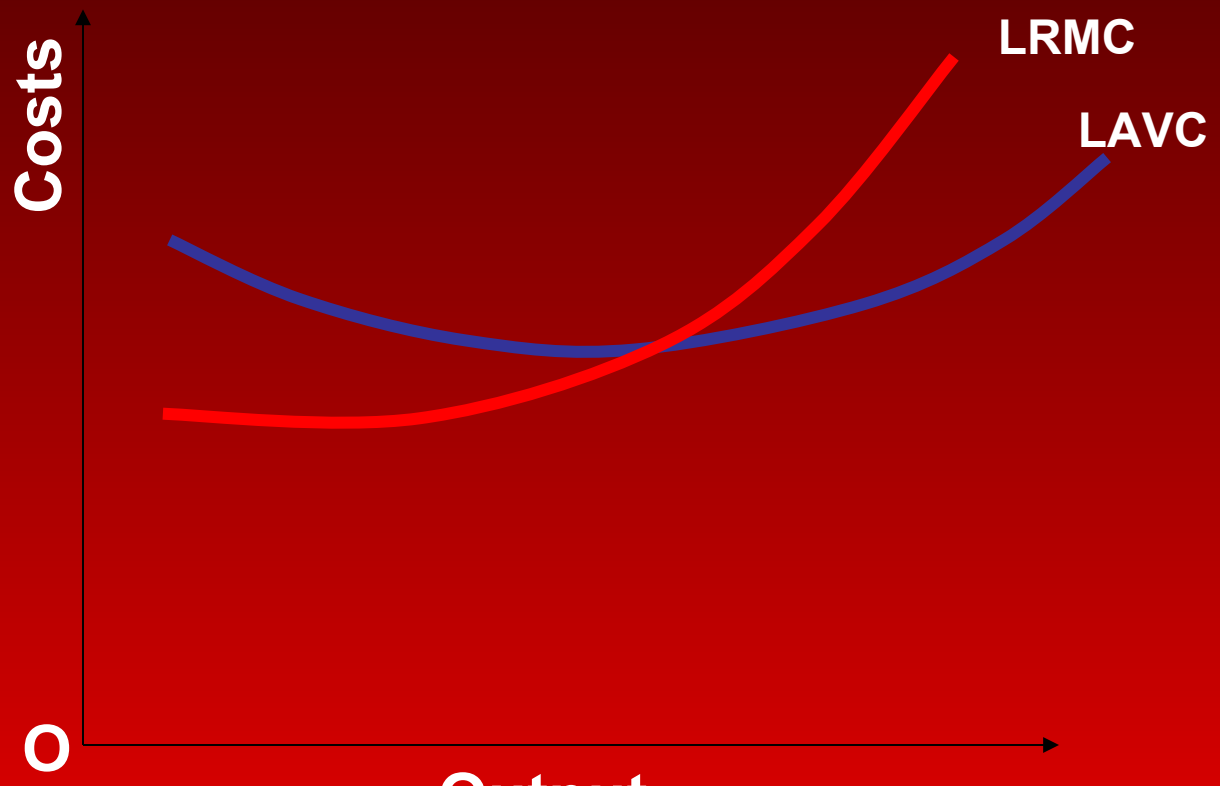
(c) Constant Costs



Constant costs

VU GLOBAL BY AARISH ALI

(d) Initially economies of scale then diseconomies of scale



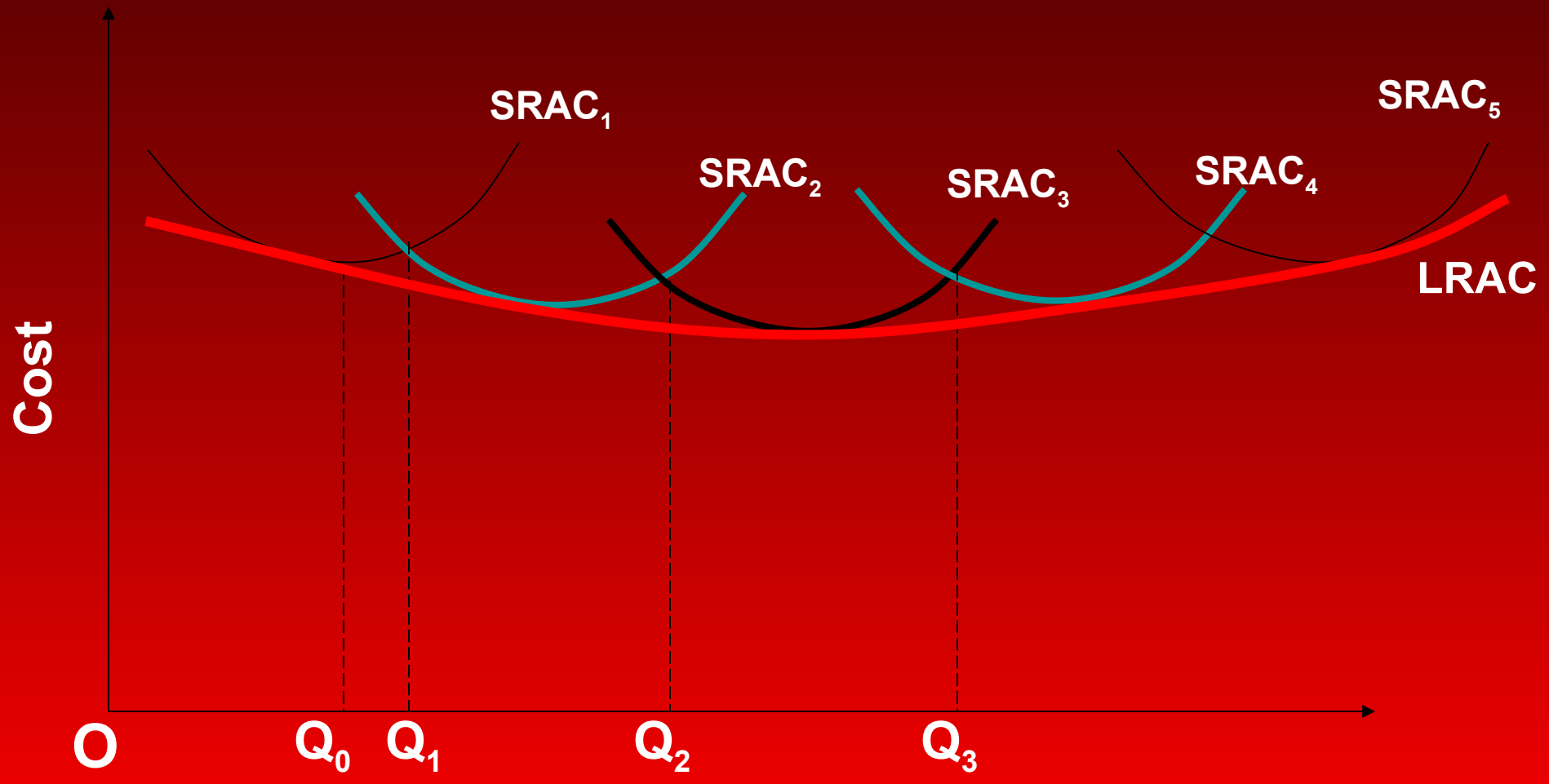
Initially economies of scale then diseconomies of scale

VU GLOBAL BY AARISH ALI

Lesson 17

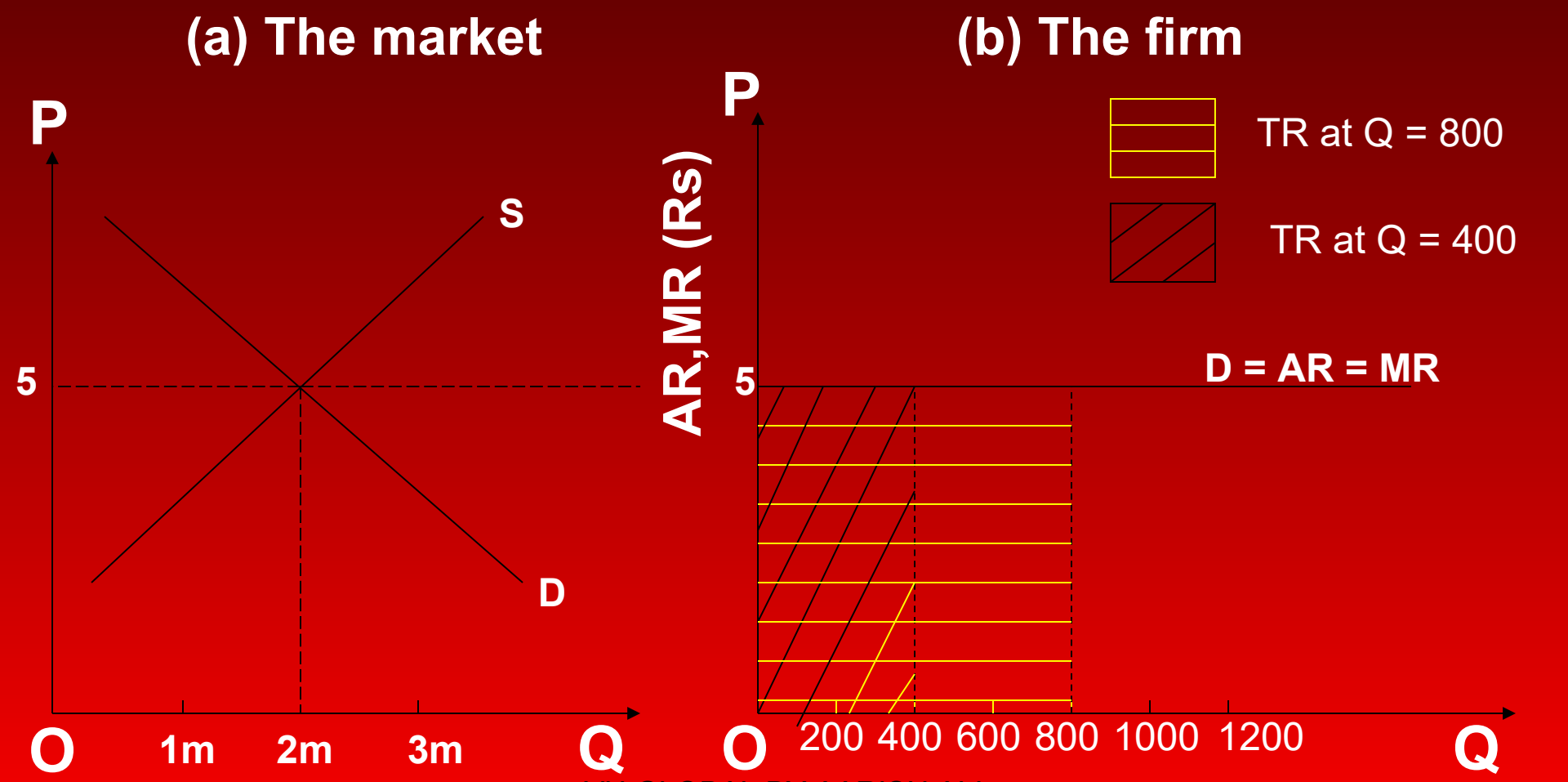
VU GLOBAL BY AARISH ALI
(+96569002641)

Relationship between long-run & short-run average cost curves



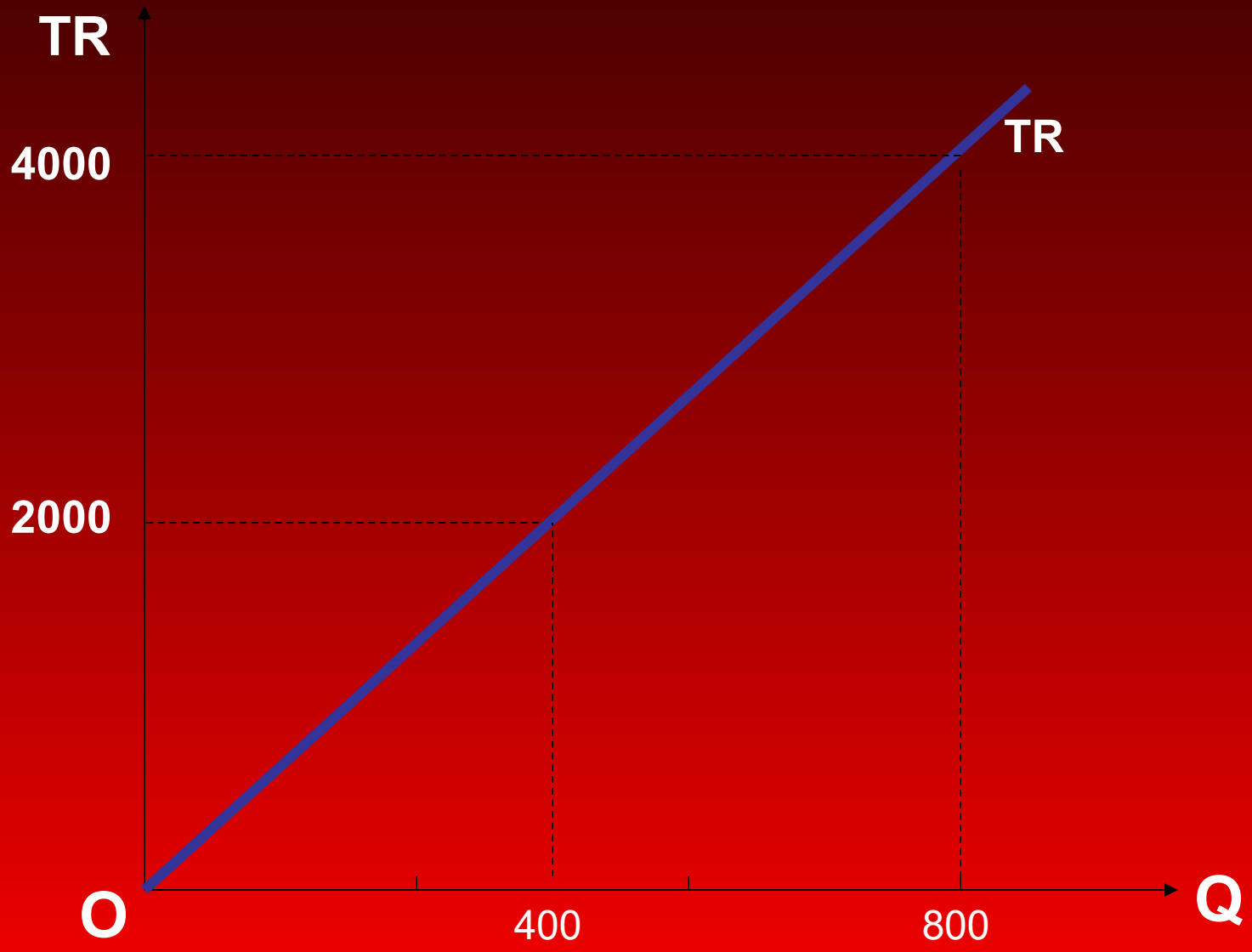
VU GLOBAL BY AARISH ALI
(+96569002641)

Deriving a firm's AR & MR curves: 'price-taking' firm



VU GLOBAL BY AARISH ALI
(+96569002641)

TR curve

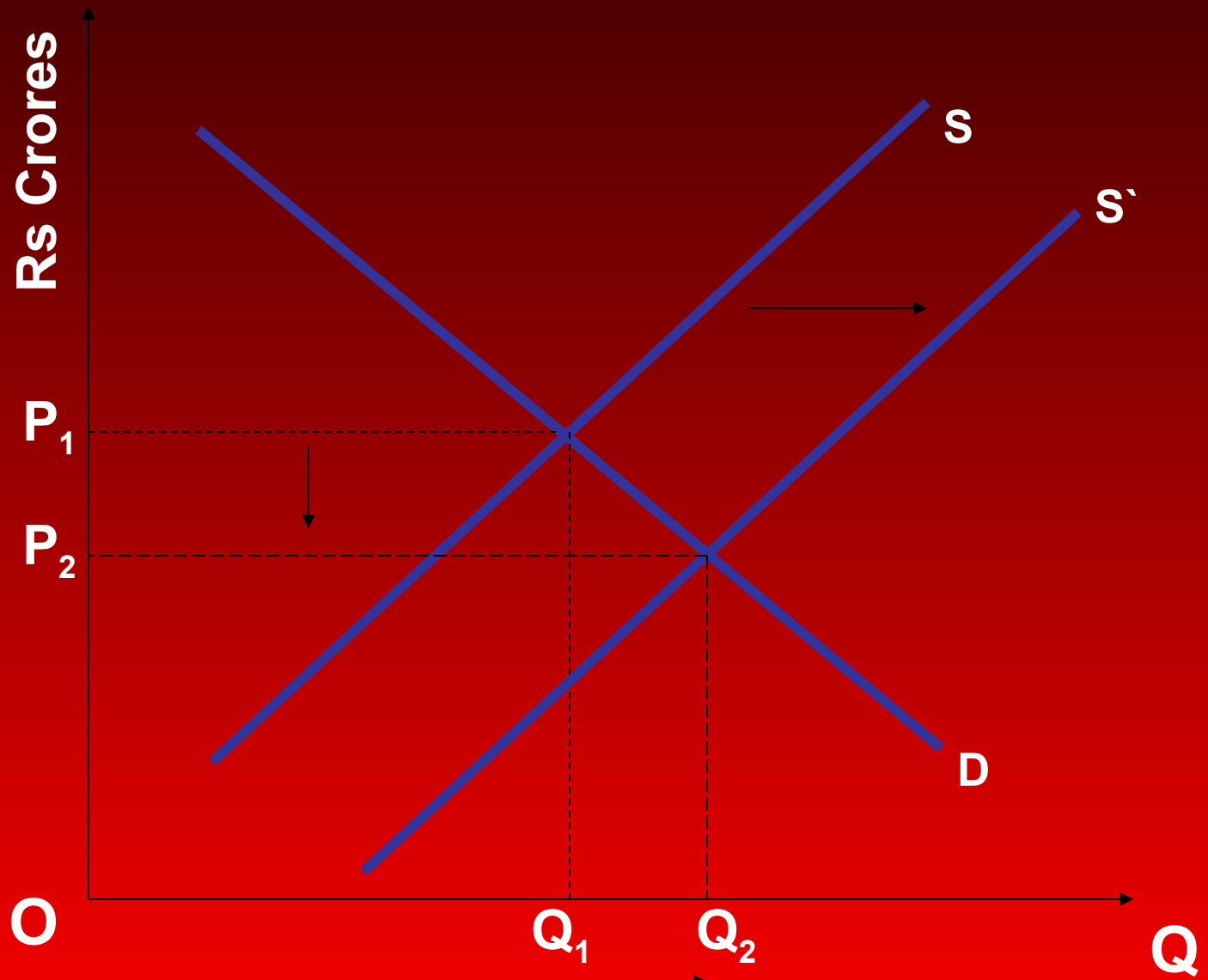


VU GLOBAL BY AARISH ALI
(+96569002641)

Revenue of a 'price-making' firm facing a downward sloping demand curve

Q (ships)	P = AR Rs. Crores	TR Rs. Crores	MR Rs. Crores
1	8	8	6
2	7	14	4
3	6	18	2
4	5	20	0
5	4	20	-2
6	3	18	-4
7	2	14	

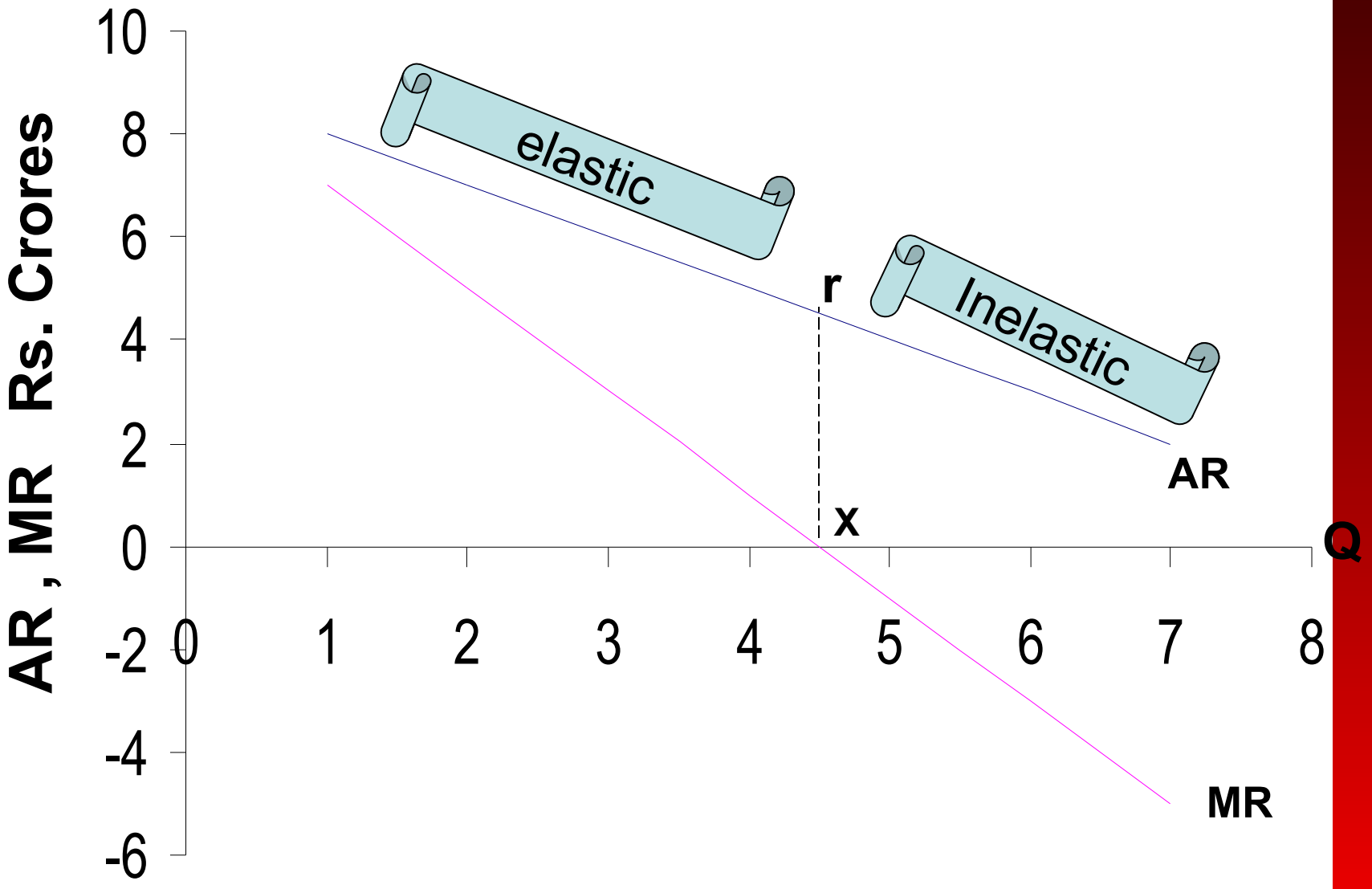
The market



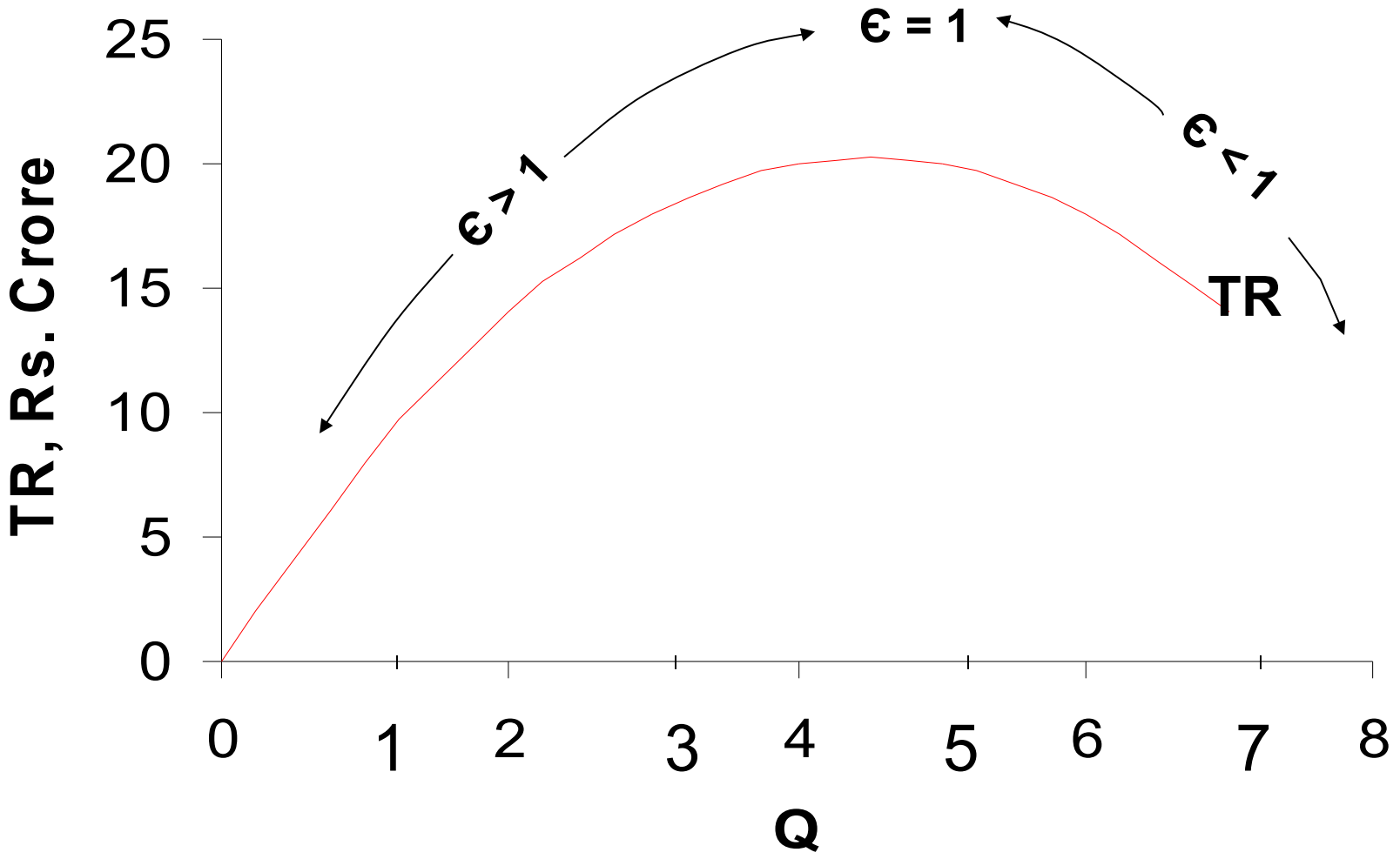
VU GLOBAL BY AARISH ALI
(+96569002641)

Revenue of a 'price-making' firm facing a downward sloping demand curve

Q (ships)	P = AR Rs. Crores	TR Rs. Crores	MR Rs. Crores
1	8	8	6
2	7	14	4
3	6	18	2
4	5	20	0
5	4	20	-2
6	3	18	-4
7	2	14	


AR , MR Rs. Crores
10
8
6
4
2
0
-2
-4
-6
0
1
2
3
4
5
6
7
8
Q
elastic
Inelastic
r
x
AR
MR

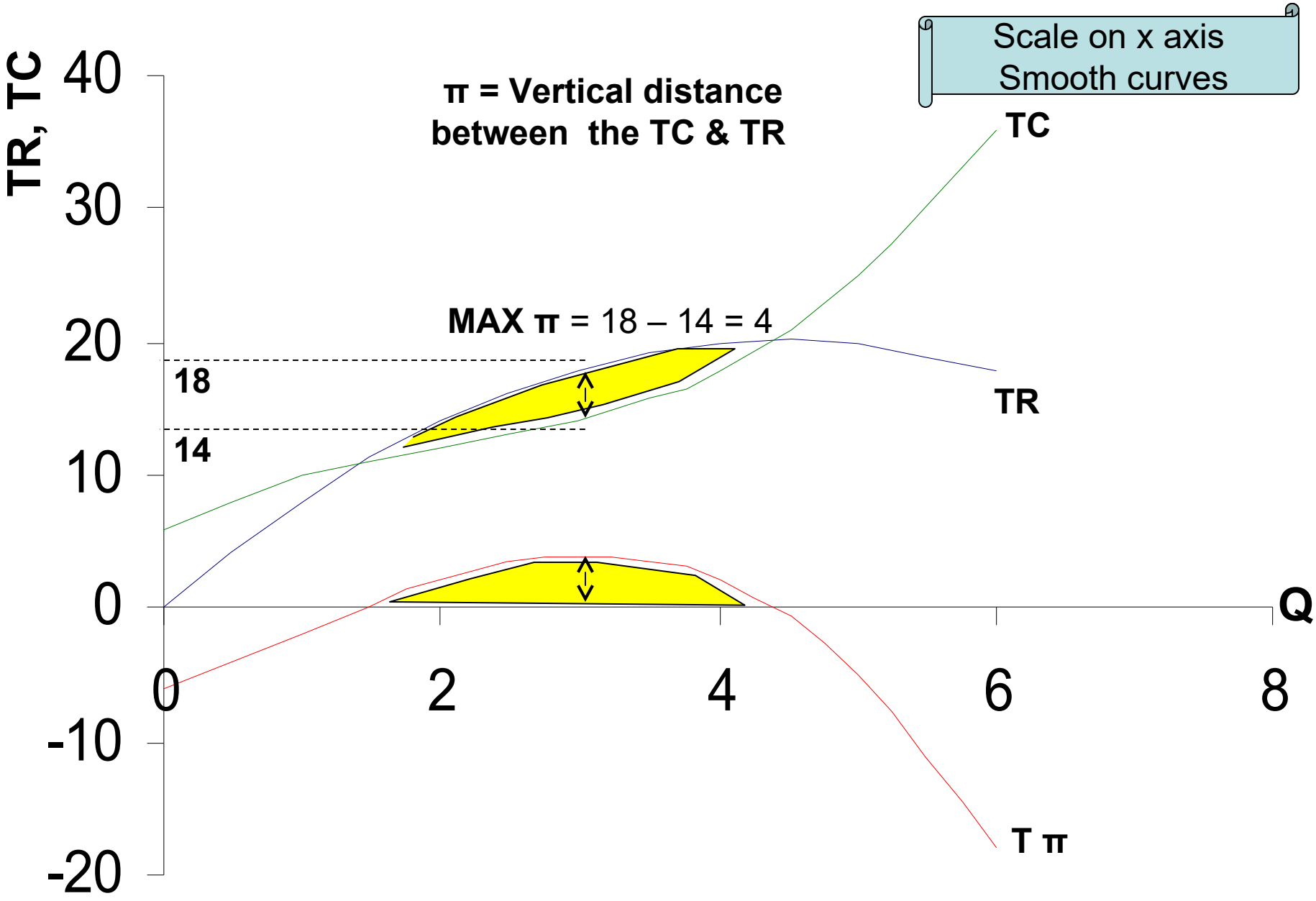
Total revenue for a firm facing a downward sloping demand curve



Total revenue and total cost approach to profit maximization

Q (units)	TR	TC	T π
0	0	6	-6
1	8	10	-2
2	14	12	2
3	18	14	4
4	20	18	2
5	20	25	-5
6	18	36	-18
7	14	56	-42

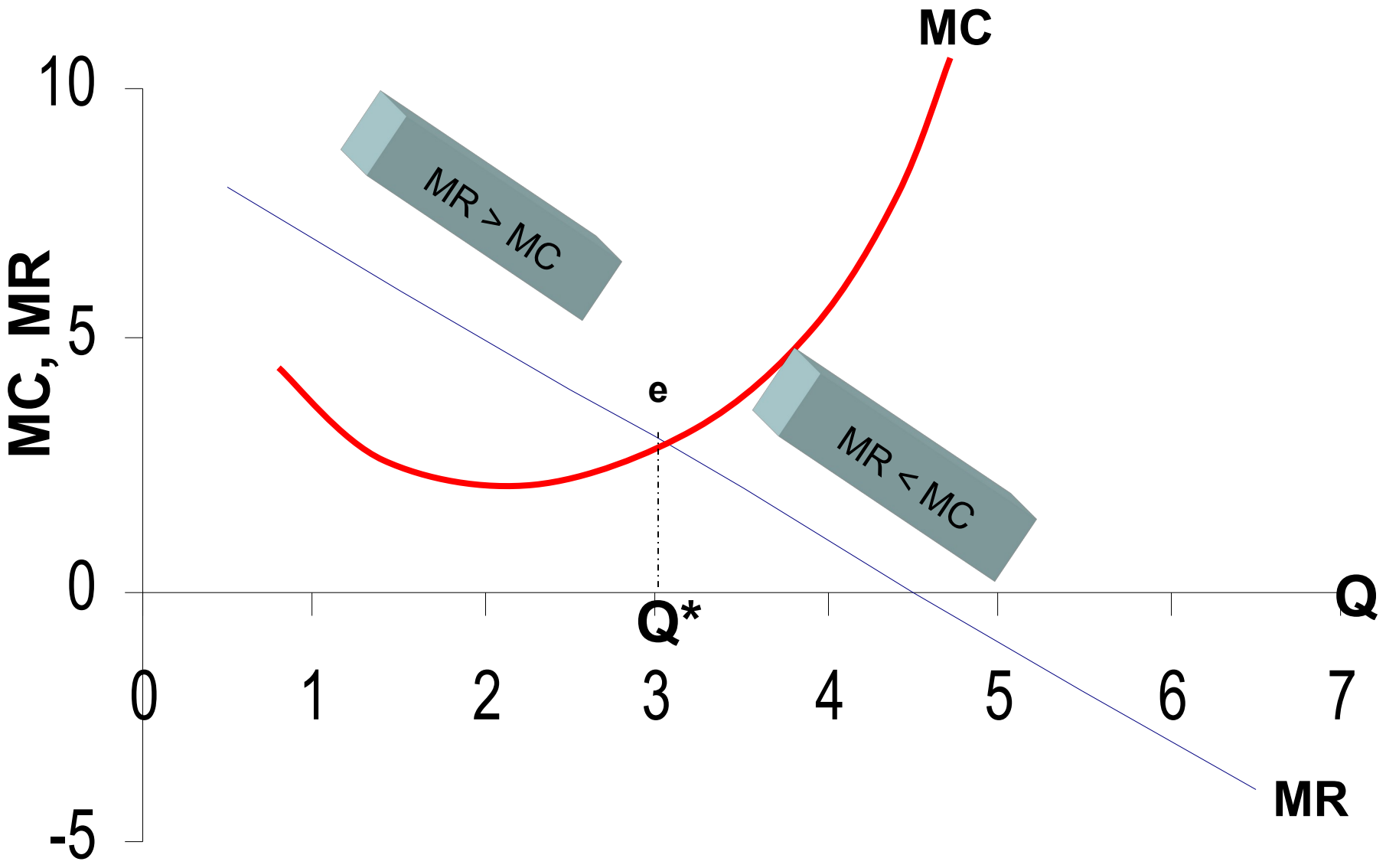
VULGLOBAL BY AARISH ALI
(+96569002641)

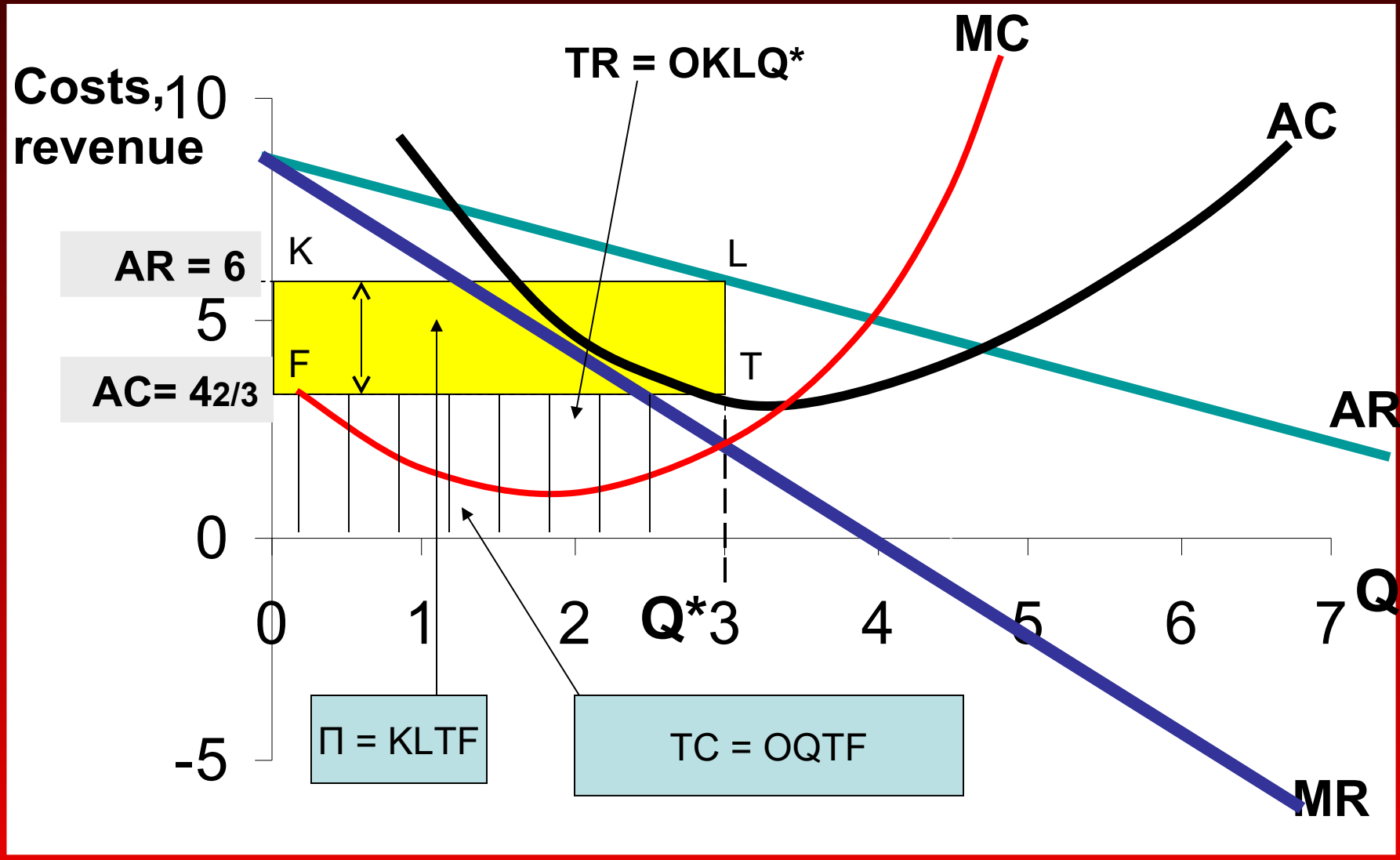

Scale on x axis
Smooth curves
π = Vertical distance between the TC & TR
TC
MAX π = 18 – 14 = 4
18
14
TR
TR, TC
40
30
20
10
0
-10
-20
Q
0
2
4
6
8
T π

TABLE

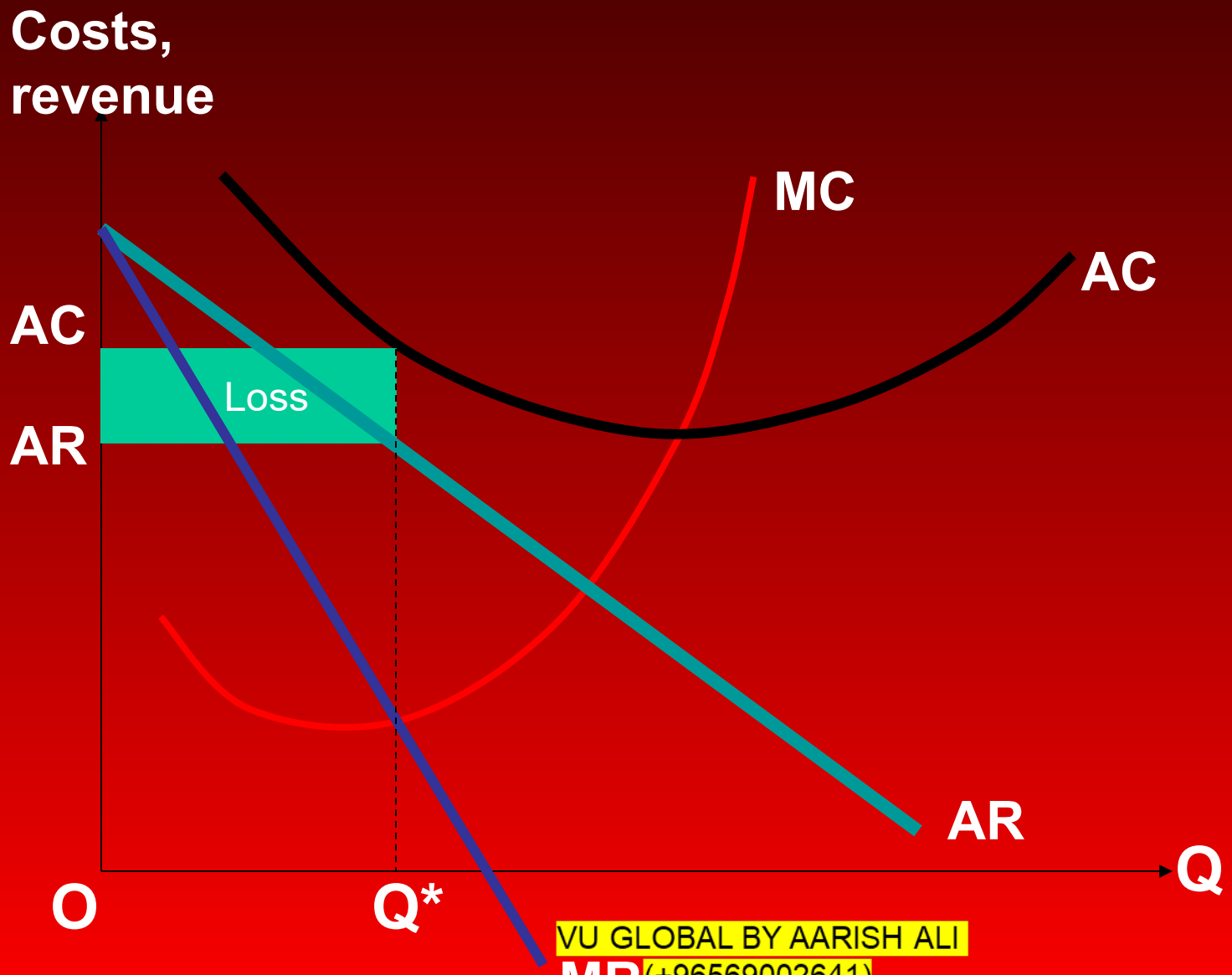
Q	P=AR	TR	MR	TC	AC	MC	T π	A π
0	9	0		6			-6	
1	8	8	8	10	10	4	-2	-2
2	7	14	6	12	6	2	2	1
3	6	18	4	14	4 2/3	2	4	1 1/3
4	5	20	2	18	4 1/2	4	2	1/2
5	4	20	0	25	5	7	-5	-1
6	3	18	-2	36	?	11	-18	-3
7	2	14	-4	56	8	20	-42	-6

VU GLOBAL BY AARISH ALI
(+96569002641)


MC
10
MC, MR
5
0
-5
MR > MC
MR < MC
e
Q*
Q
0
1
2
3
4
5
6
7
MR


Costs, revenue
10
5
0
-5
AR = 6
AC= 42/3
K
L
F
T
TR = OKLQ*
MC
AC
AR
MR
0
1
2
Q*3
4
5
6
7
Q
Π = KLTF
TC = OQTF

Loss minimizing output

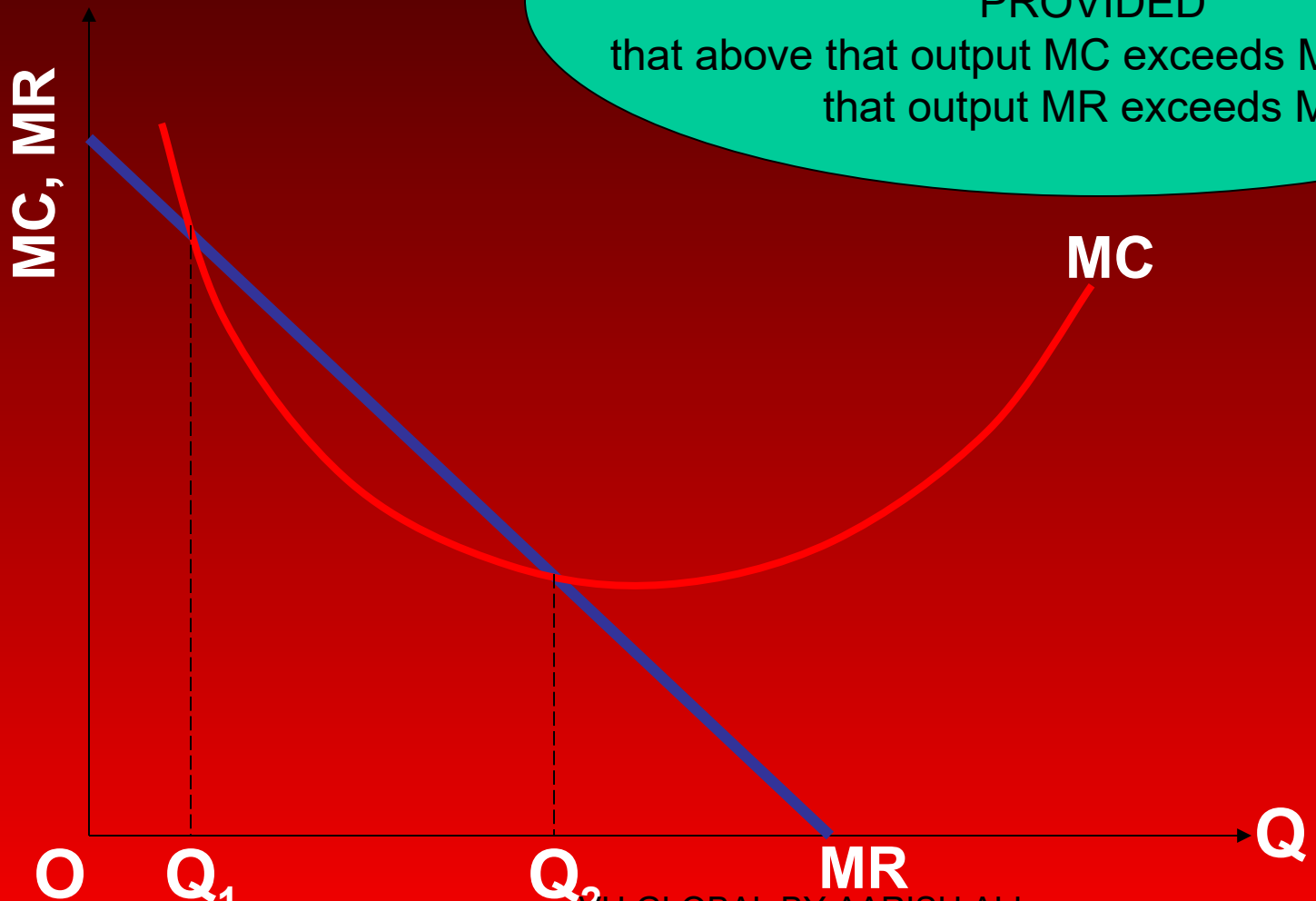


VU GLOBAL BY AARISH ALI
(+96569002641)

Lesson 18

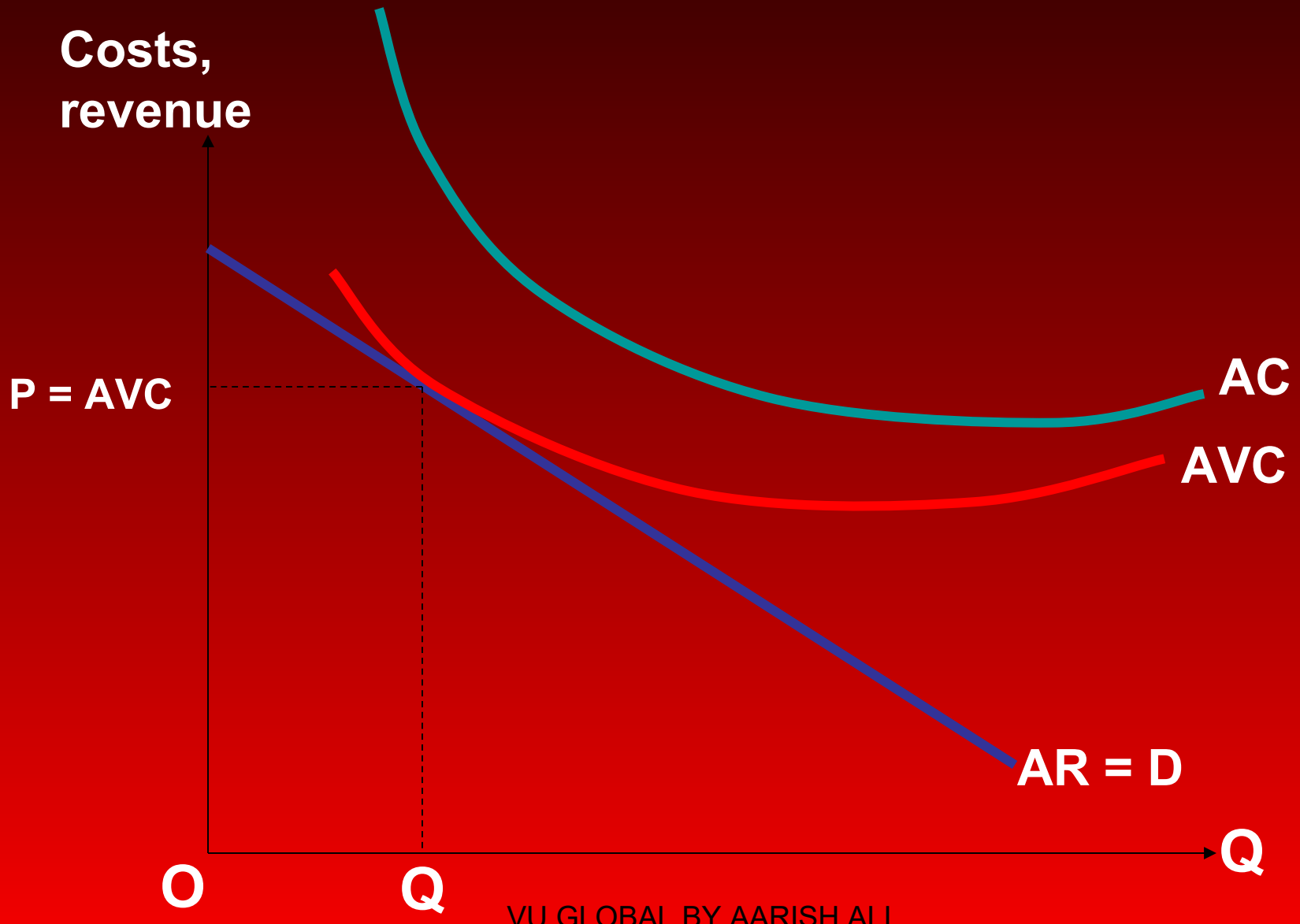
VU GLOBAL BY AARISH ALI
(+96569002641)

<u>Rule</u>
The firm should produce where MR = MC
PROVIDED
that above that output MC exceeds MR and below that output MR exceeds MC.



VU GLOBAL BY AARISH ALI
(+96569002641)

Shut down point



VU GLOBAL BY AARISH ALI
(+96569002641)

Using calculus to find maximum profit output

- $TR = 48Q - Q^2$
- $TC = 12 + 16Q + 3Q^2$

Q	TR	TC	Tπ = TR –TC
0	0	12	-12
1	47	31	16
2	92	56	36
3	135	87	48
4	176	124	52
5	215	167	48
6	252	216	36
7	287	271	16

VU GLOBAL BY AARISH ALI
(+96569002641)

- **FINDING WHERE MR = MC**

- **MR = $\frac{dTR}{dQ}$**

  MC = $\frac{dTC}{dQ}$

- **Differentiating the TR and TC gives**

  $\frac{dTR}{dQ} = 48 - 2Q = MR$

  $\frac{dTC}{dQ} = 16 + 6Q = MC$

- **Profit is maximized where MR = MC:**

  $48 – 2Q = 16 + 6Q$

- **Solving this for Q gives:**

  $32 = 8Q$

  $Q = 4$

- **The equation for total profit is**

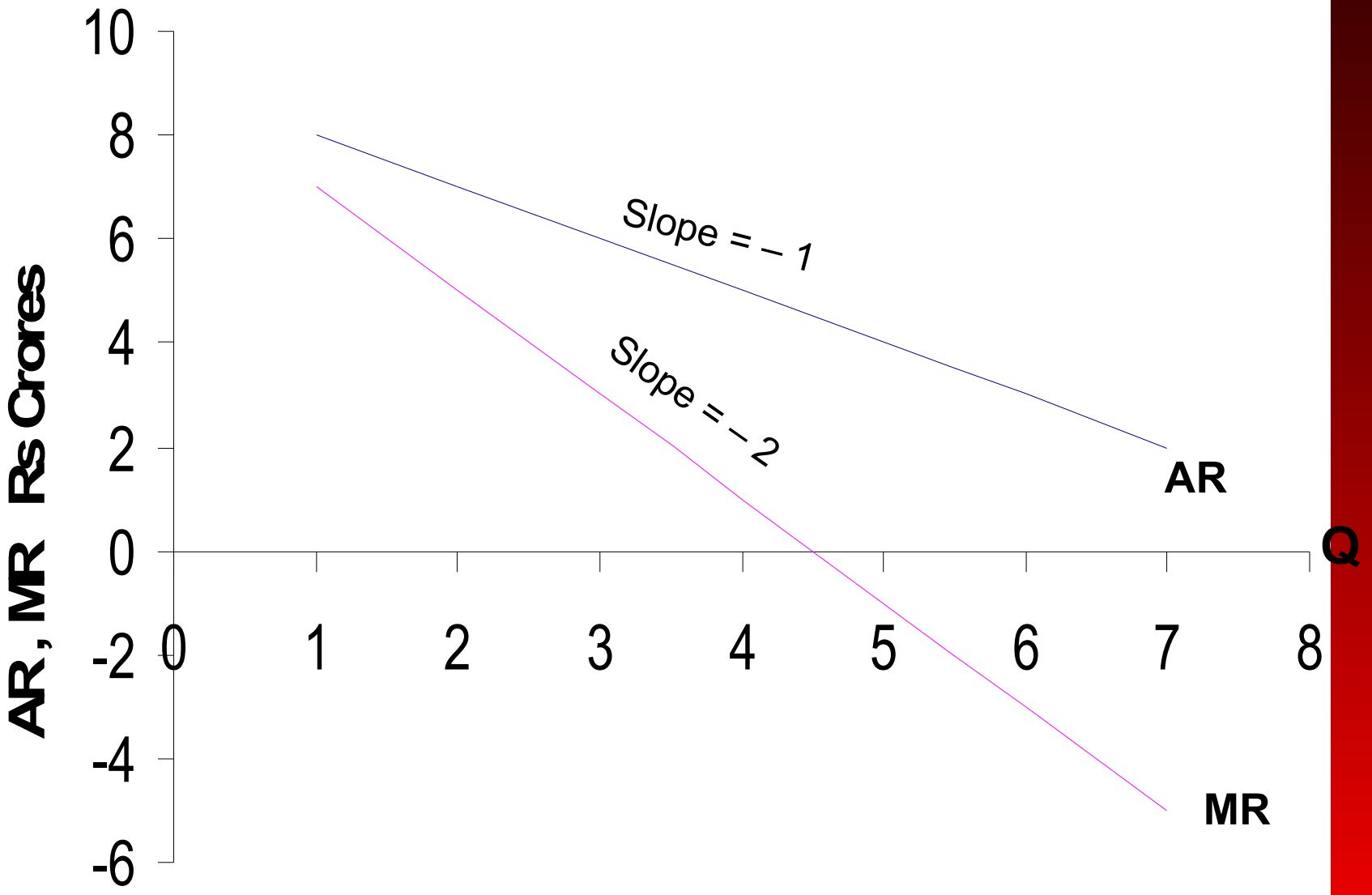
$$T\pi = TR – TC$$

$$= 48Q – Q^2 – (12 + 16Q + 3Q^2)$$

$$= -12 + 32Q – 4Q^2$$

Putting $Q = 4$

$T\pi = 52$


10
8
6
4
2
0
-2
-4
-6
AR, MR Rs Crores
0
1
2
3
4
5
6
7
8
Q
Slope = – 1
Slope = – 2
AR
MR

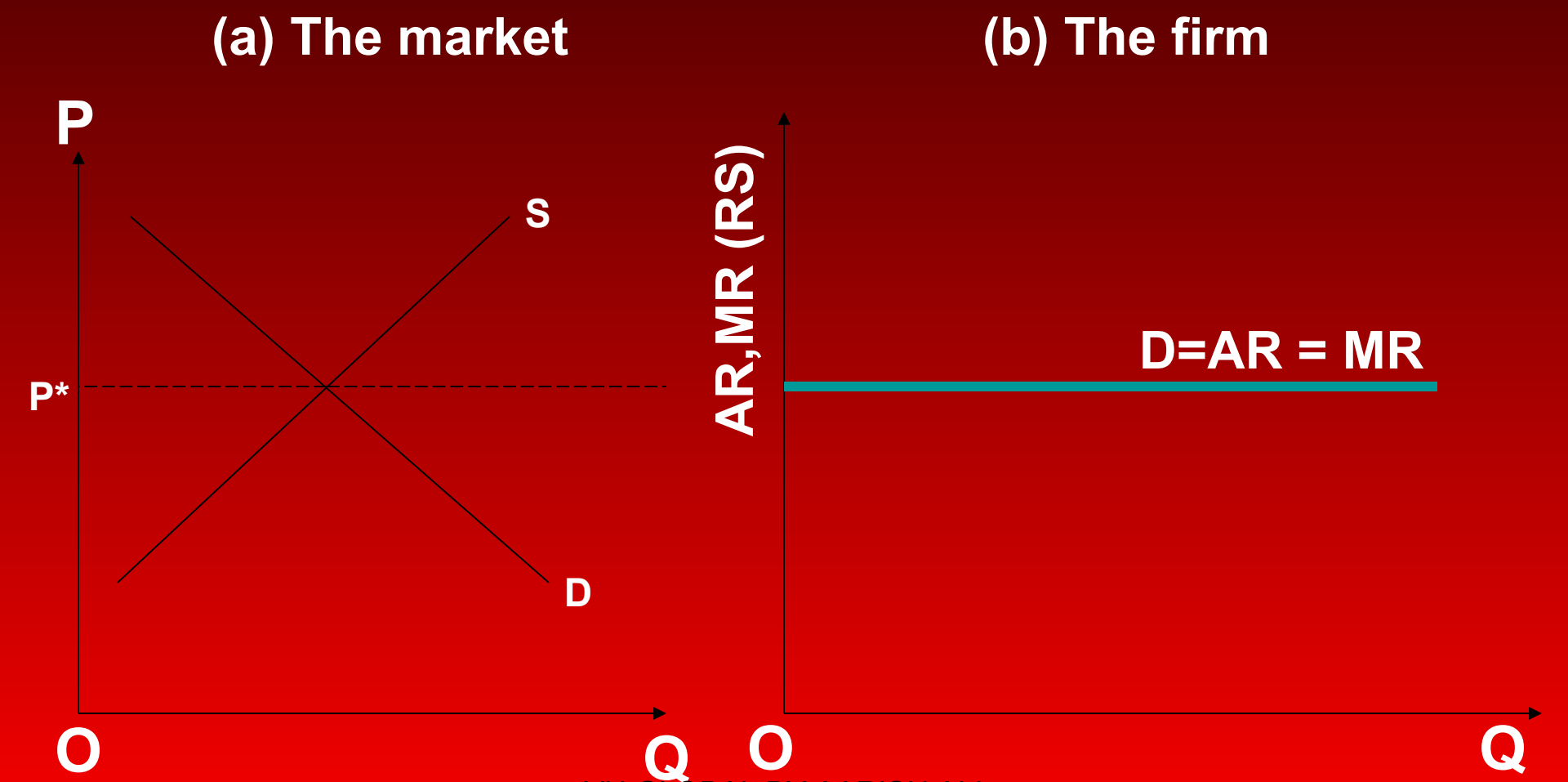
Type of market	Number of firms	Freedom of entry	Nature of product	Examples	Implication for demand curve of firm
Perfect competition	Very many	Unrestricted	Homogenous (undifferentiated)	Grains (wheat) or vegetables	Horizontal; firm is a price taker
Monopolistic competition	Many / Several	Unrestricted	Differentiated	Plumbers, restaurants	Downward sloping but relatively elastic; firm has some control over prices.

VU GLOBAL BY AARISH ALI
(+96569002641)

Type of market	Number of firms	Freedom of entry	Nature of product	Examples	Implication for demand curve of firm
Oligopoly or Cartel	Few	Restricted	1.Undifferentiated or 2. Differentiated	Cement, cars, electrical appliance, oil.	Downward sloping relatively inelastic but depends on reactions of rivals to a price change
Monopoly	One	Restricted or completely blocked	Unique	WAPDA, or KESC	Downward sloping more inelastic than oligopoly; firm has considerable control over price

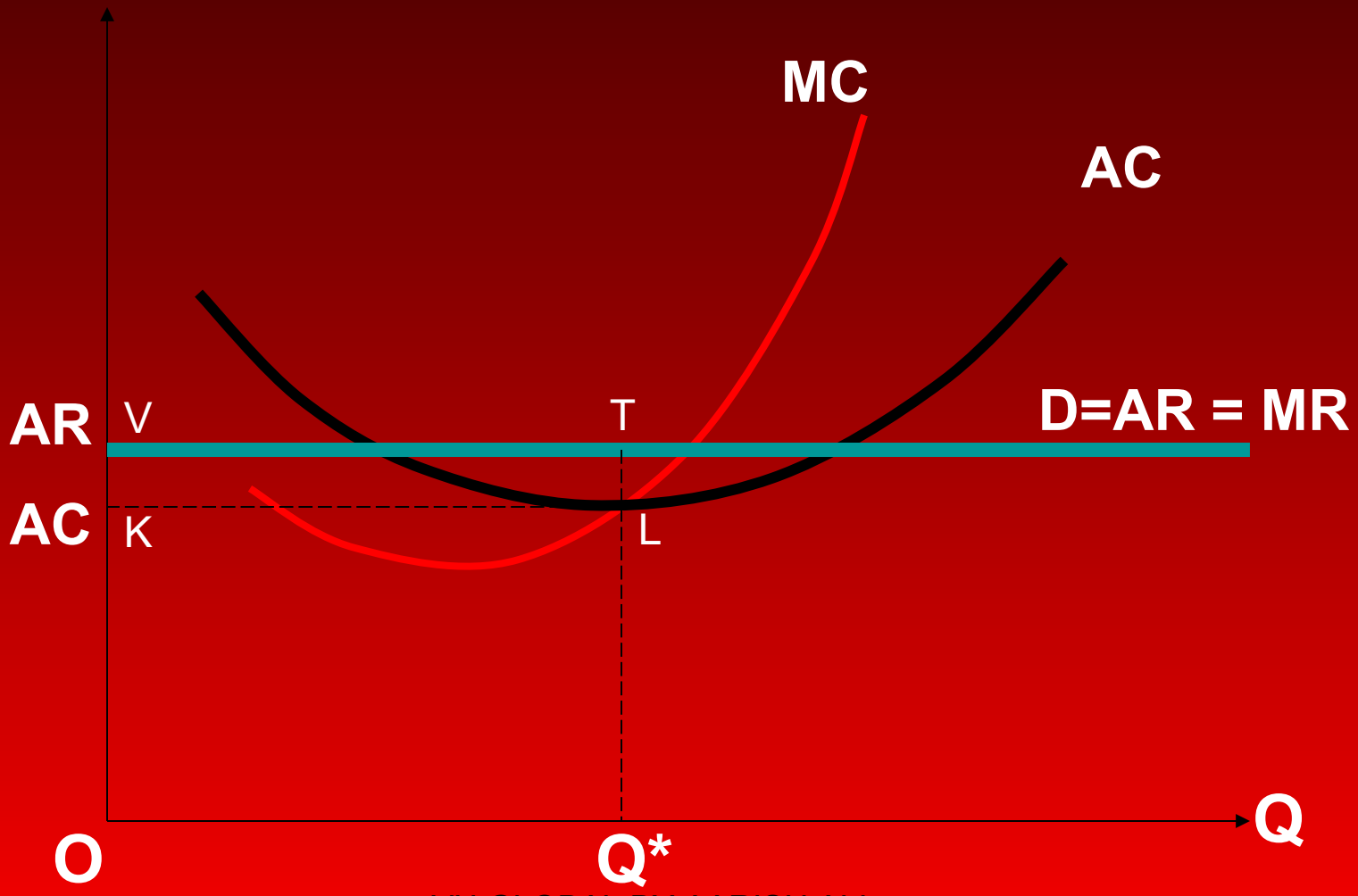
VU GLOBAL BY AARISH ALI
(+96569002641)

A price taking firm



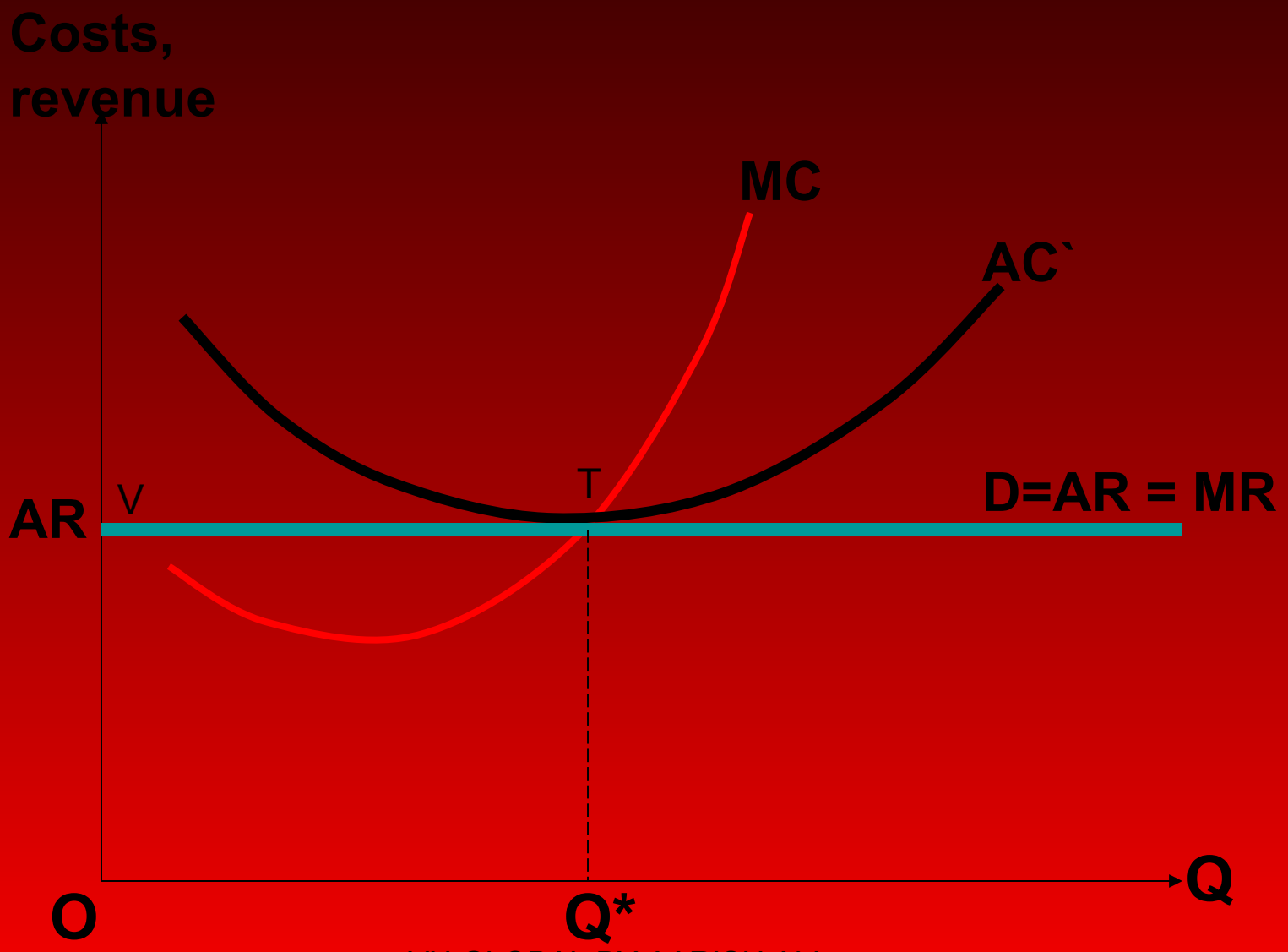
VU GLOBAL BY AARISH ALI
(+966569002641)

Firm makes super normal profits



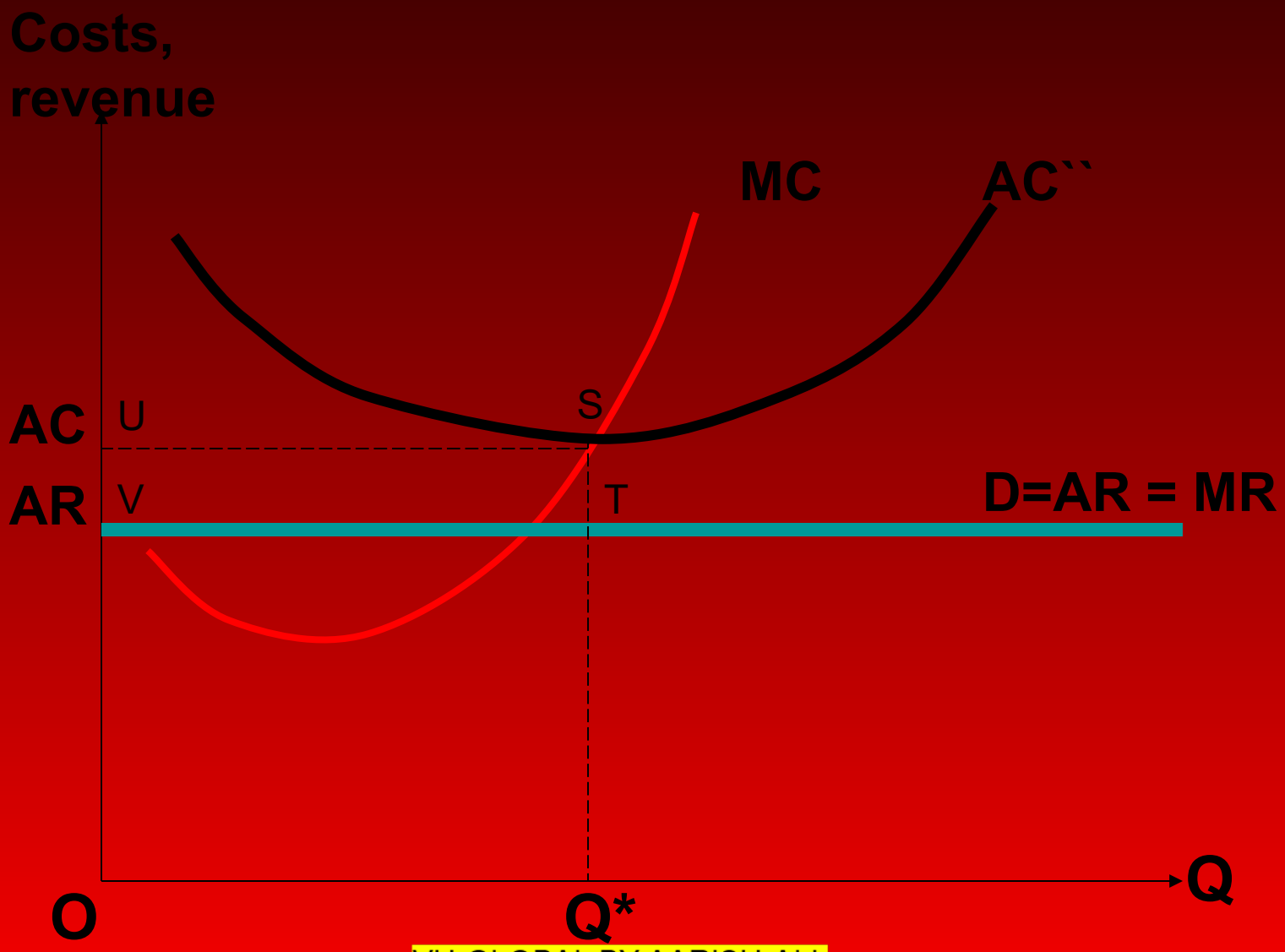
VU GLOBAL BY AARISH ALI
(+96569002641)

Firm makes normal profits



VU GLOBAL BY AARISH ALI
(+96569002641)

Firm makes loss

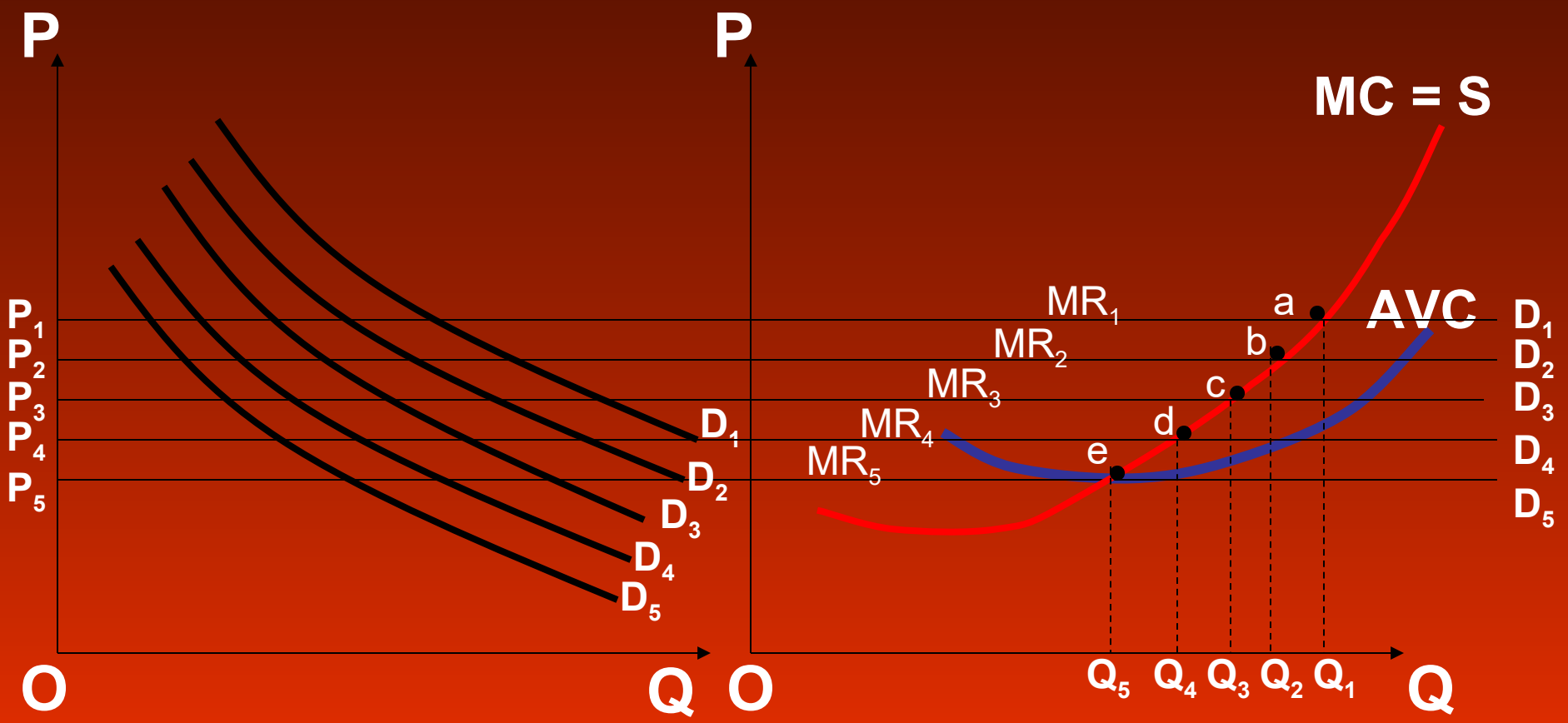


VU GLOBAL BY AARISH ALI
(+96569002641)

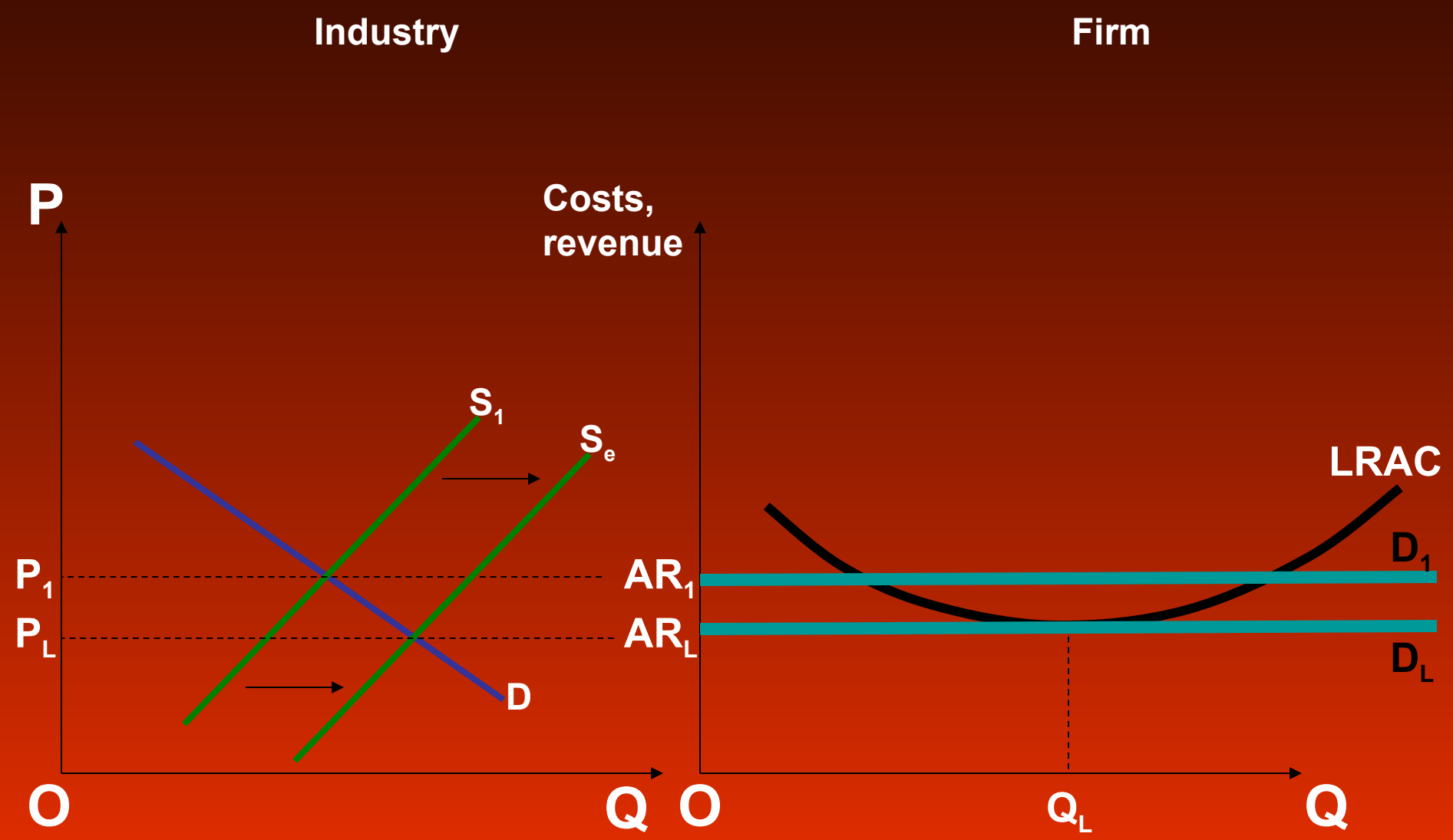
Introductory Economics

Lecture 19

VU GLOBAL BY AARISH ALI
(+96569002641)

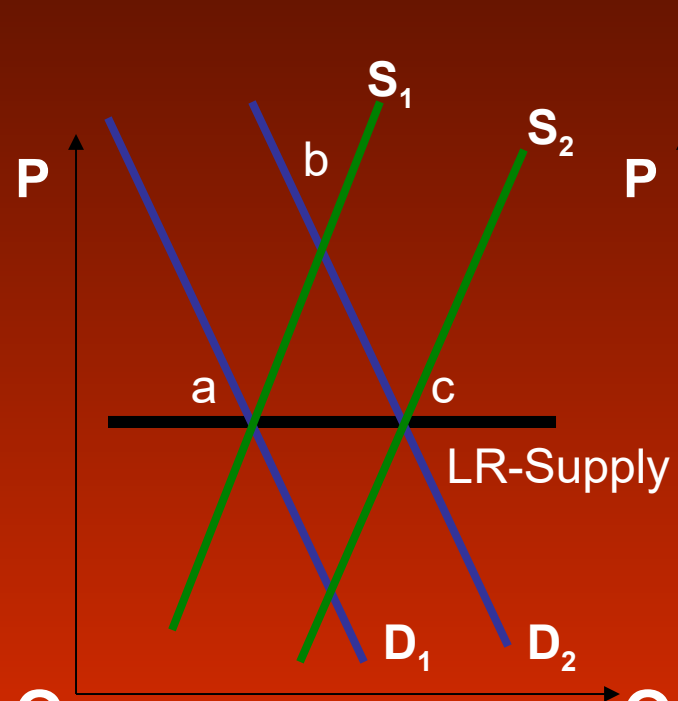


VU GLOBAL BY AARISH ALI
(+96569002641)

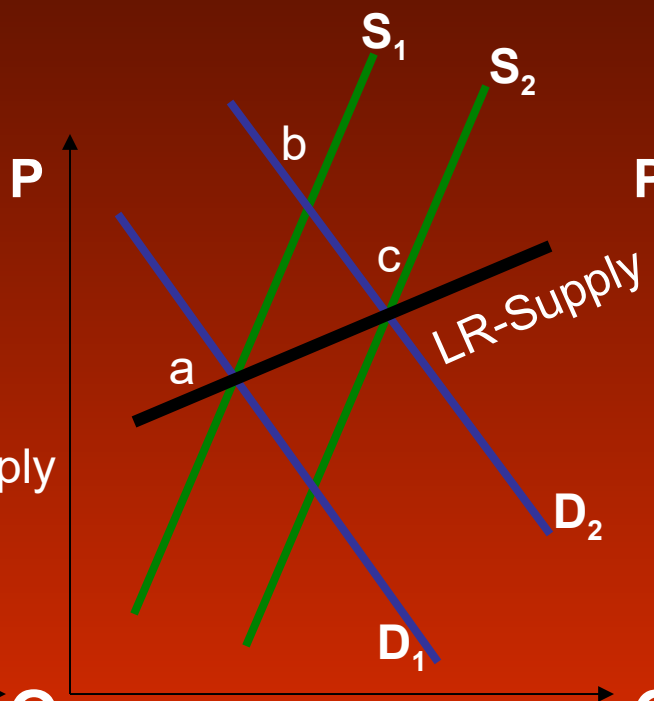


VU GLOBAL BY AARISH ALI
(+96569002641)

Long run industry supply curves

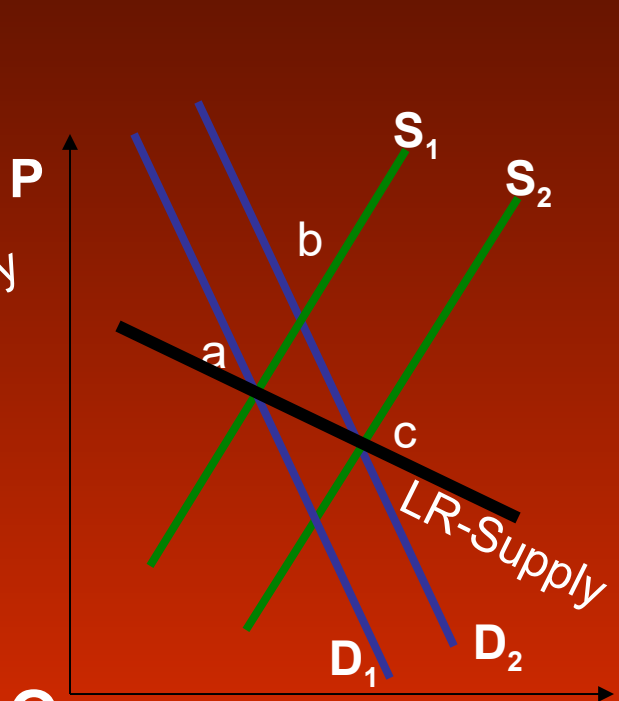


(a) Constant industry cost



(b) Increasing industry cost

External diseconomies of scale



(c) Decreasing industry cost

External economies of scale

VU GLOBAL BY AARISH ALI
(+96569002641)

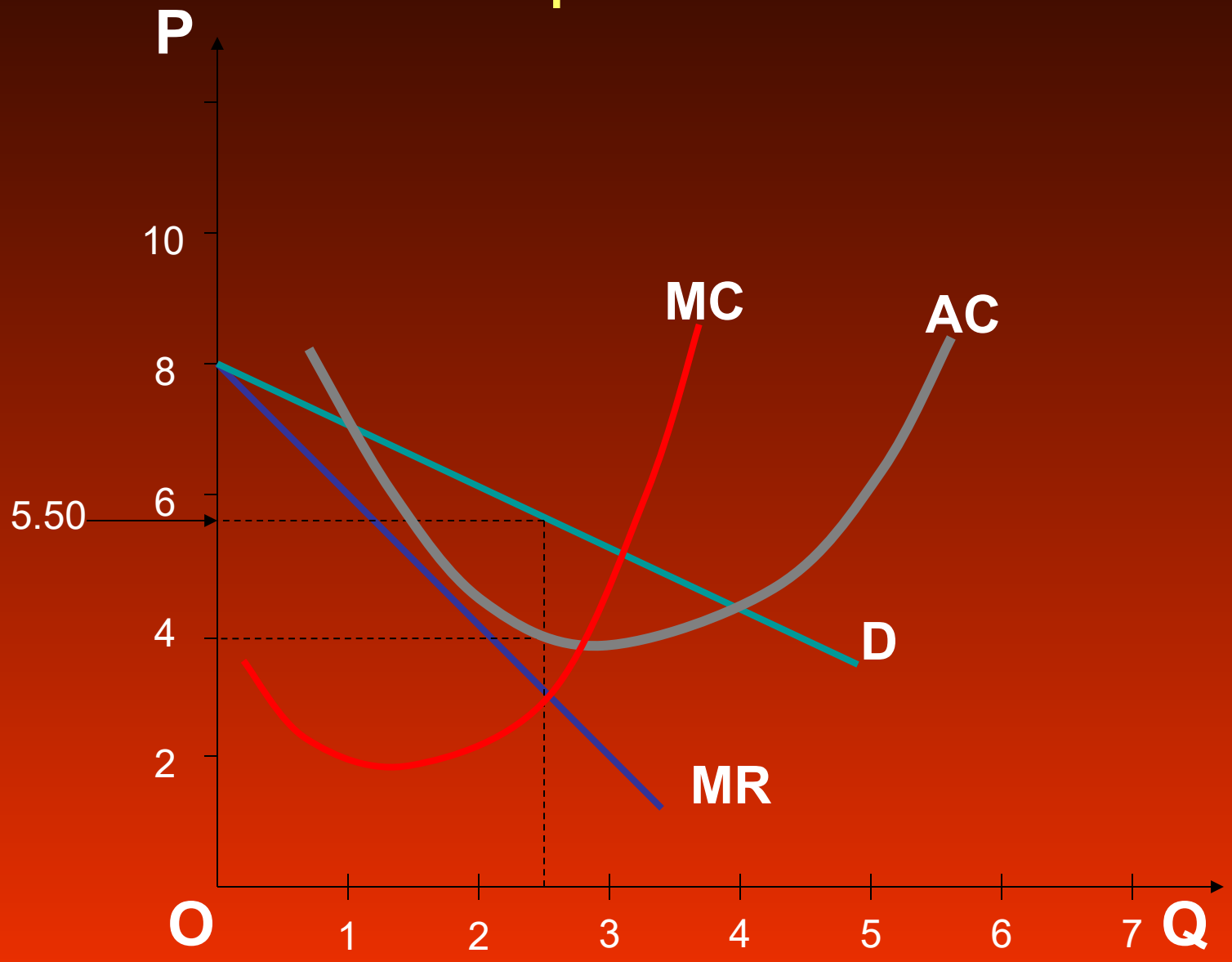
Monopoly

Table

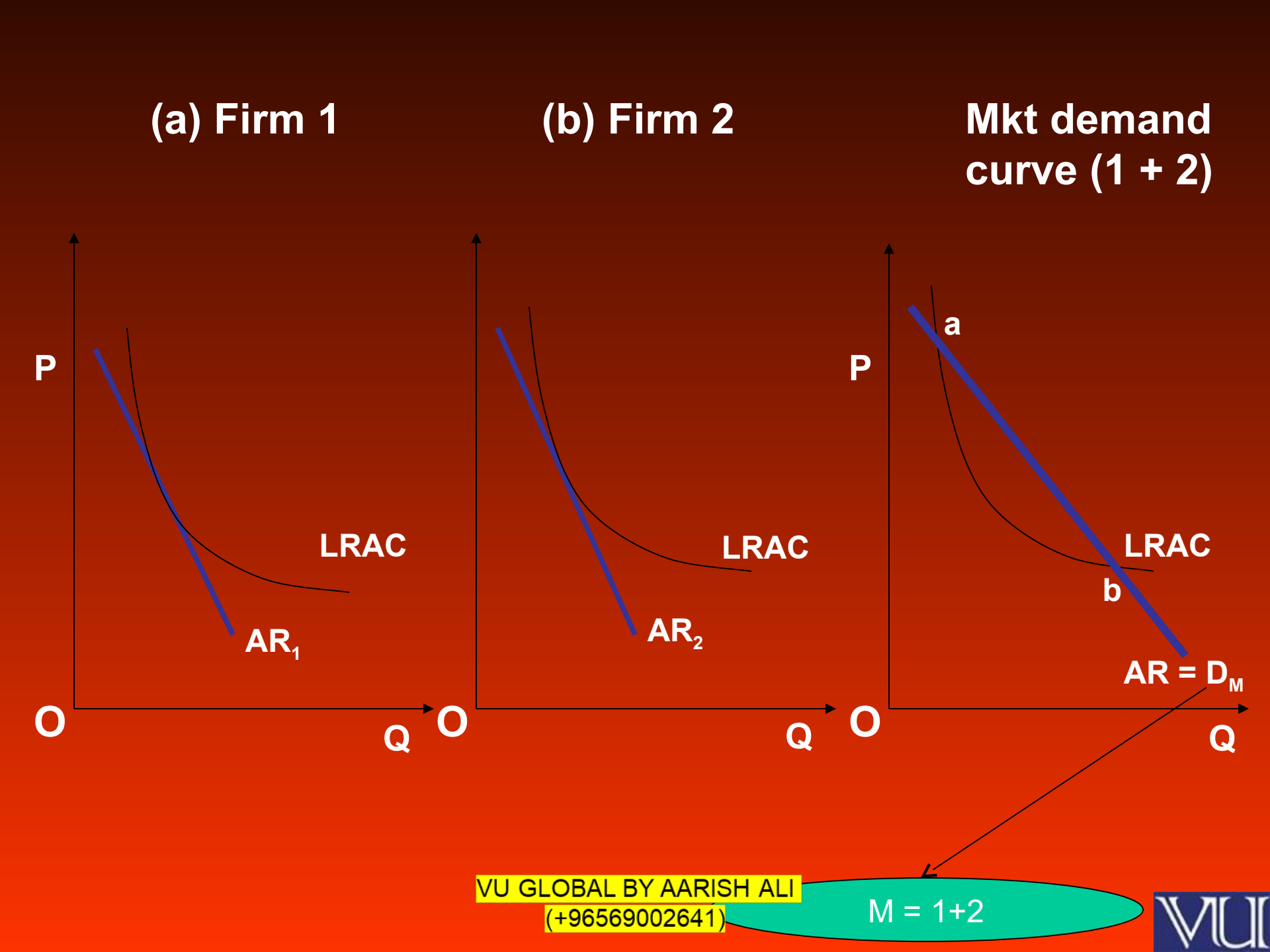
P	Q	TR	MR	TC	MC	AC	T π
8	0	0	7	6	2		-6
7	1	7	5	8	1	8	1
6	2	12		9		4.5	3
5.5	2.5	13.75	3	10	3	4	3.75
5	3	15	1	18	8	4	3
4	4	16	1	20	15	5	-4
3	5	15		35		7	-20

VU GLOBAL BY AARISH ALI
(+96569002641)

Graphical illustration



VU GLOBAL BY AARISH ALI
(+96569002641)



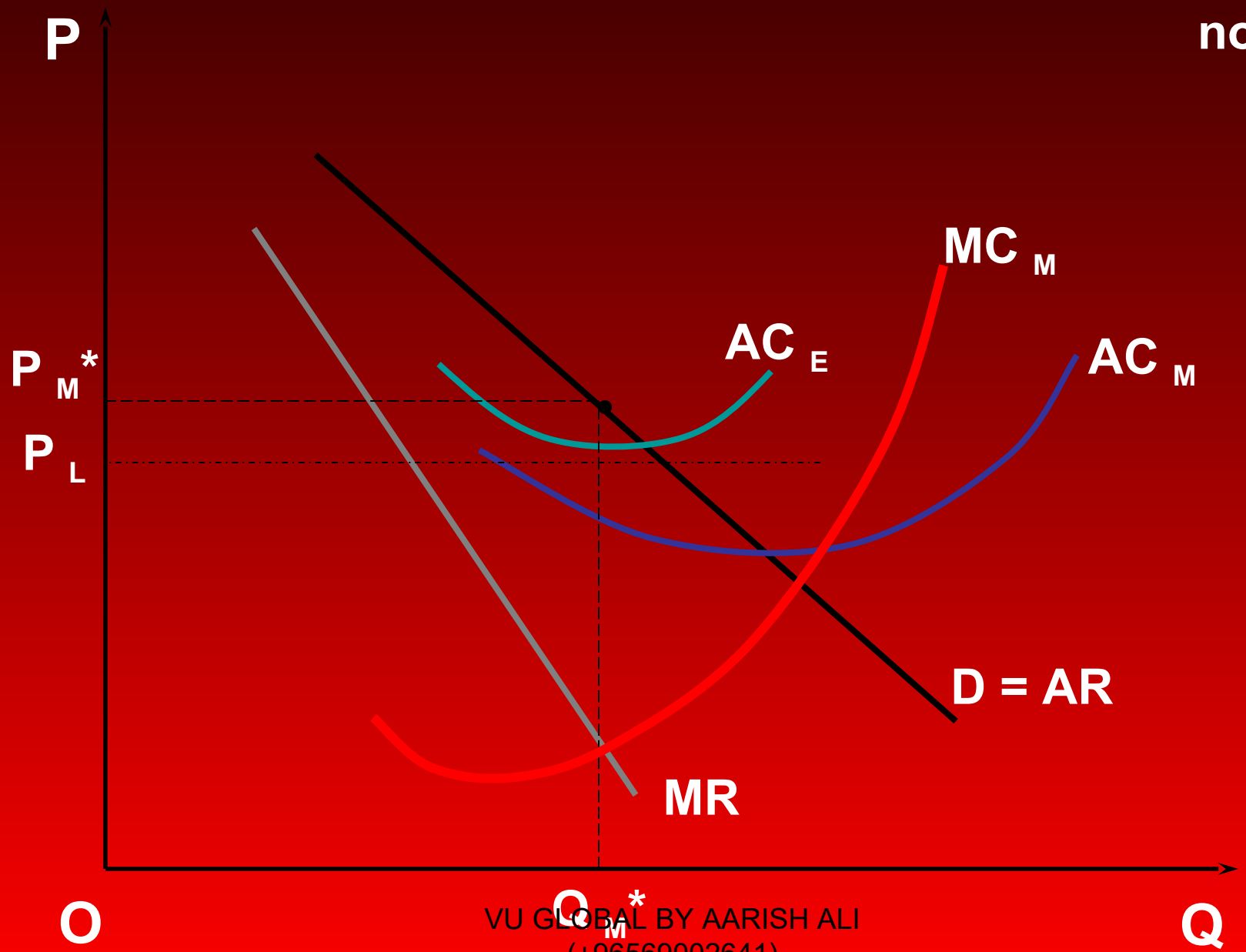
VU GLOBAL BY AARISH ALI
(+96569002641)

Lesson 20

VU GLOBAL BY AARISH ALI
(+96569002641)

Limit Pricing

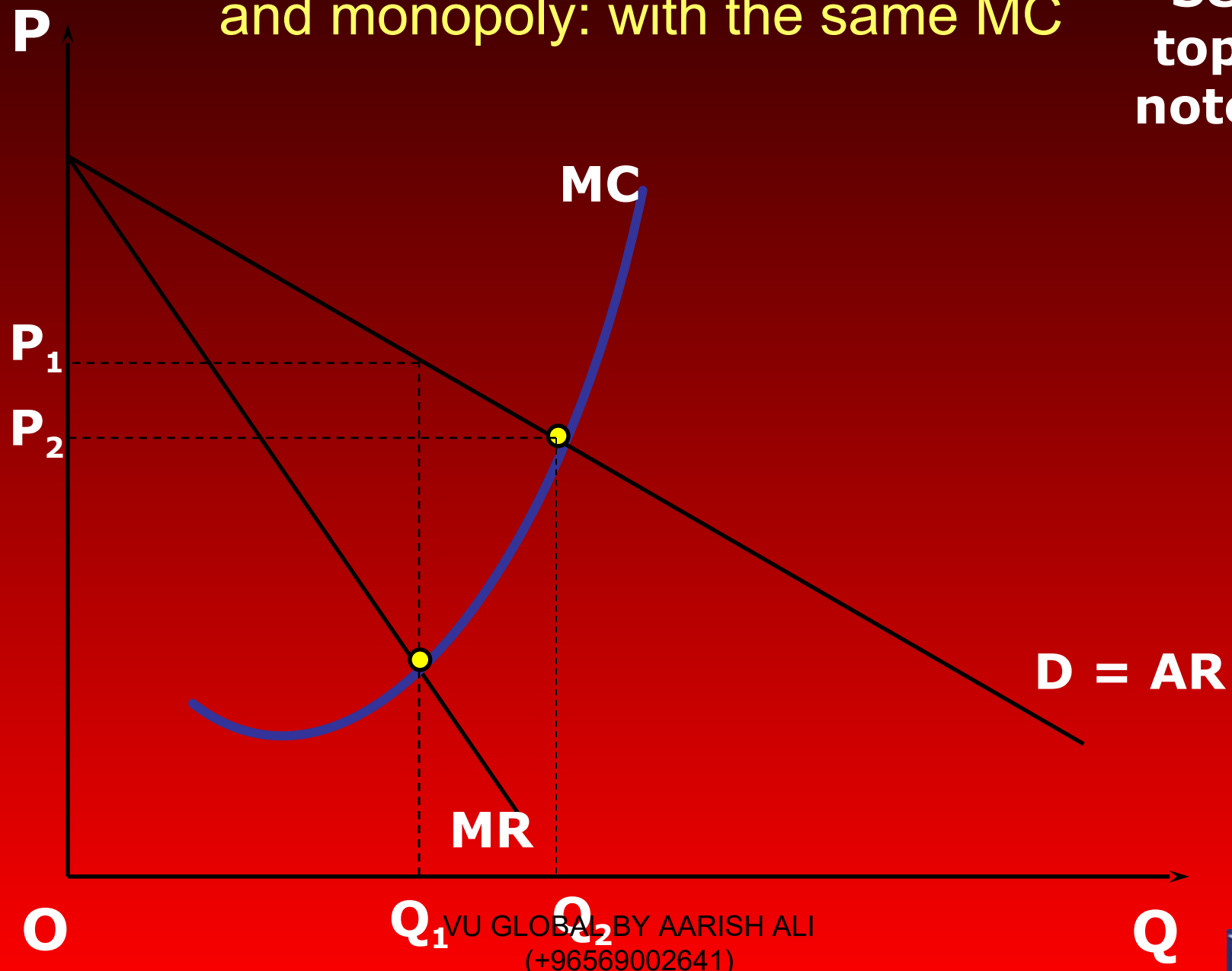
See topic note 4



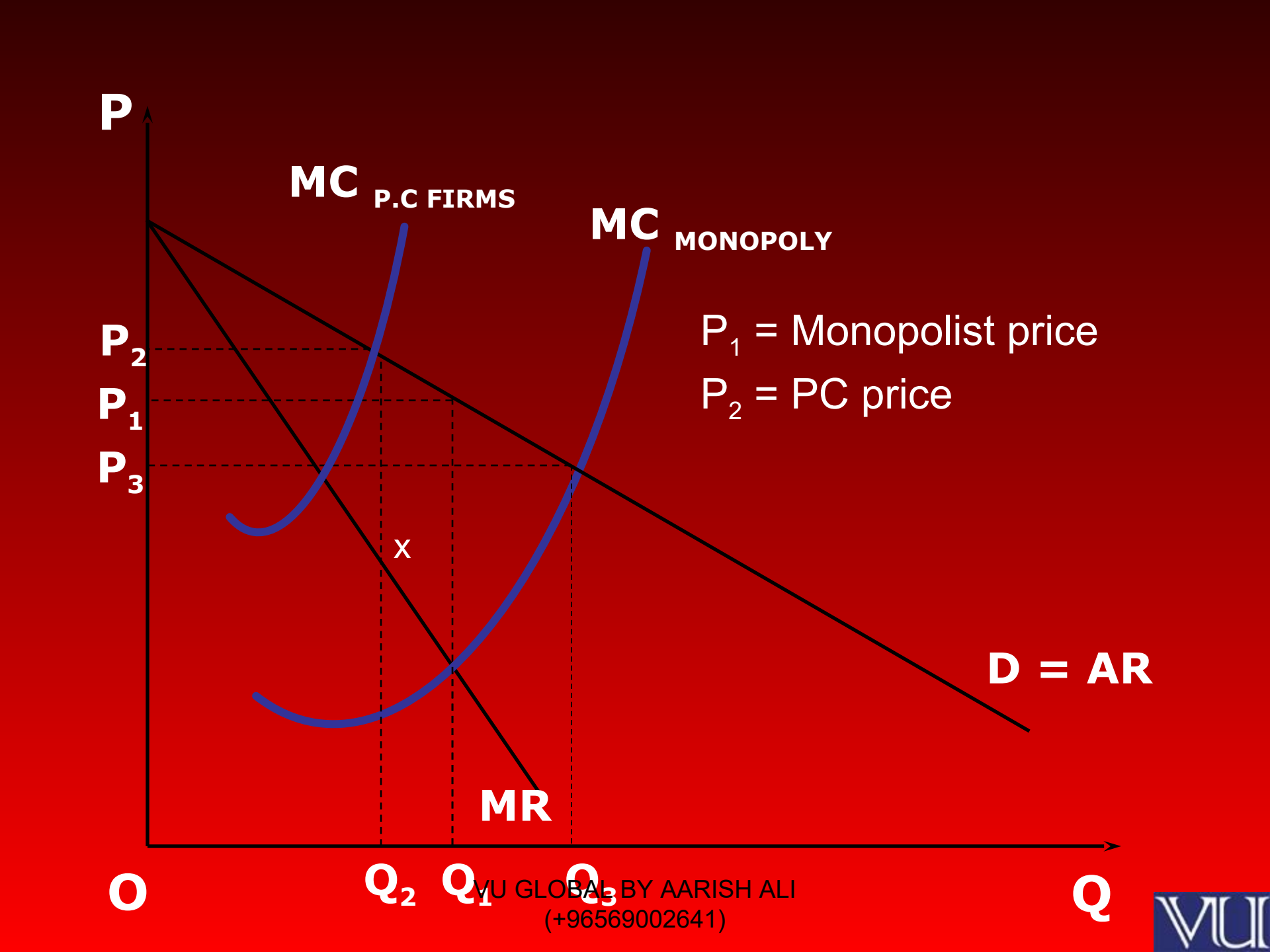
VU GLOBAL BY AARISH ALI
(+96569002641)

Equilibrium of the industry under perfect competition and monopoly: with the same MC

See topic note 4



VU GLOBAL BY AARISH ALI
(+96569002641)

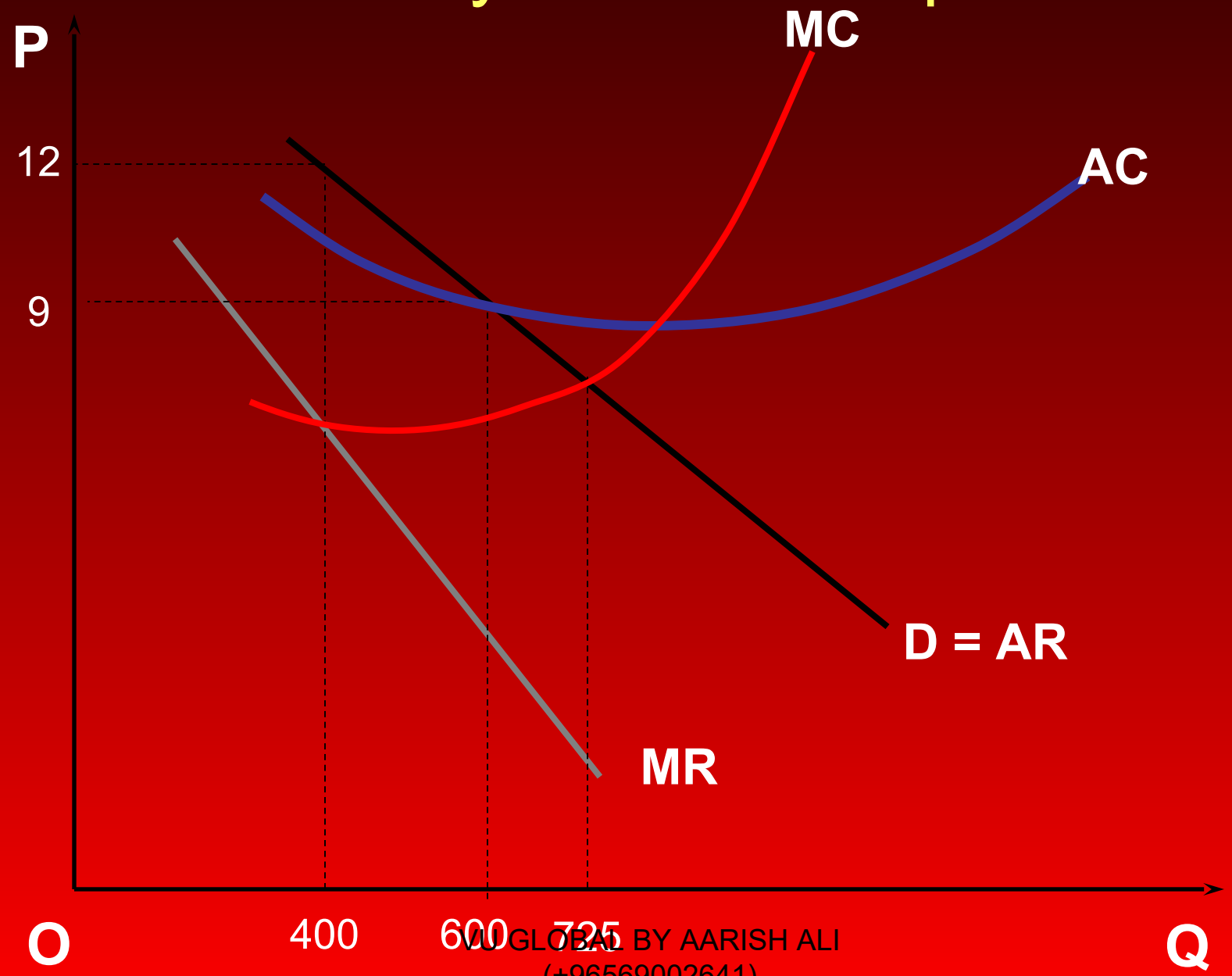


P_1 = Monopolist price

P_2 = PC price

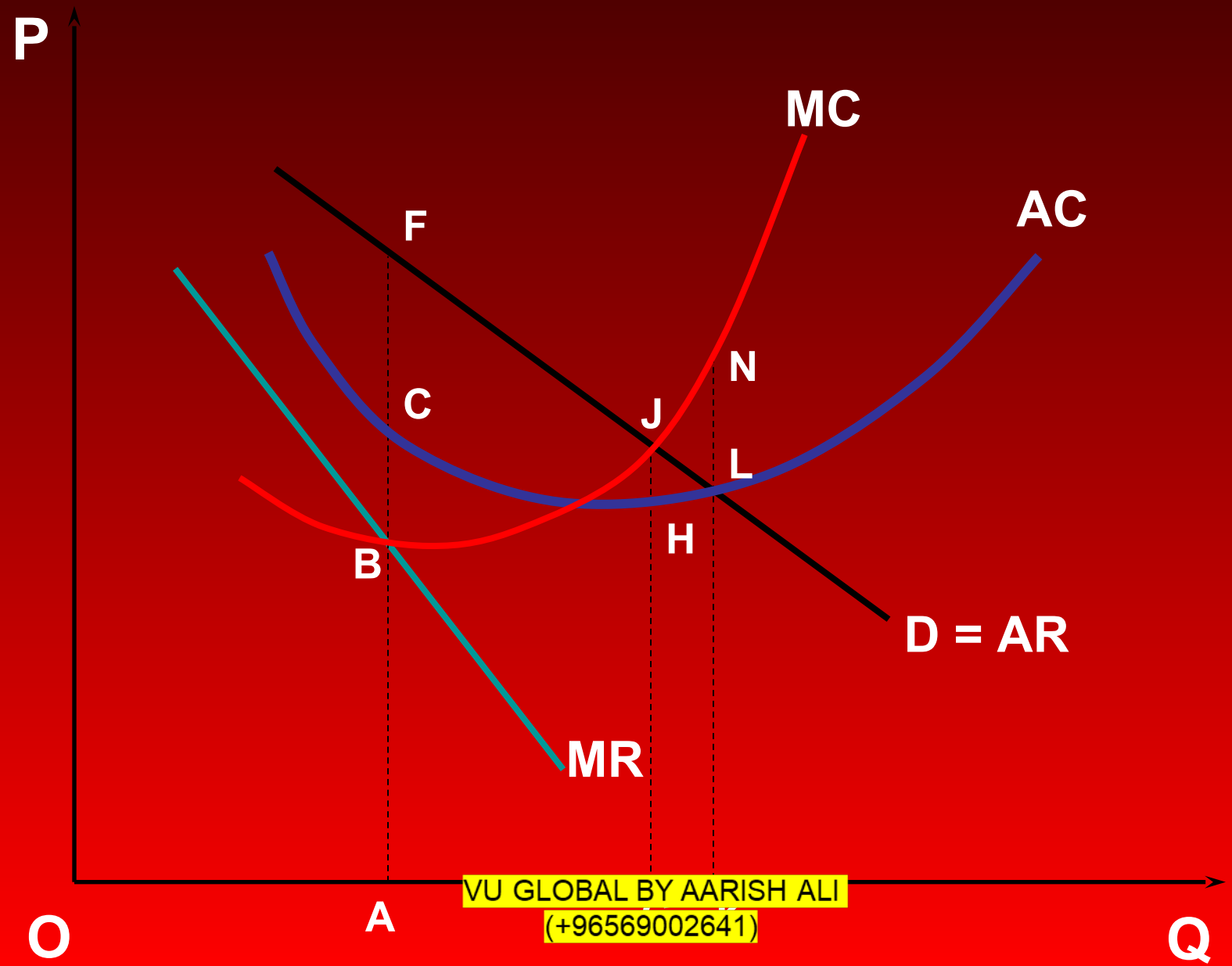
VU GLOBAL BY AARISH ALI
(+96569002641)

Subsidy to the monopolist



VU GLOBAL BY AARISH ALI
(+96569002641)

Imposition of tax on the monopolist

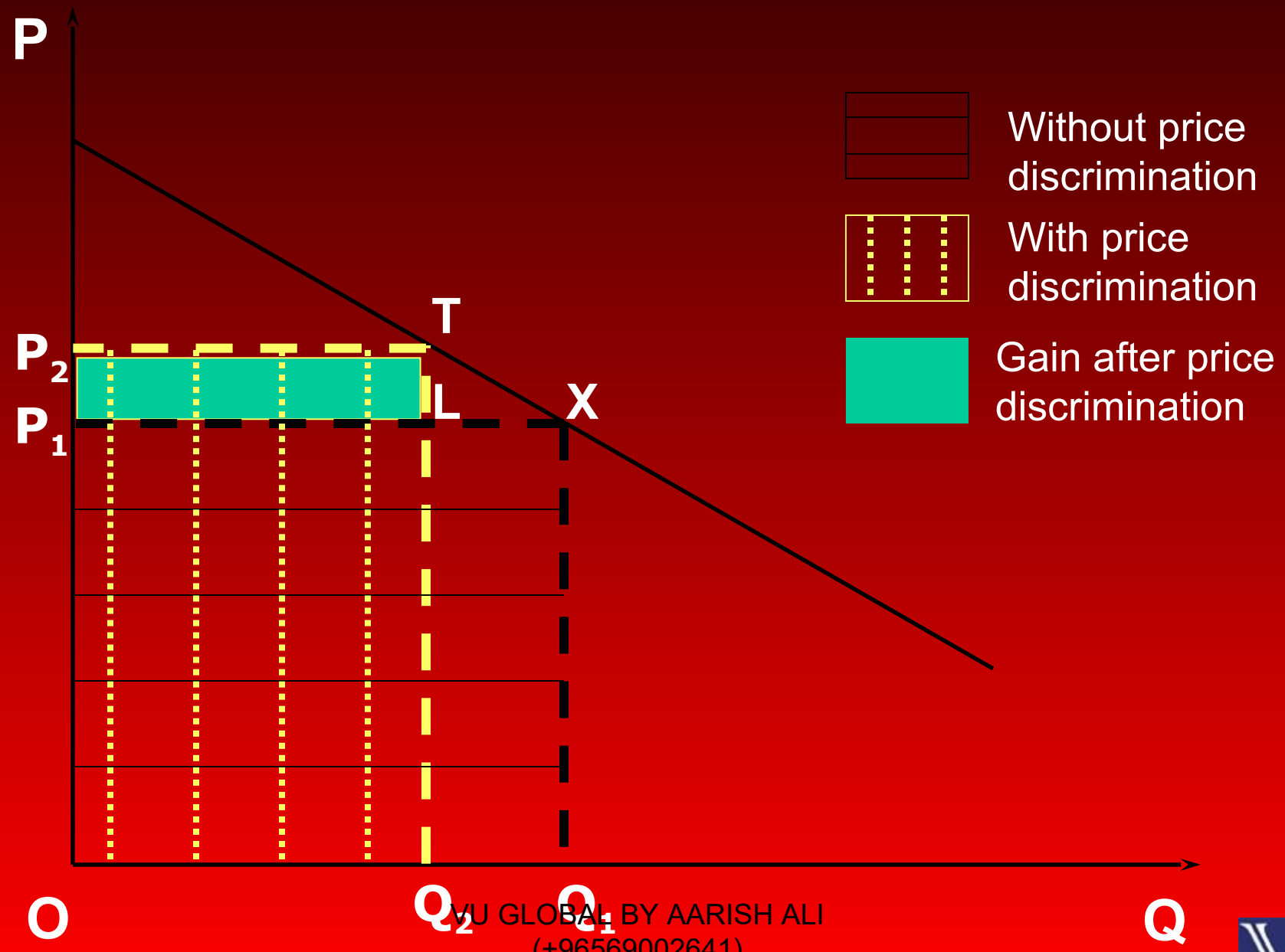


VU GLOBAL BY AARISH ALI
(+96569002641)

Lesson 21

VU GLOBAL BY AARISH ALI
(+96569002641)

Benefits of price discrimination

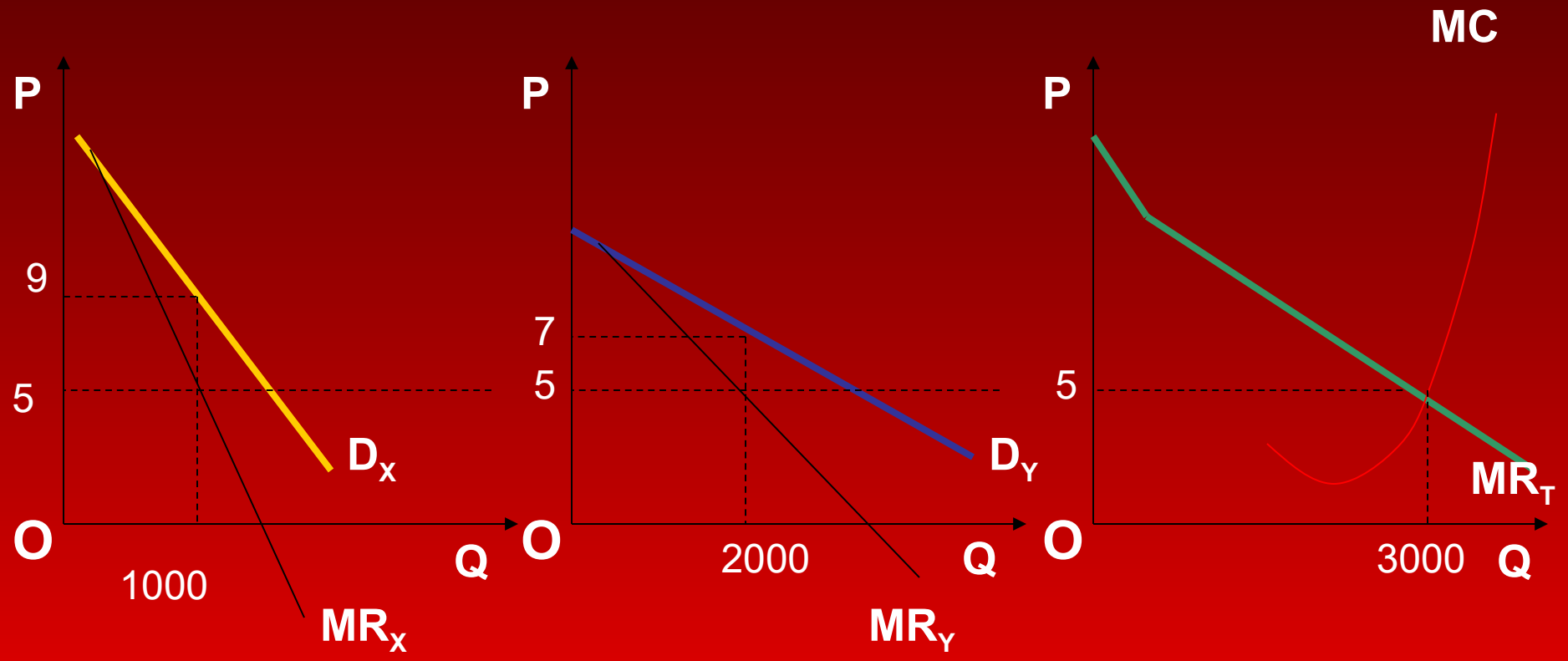


VU GLOBAL BY AARISH ALI
(+96569002641)

Recap

- Perfect Competition
- Monopoly

Profit maximization with price discrimination



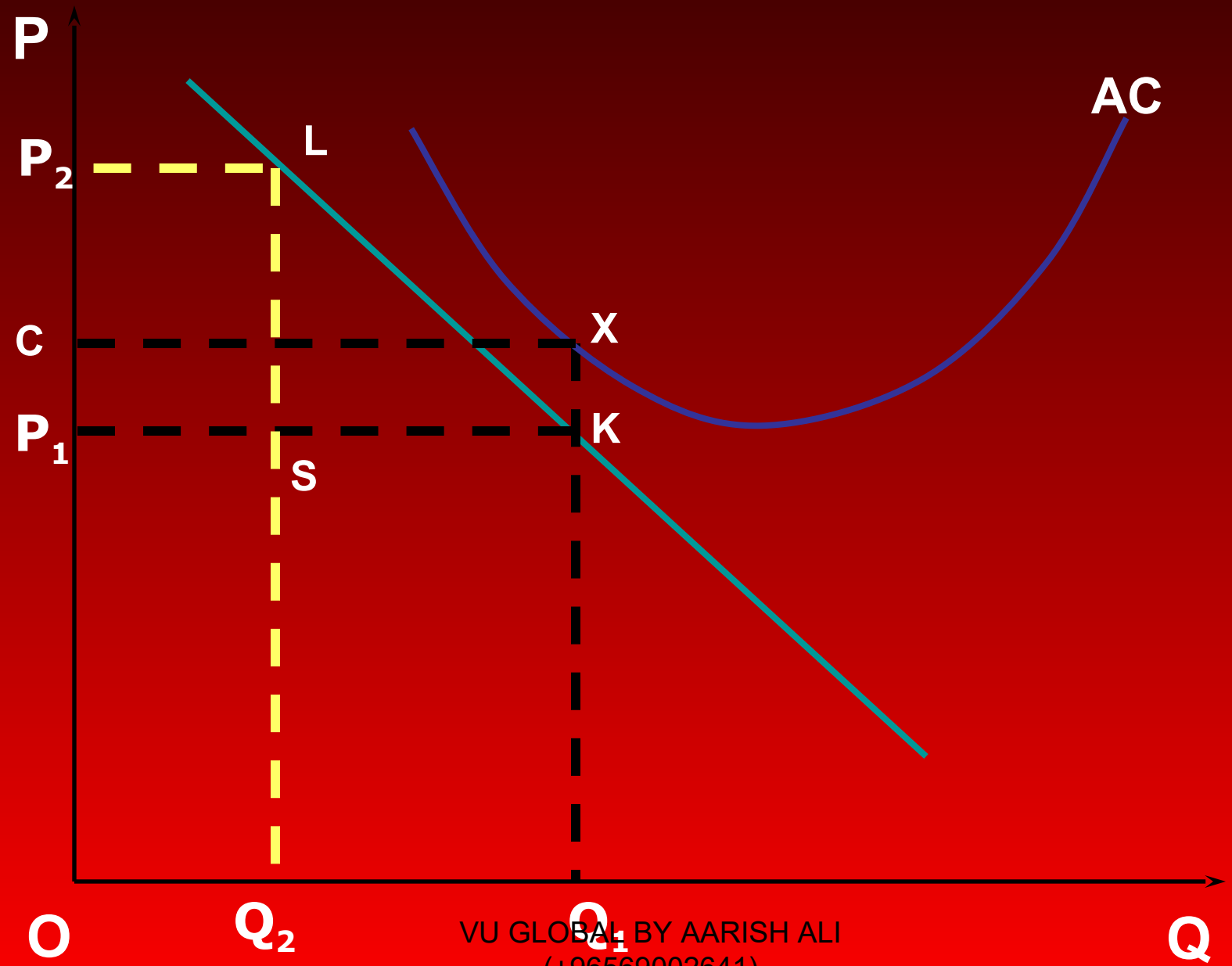
(a) Market X

(b) Market Y

(c) Total (market = X+Y)

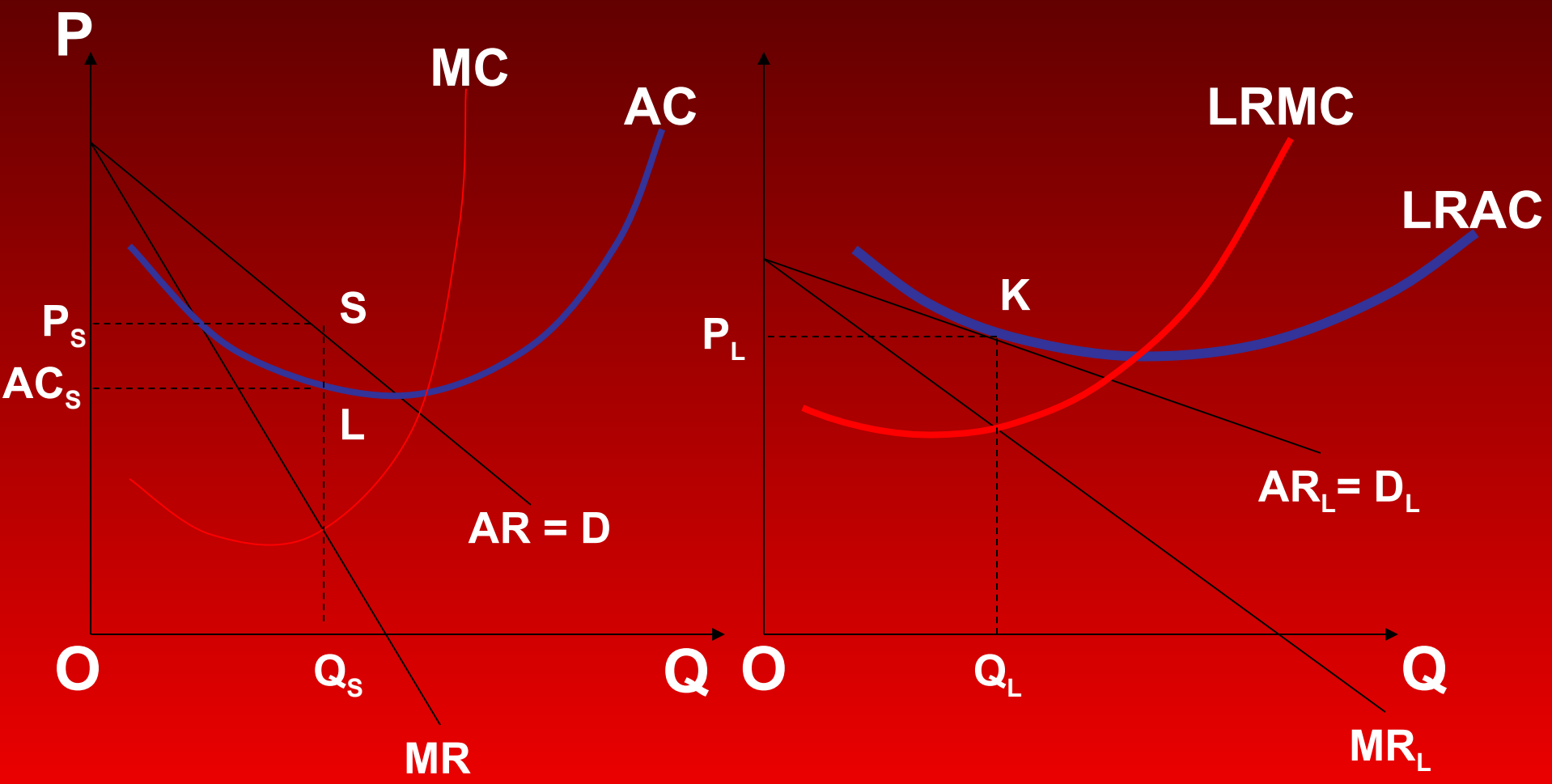
VU GLOBAL BY AARISH ALI
(+96569002641)

Turning loss into profits using PD



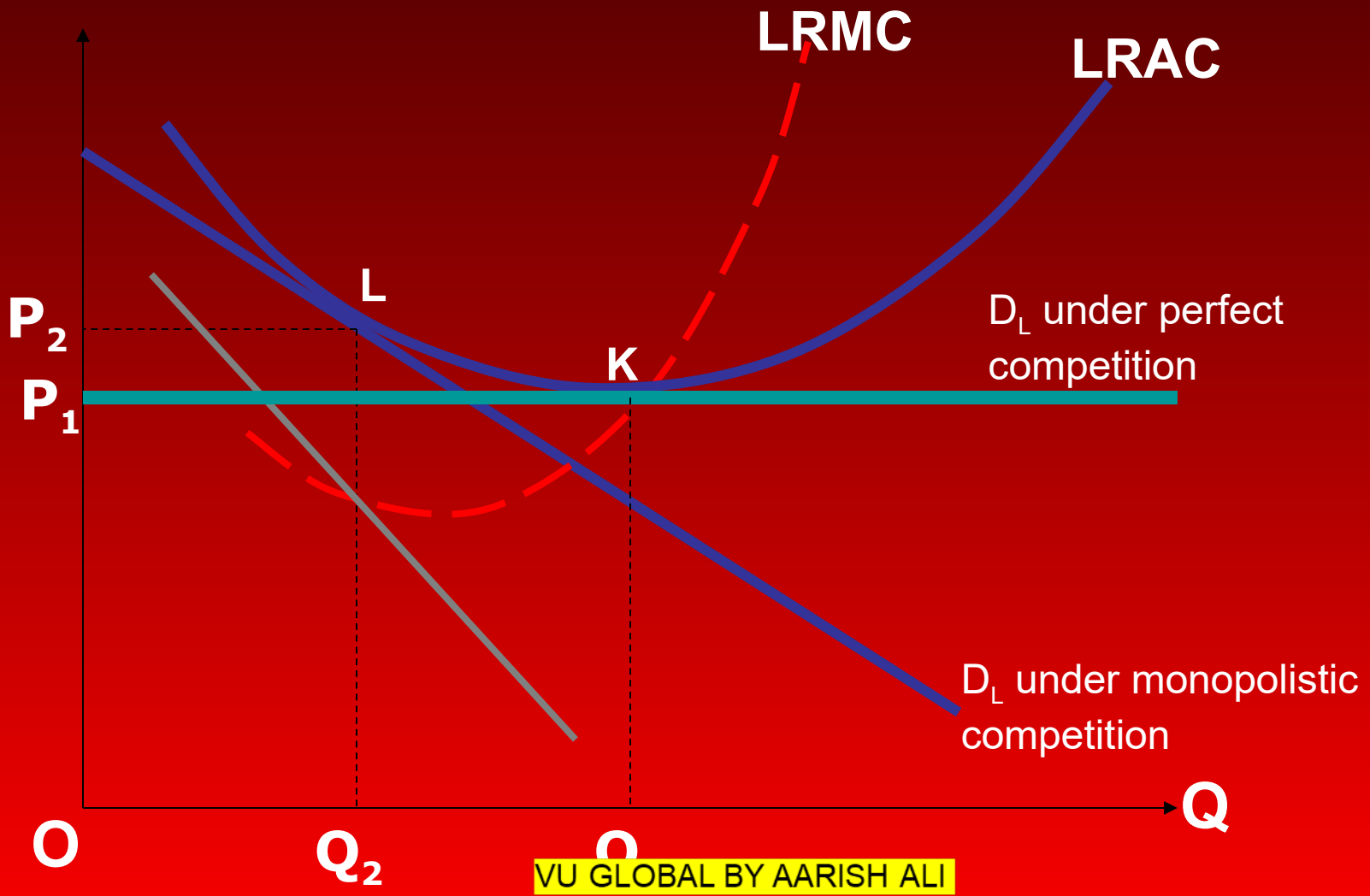
VU GLOBAL BY AARISH ALI
(+96569002641)

Monopolistic competition



VU GLOBAL BY AARISH ALI
(+96569002641)

Monopolistic competition & public interest

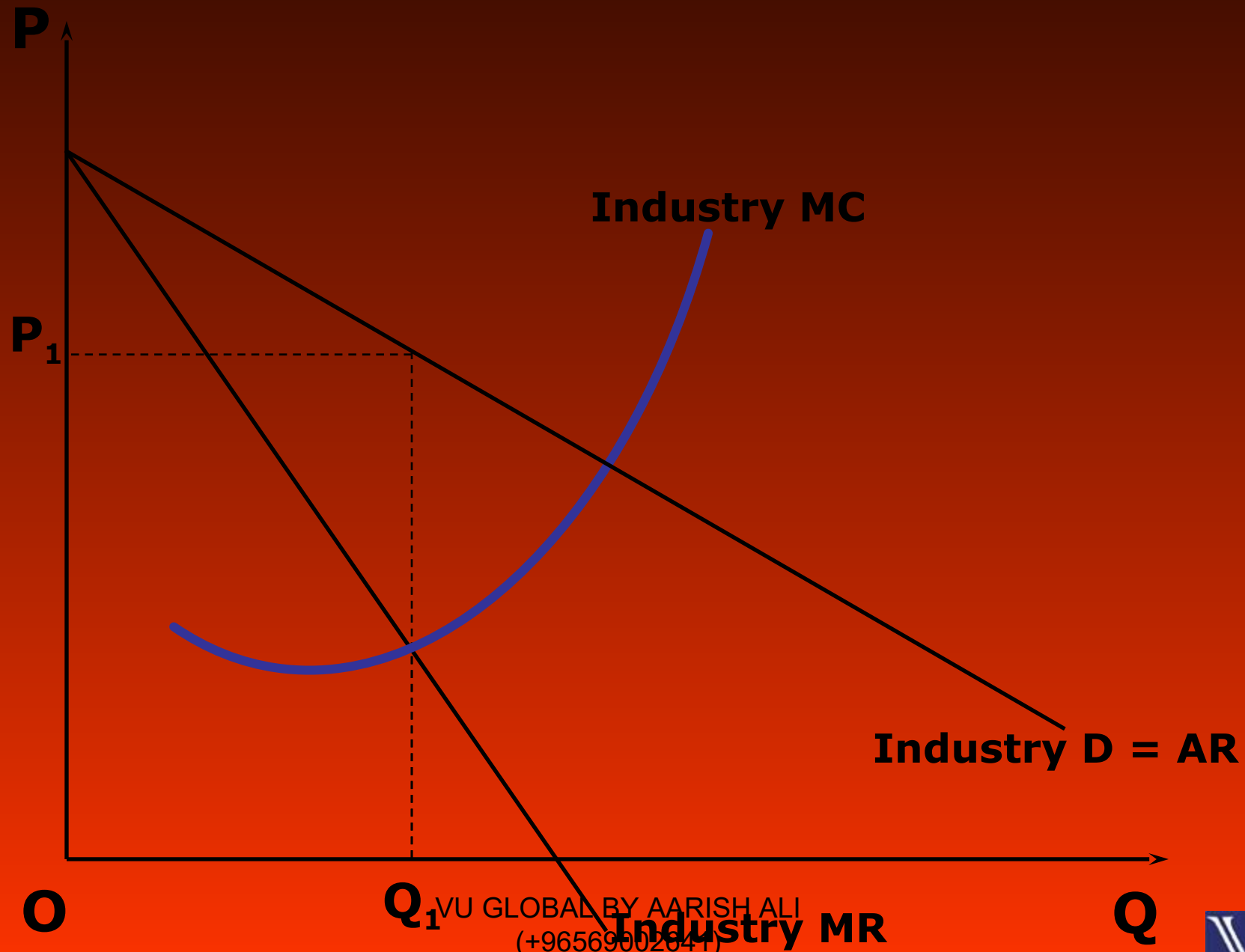


VU GLOBAL BY AARISH ALI
(+96569002641)

Lesson 22

VU GLOBAL BY AARISH ALI
(+96569002641)

Profit maximizing cartel

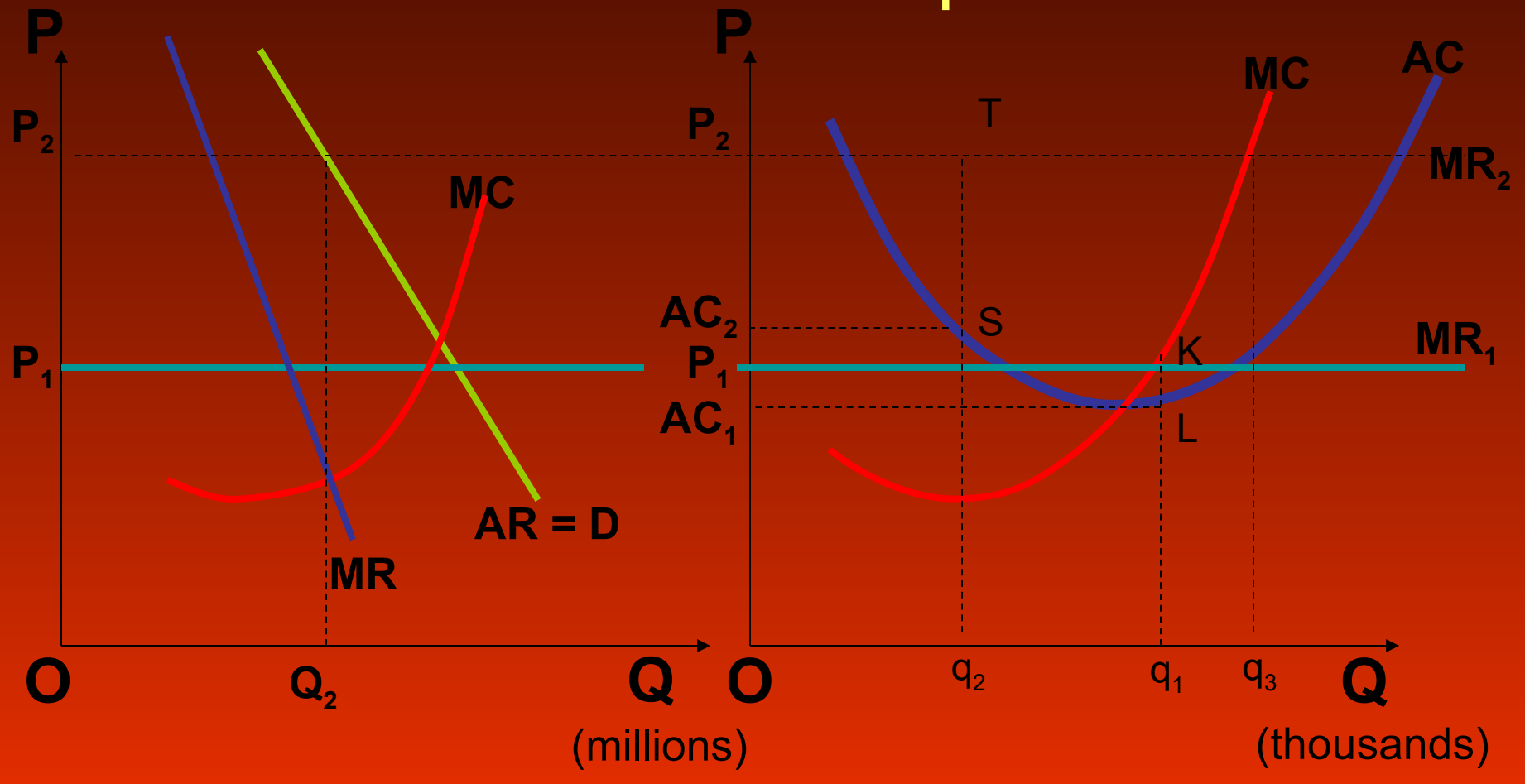


VU GLOBAL BY AARISH ALI
(+96569002641)

Oligopoly

- Collusive Oligopoly or Cartel
- Non-Collusive Oligopoly

The incentive for the firm to produce more than its quota

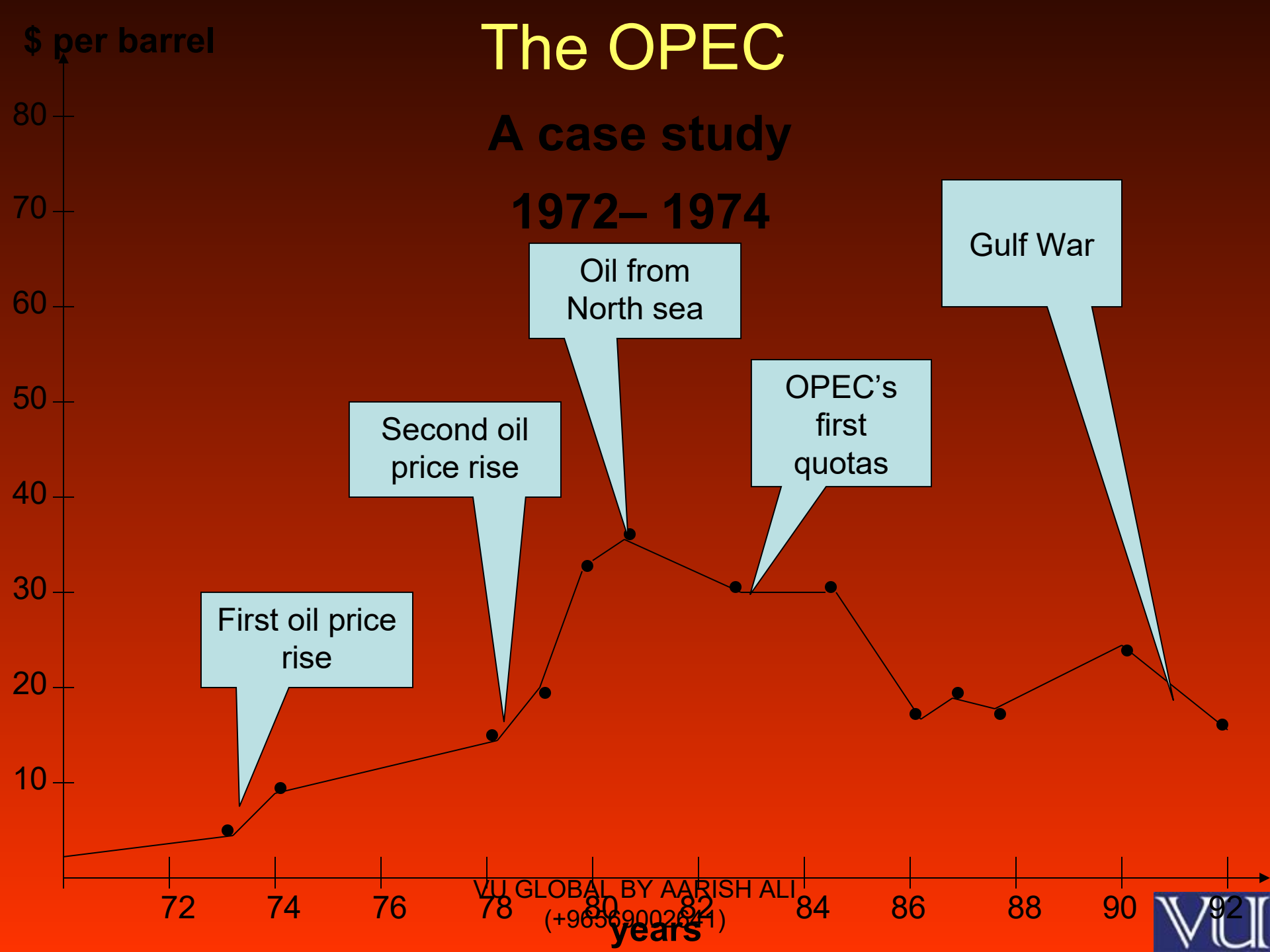


VU GLOBAL BY AARISH ALI
(+96569002641)

The OPEC

A case study

1972– 1974



VU GLOBAL BY AARISH ALI
(+96569002644)

The prisoner's Dilemma

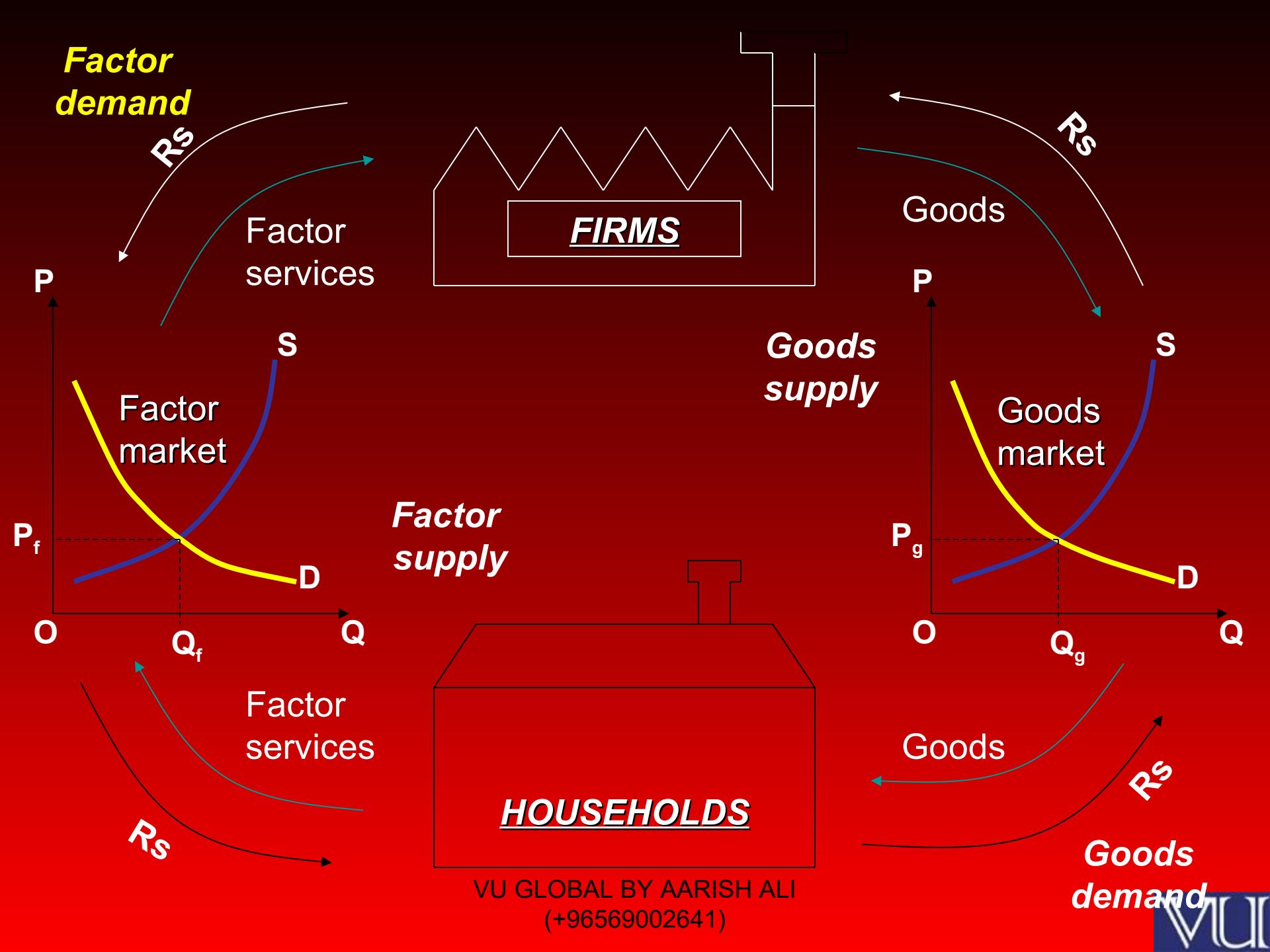
Payoff of a matrix for firm X& Y
(profit in Rs: at different prices)

Y's price	X's price: Rs.2	X's price: Rs.1.80
Rs.2	A 10m each	B 5m for Y 12m for X
Rs.1.80	C 12m for Y 5m for X	D 8m each

VU GLOBAL BY AARISH ALI
(+96569002641)

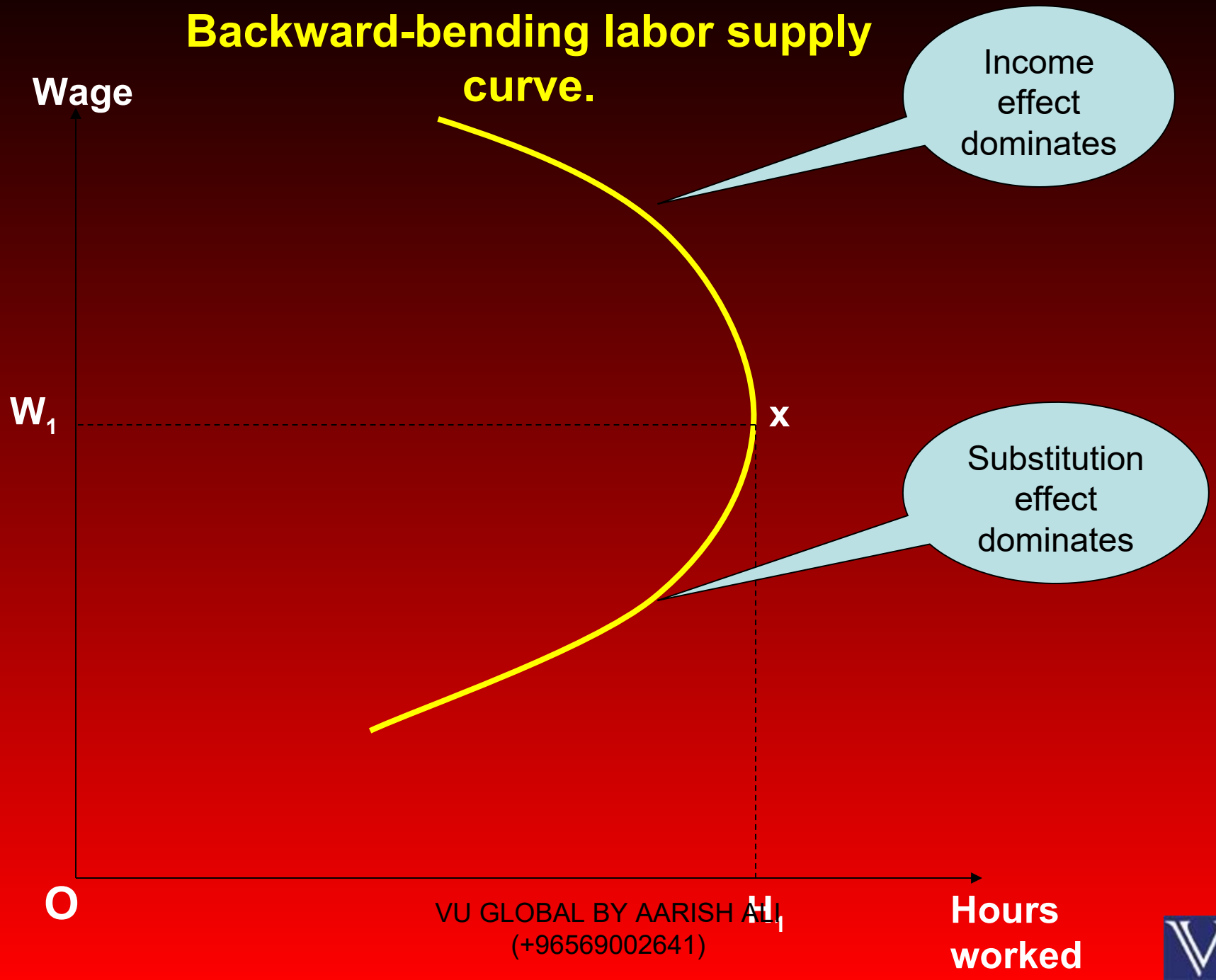
Lesson 24

VU GLOBAL BY AARISH ALI
(+96569002641)

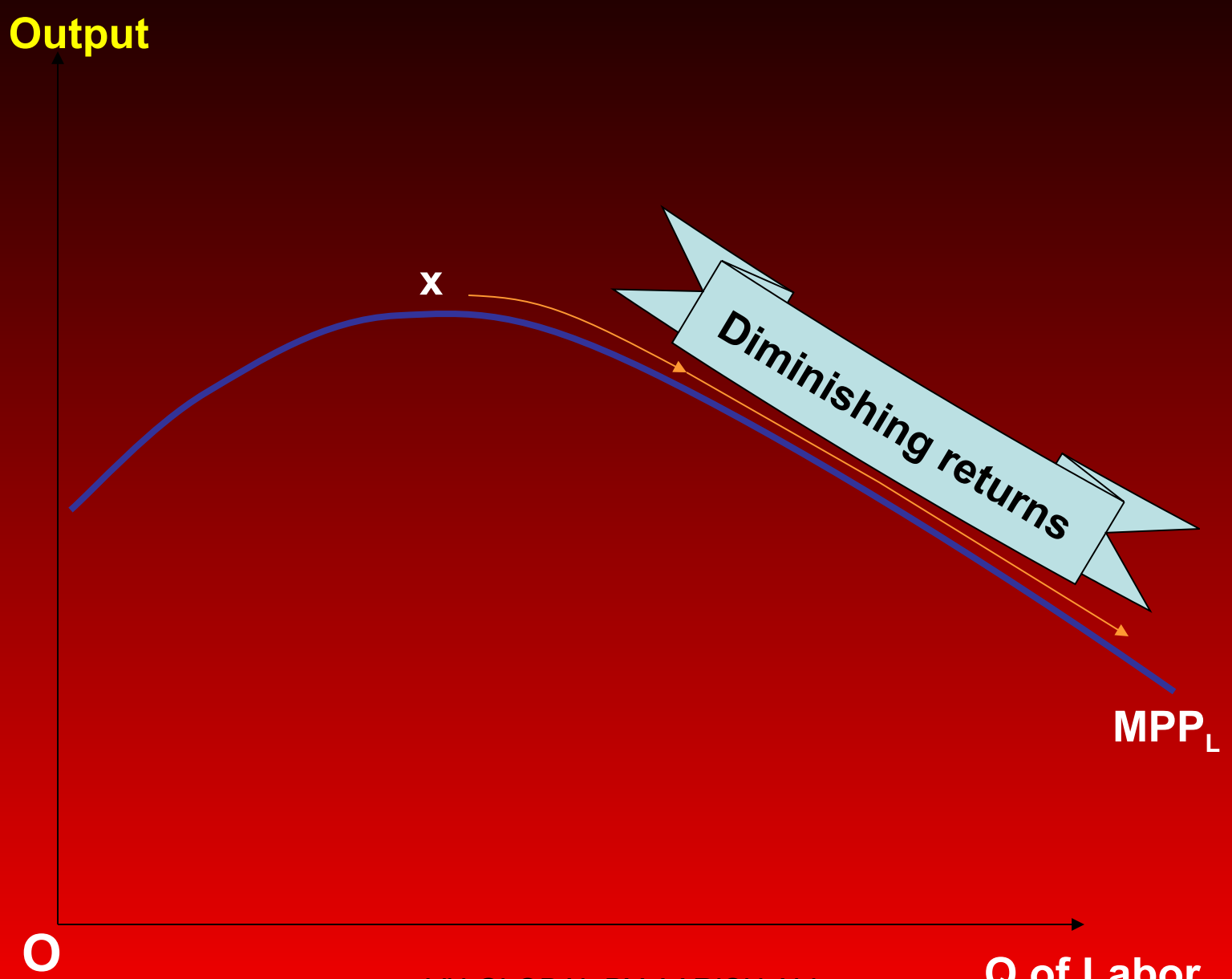


VU GLOBAL BY AARISH ALI
(+96569002641)

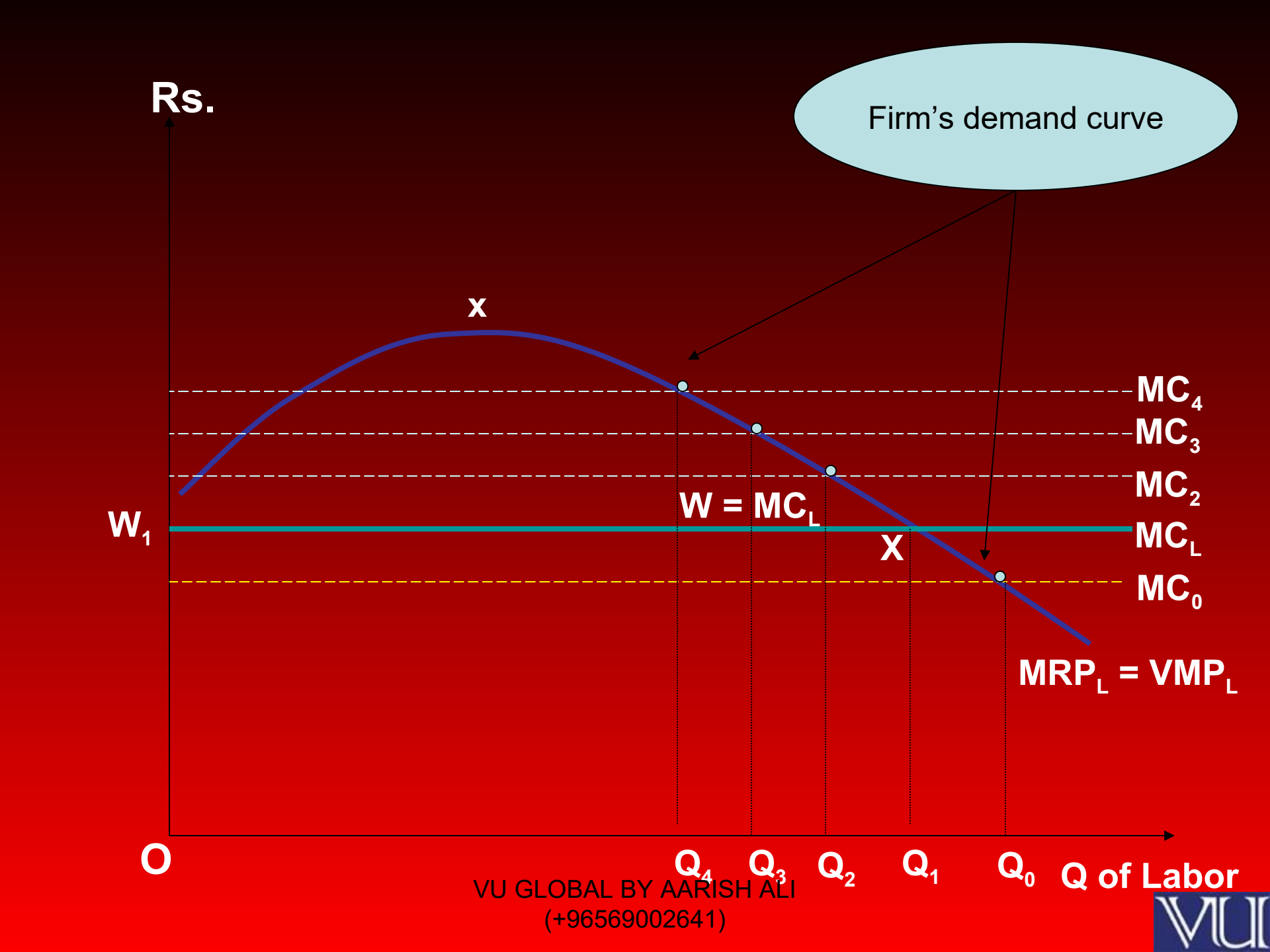
Backward-bending labor supply curve.



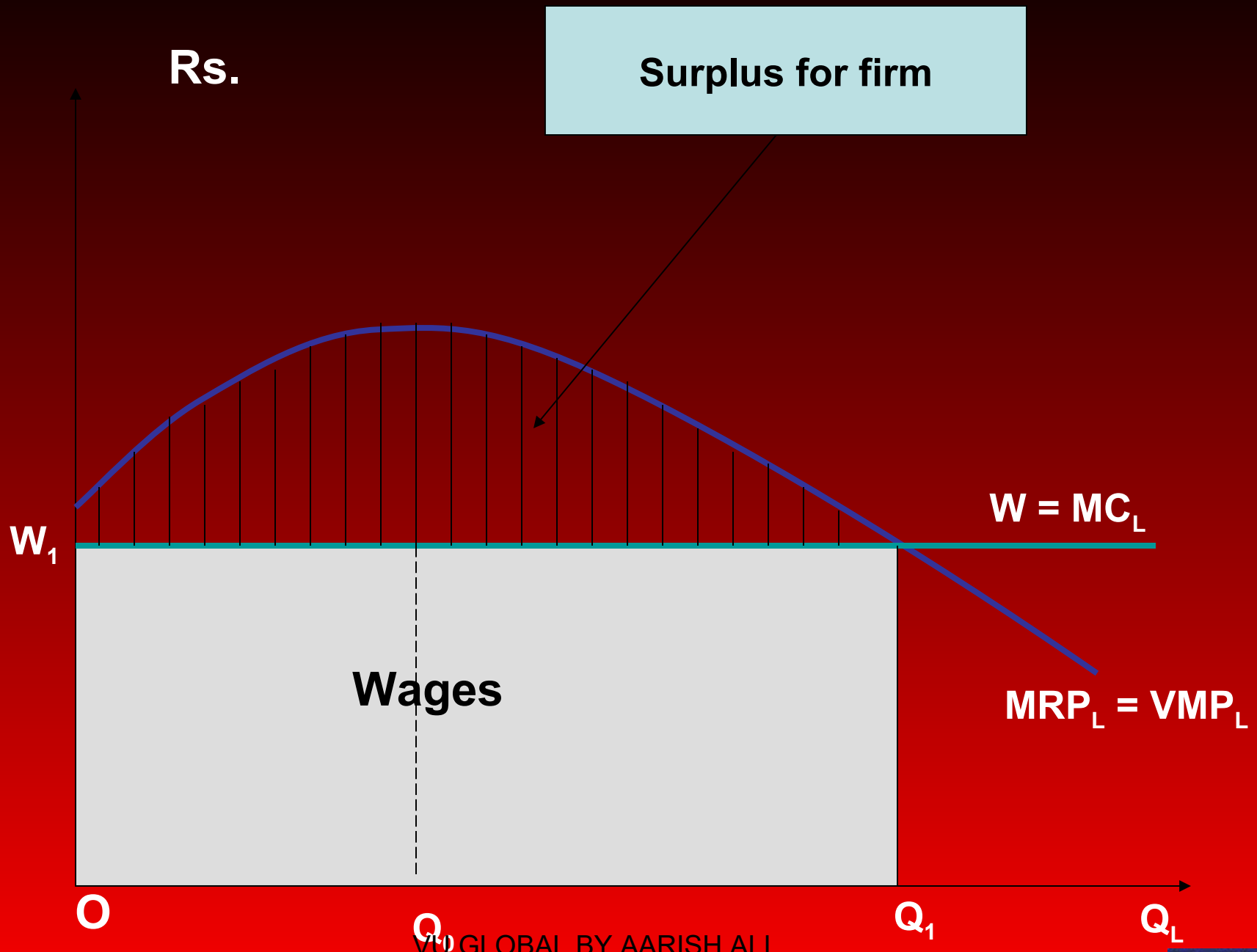
VU GLOBAL BY AARISH ALI
(+96569002641)



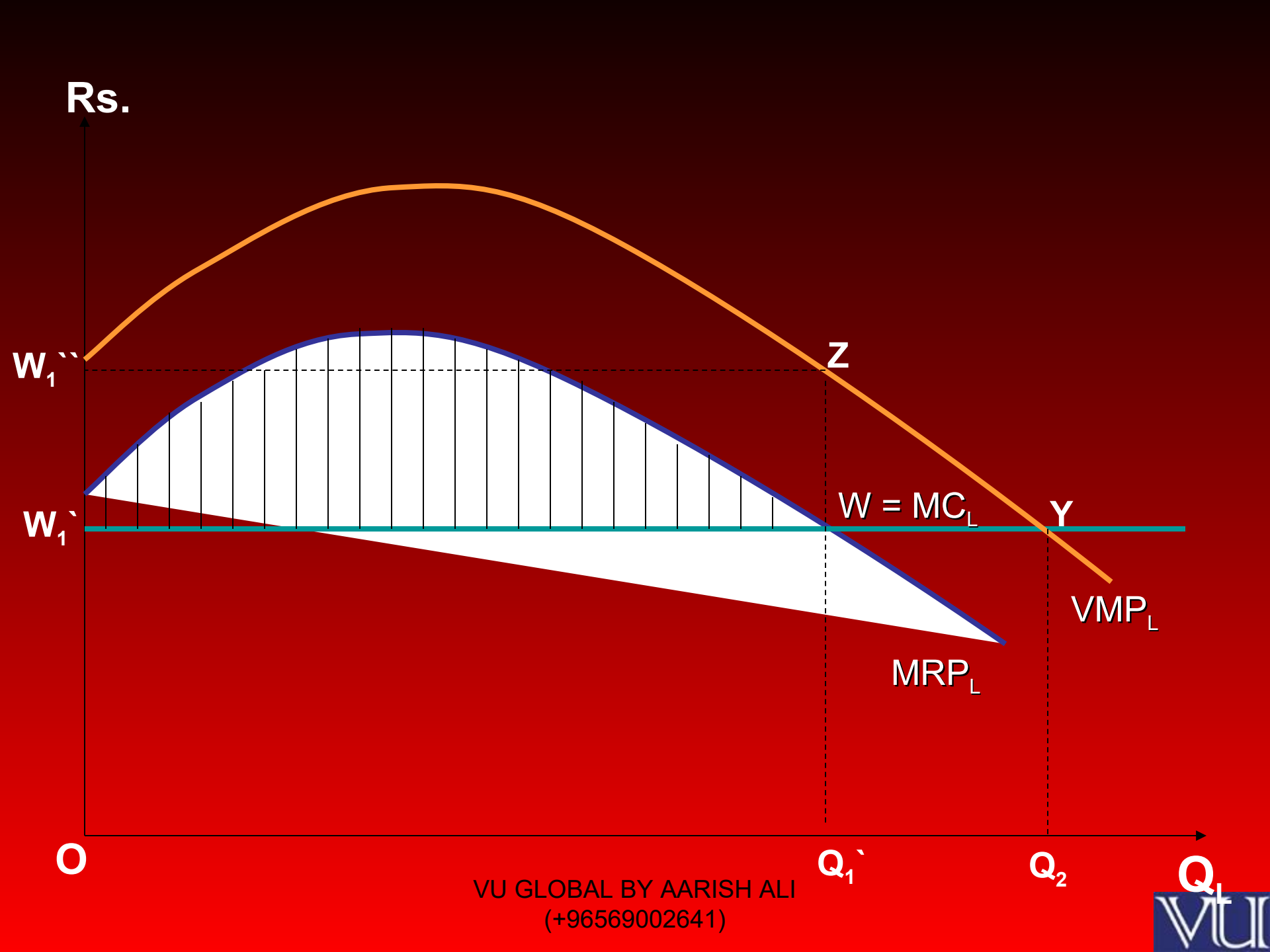
VU GLOBAL BY AARISH ALI
(+96569002641)



VU GLOBAL BY AARISH ALI
(+96569002641)



VU GLOBAL BY AARISH ALI
(+96569002641)



VU GLOBAL BY AARISH ALI
(+96569002641)

Discounting

- **Rate of discount = 10%**
- **The formula for discounting is as follows:**

$$PV = \sum_i \left(\frac{X_i}{(1+r)^i} \right)$$

where PV is present value

X_i is earnings from the investment in the year i

r is the rate of discount

$\sum_i$ is the sum over i, of the discounted earnings.

Present value of machine that generates Rs. 1,000 for four years and then sold as scrap for Rs. 1,000 at the end of year 4?

Year 1	Year 2	Year 3	Year 4

$$= \frac{1,000}{(1.1)^1} + \frac{1,000}{(1.1)^2} + \frac{1,000}{(1.1)^3} + \frac{2,000}{(1.1)^4}$$

$$= 909 + 826 + 751 + 1366 = \textbf{Rs. 3852}$$

If machine costs less than this then Buy, otherwise don't Buy.

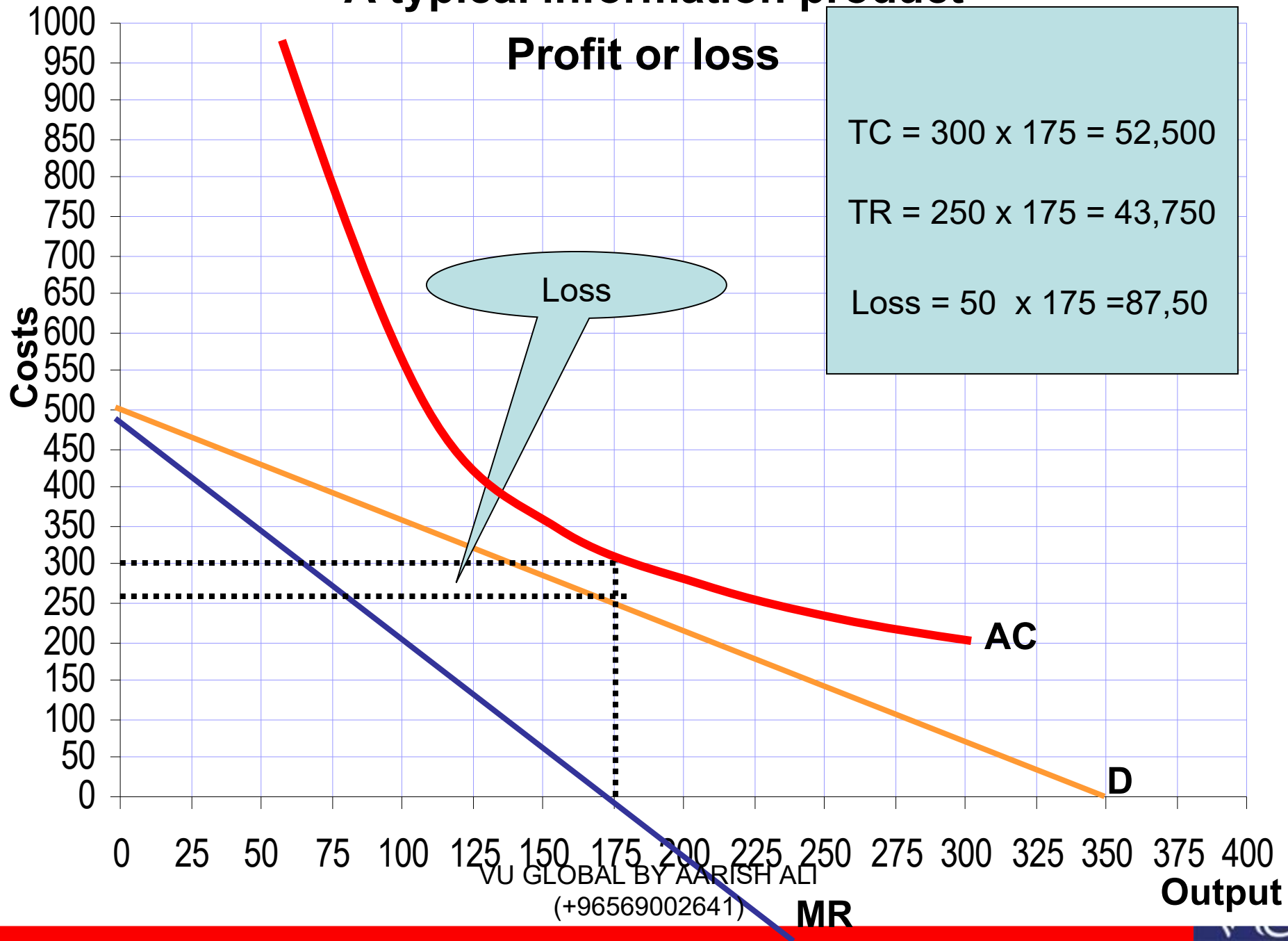
Net present value = PV – Purchase cost

A typical information product

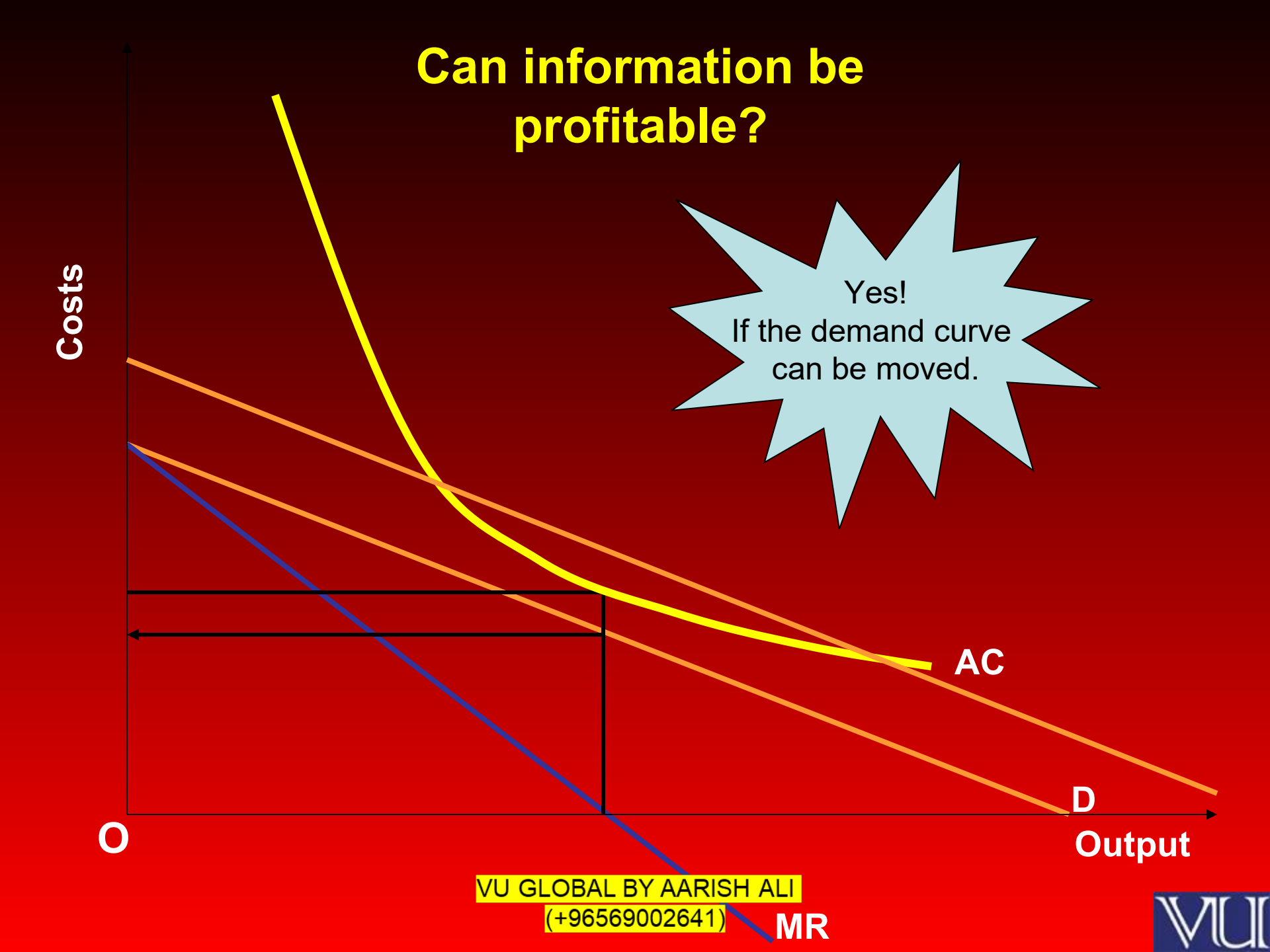
Online economics course			
Q	TC	MC	AC
50	50,000		1000
100	50,000	0	500
150	50,000	0	330
200	50,000	0	250
250	50,000	0	200
300	50,000	0	166

VU GLOBAL BY AARISH ALI
(+96569002641)

A typical information product



Can information be profitable?



VU GLOBAL BY AARISH ALI
(+96569002641)

Lecture 25

Introduction to Macro Economics

VU GLOBAL BY AARISH ALI
(+96569002641)

MACROECONOMICS

- Macroeconomics is a branch of economics that deals with the performance, structure, and behavior of a national economy as a whole. The variables of interest change from the price, demand or supply of a particular product to the economy-wide price level, aggregate demand and aggregate supply.

- **Aggregate demand (AD) is the total planned or desired spending (expenditure) in the economy during a given period.**

- **Aggregate supply (AS) is the total value of goods and services that all the firms in the economy would and can willingly produce in a given time period.**

CLASSICAL ECONOMICS

- The optimal role for the government under classical economics was one of laissez-faire.
- Invisible hand was a concept introduced by Adam Smith in 1776 to describe the paradox of laissez-faire market economy. The invisible hand doctrine holds that, with each participant pursuing his or her own private interest, a market system nevertheless works to the benefits of all as though a benevolent invisible hand were directing the whole process.
- The Classical economists assumed that if the economy was left to itself, then it would tend to full employment equilibrium. This would happen if the labour market worked properly.

FAILURE OF THE CLASSICAL MODEL

- After 1930, the classical model failed. Solution of classical economist was not found reasonable to solve the world crises prevailed at that time.

- The Great Depression was the longest and severest recession the world has ever seen.

KEYNES AND THE ORIGINS OF MODERN MACRO ECONOMICS

- Keynesian economics promotes a mixed economy, in which both the state and the private sector are considered to play an important role.

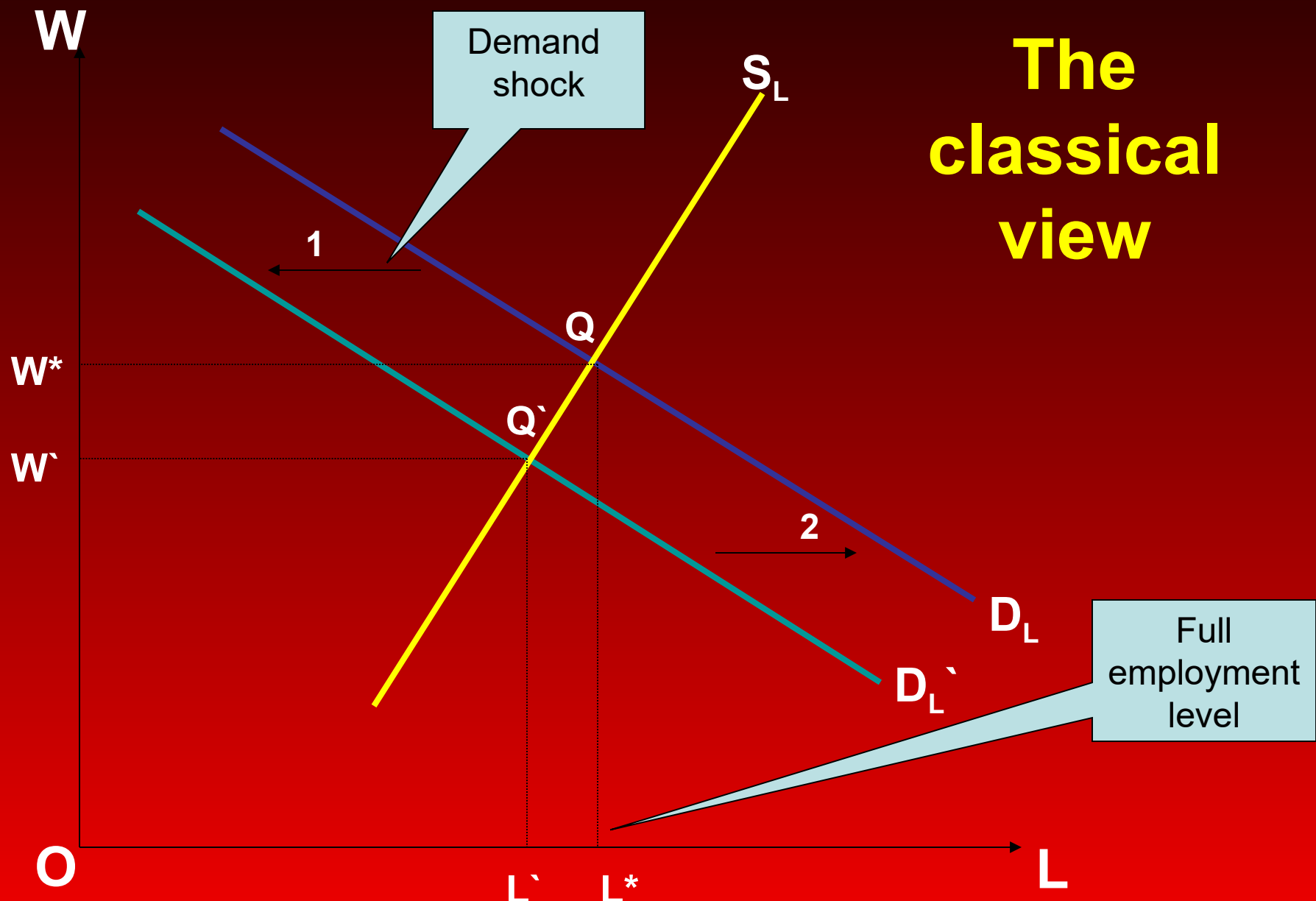
- Keynes' view on the causes of the Great Depression and what needed to be done was very different. He believed that there were overarching problems of low demand and static pessimistic expectations that needed to be addressed rather than disequilibria in the loanable funds, labour and goods markets.

VU GLOBAL BY AARISH ALI
(+96569002641)

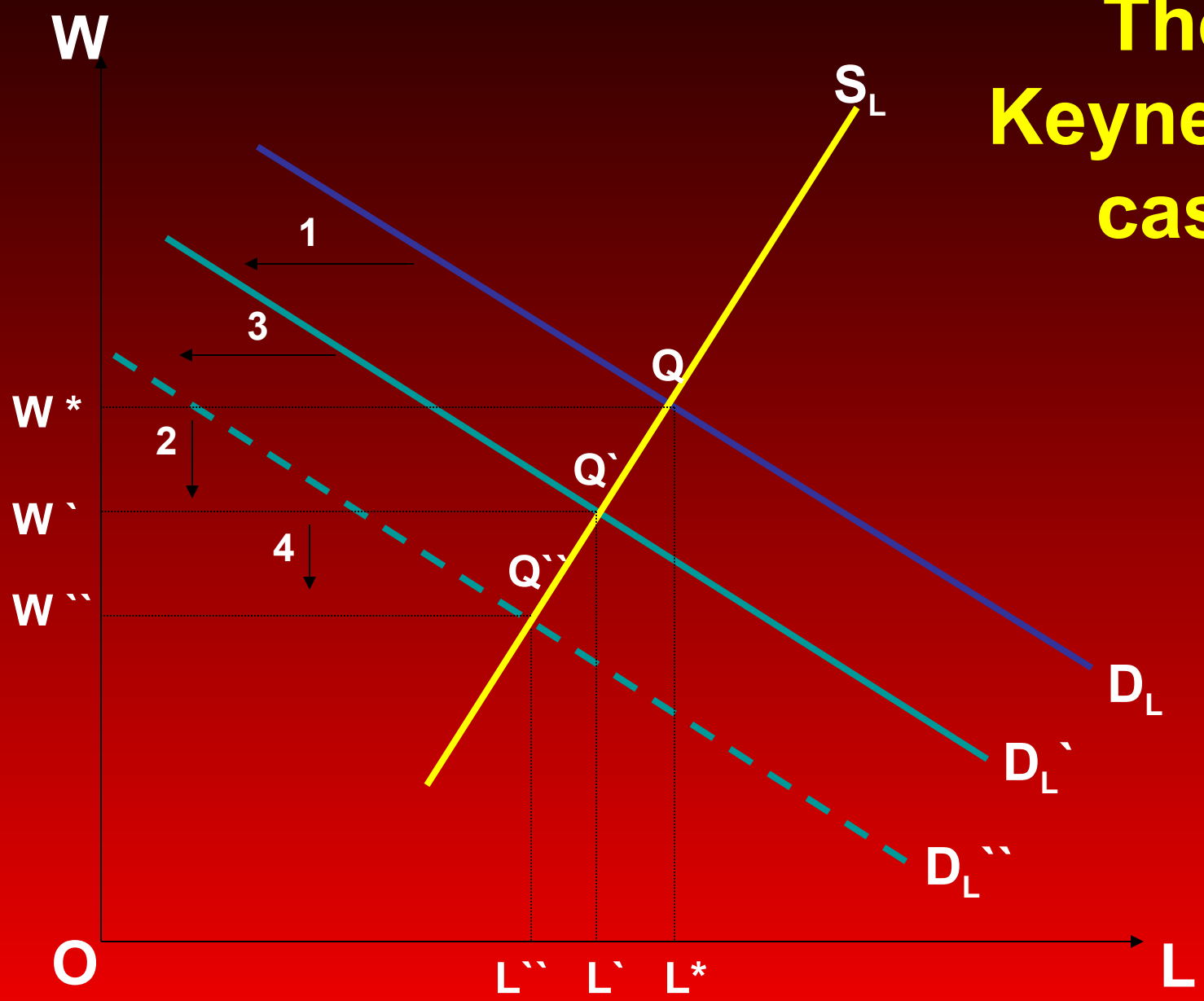
Lesson 26

VU GLOBAL BY AARISH ALI
(+96569002641)

The classical view

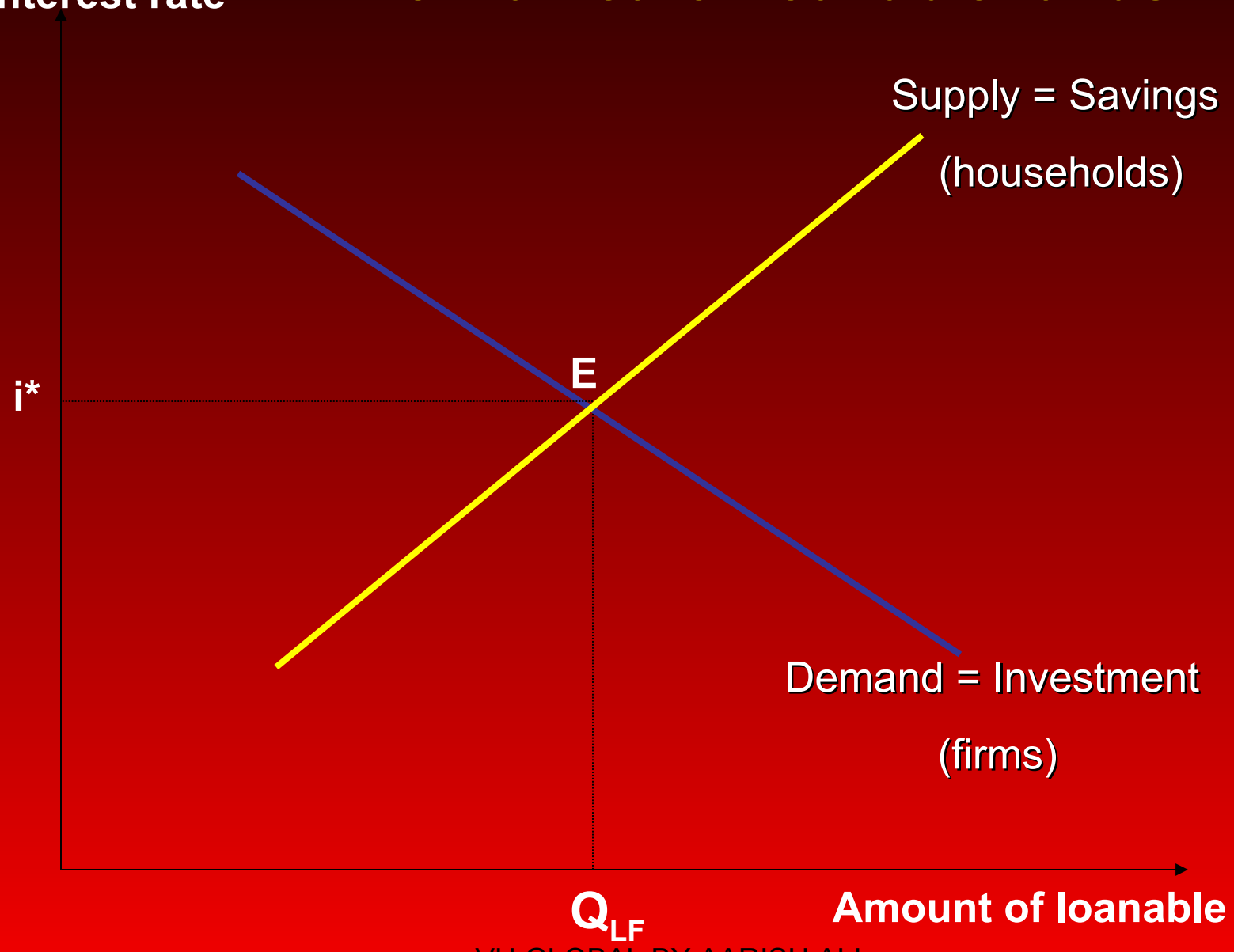


The Keynesian case



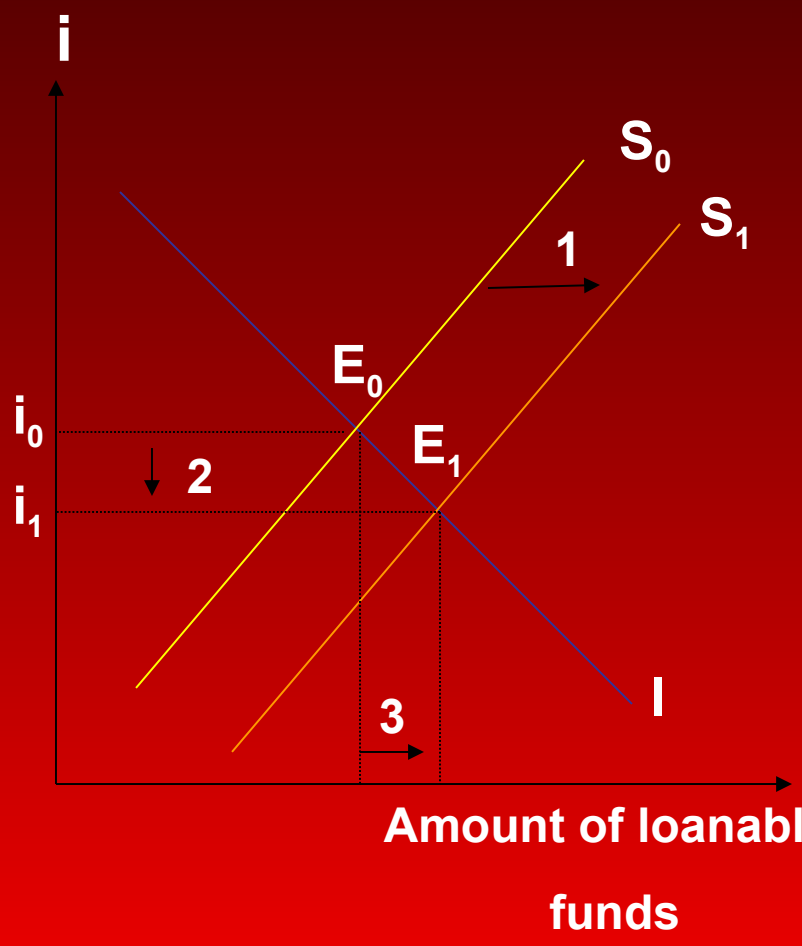
VU GLOBAL BY AARISH ALI
(+96569002641)

The market for loanable funds

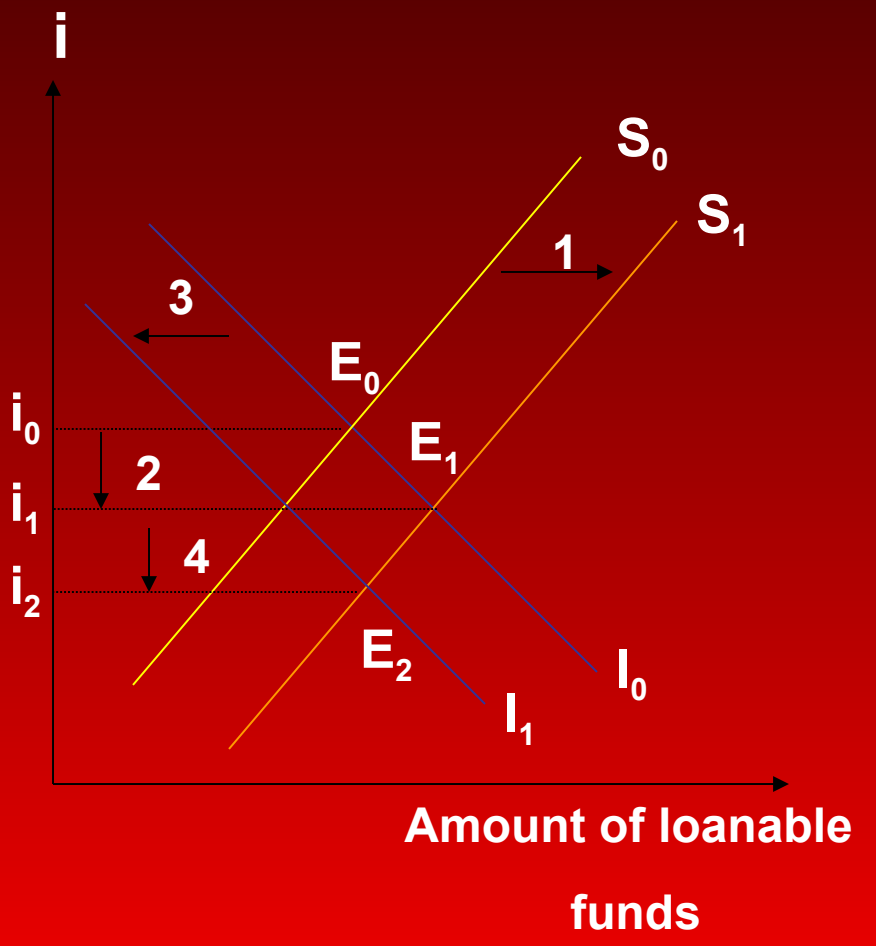


VU GLOBAL BY AARISH ALI
(+96569002641)

Classical view



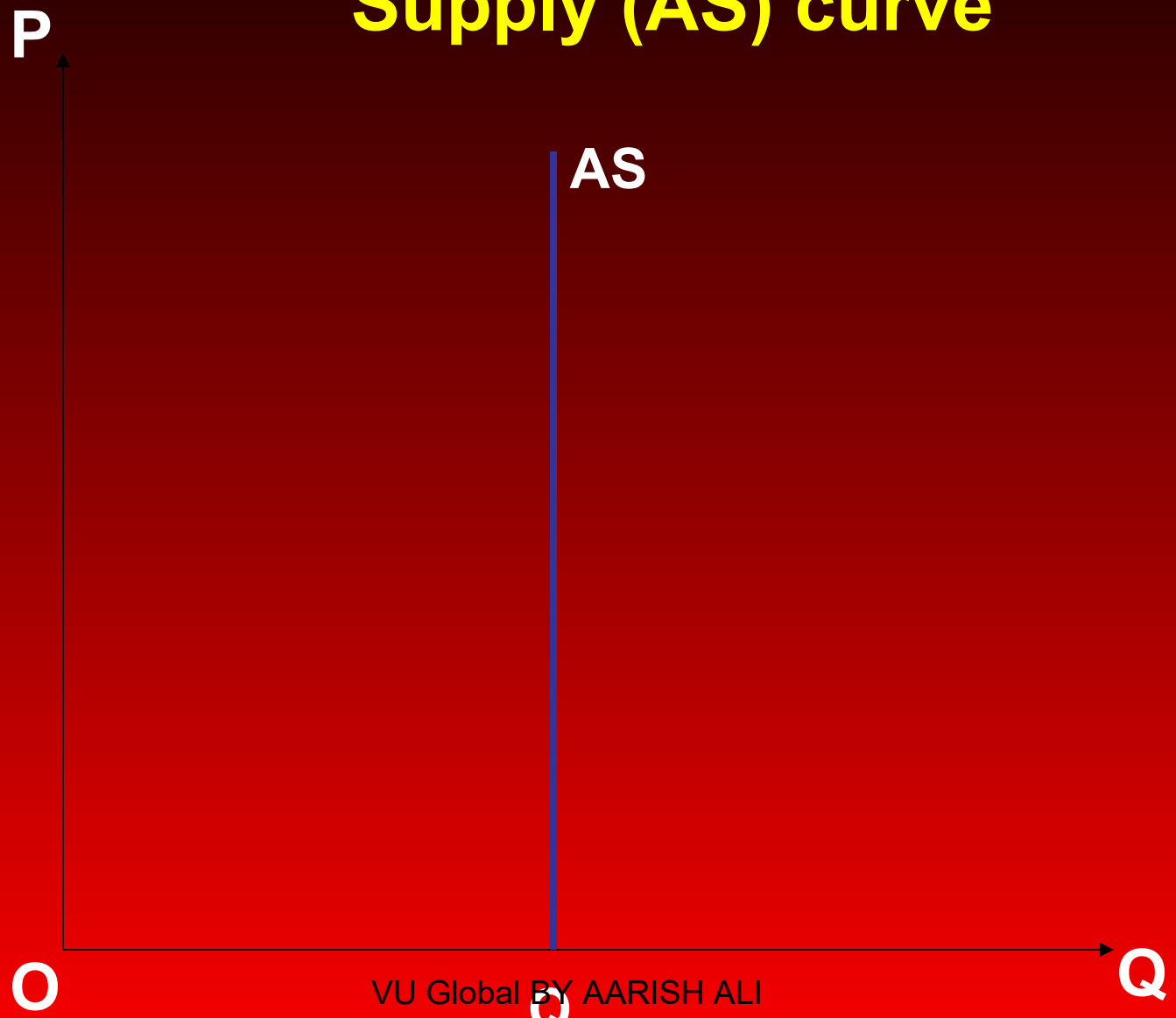
Keynesian view



Lesson 27

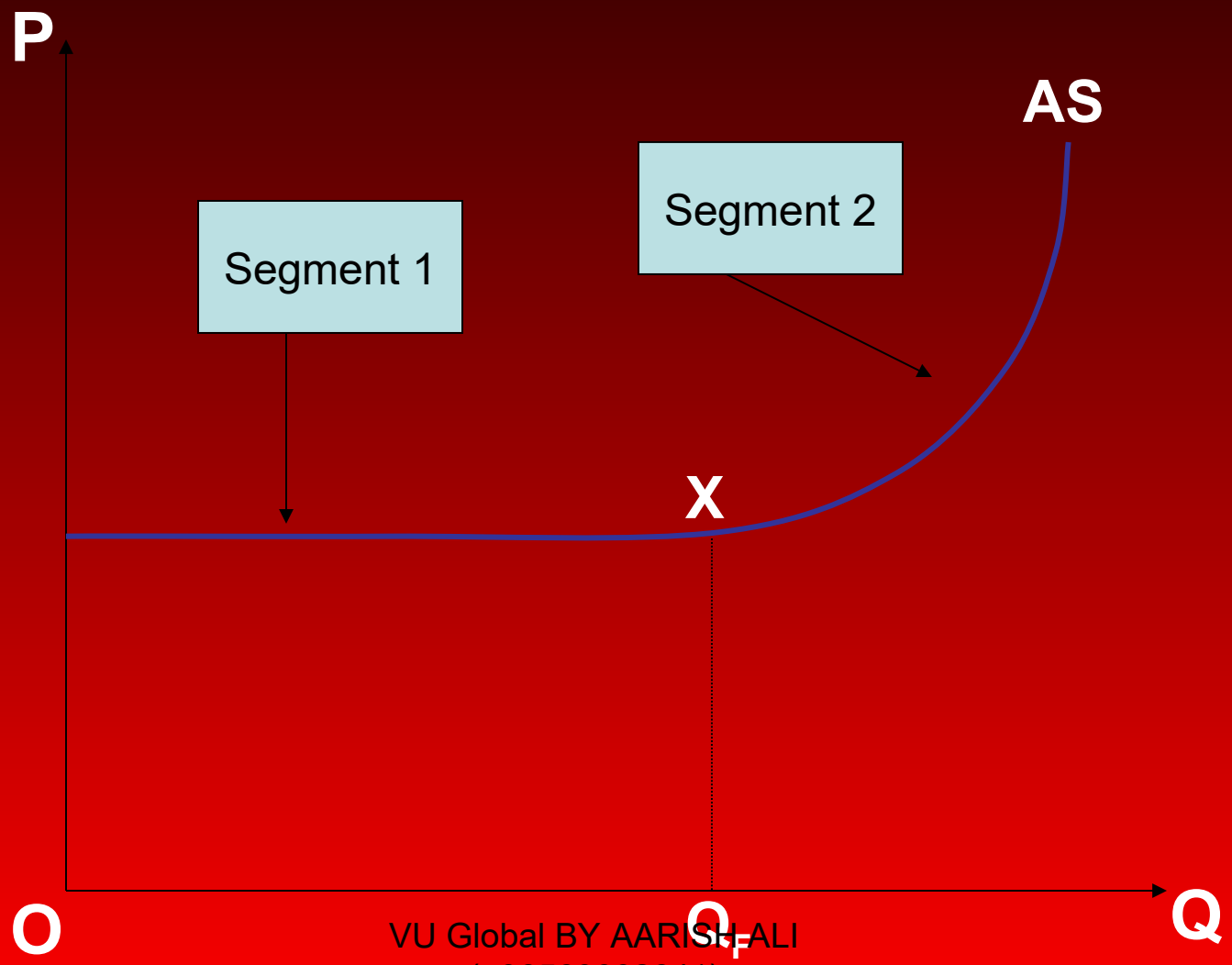
VU Global BY AARISH ALI
(+96569002641)

The Classical Aggregate Supply (AS) curve



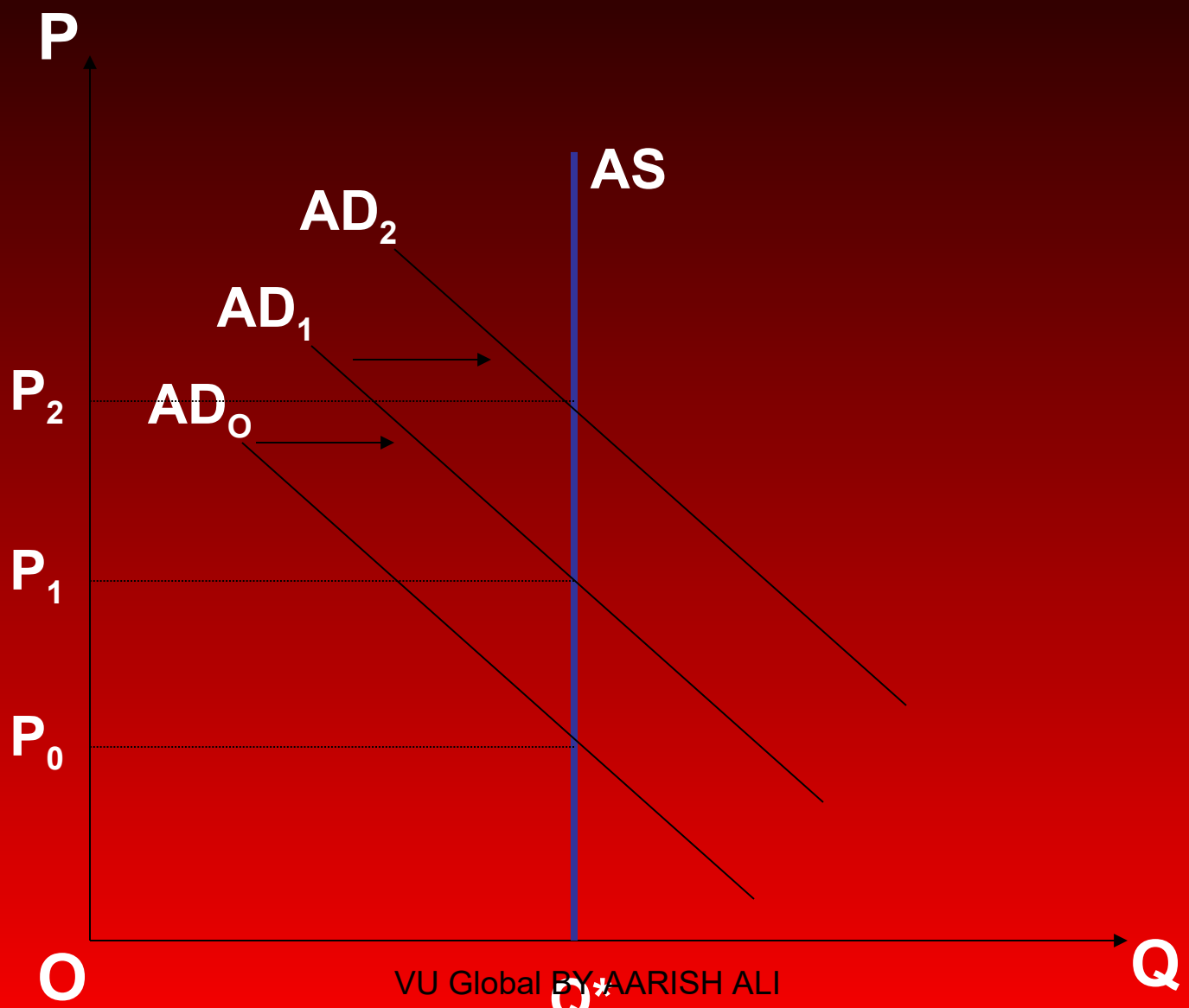
VU Global BY AARISH ALI
(+96569002641)

The Keynesian Aggregate Supply (AS) curve



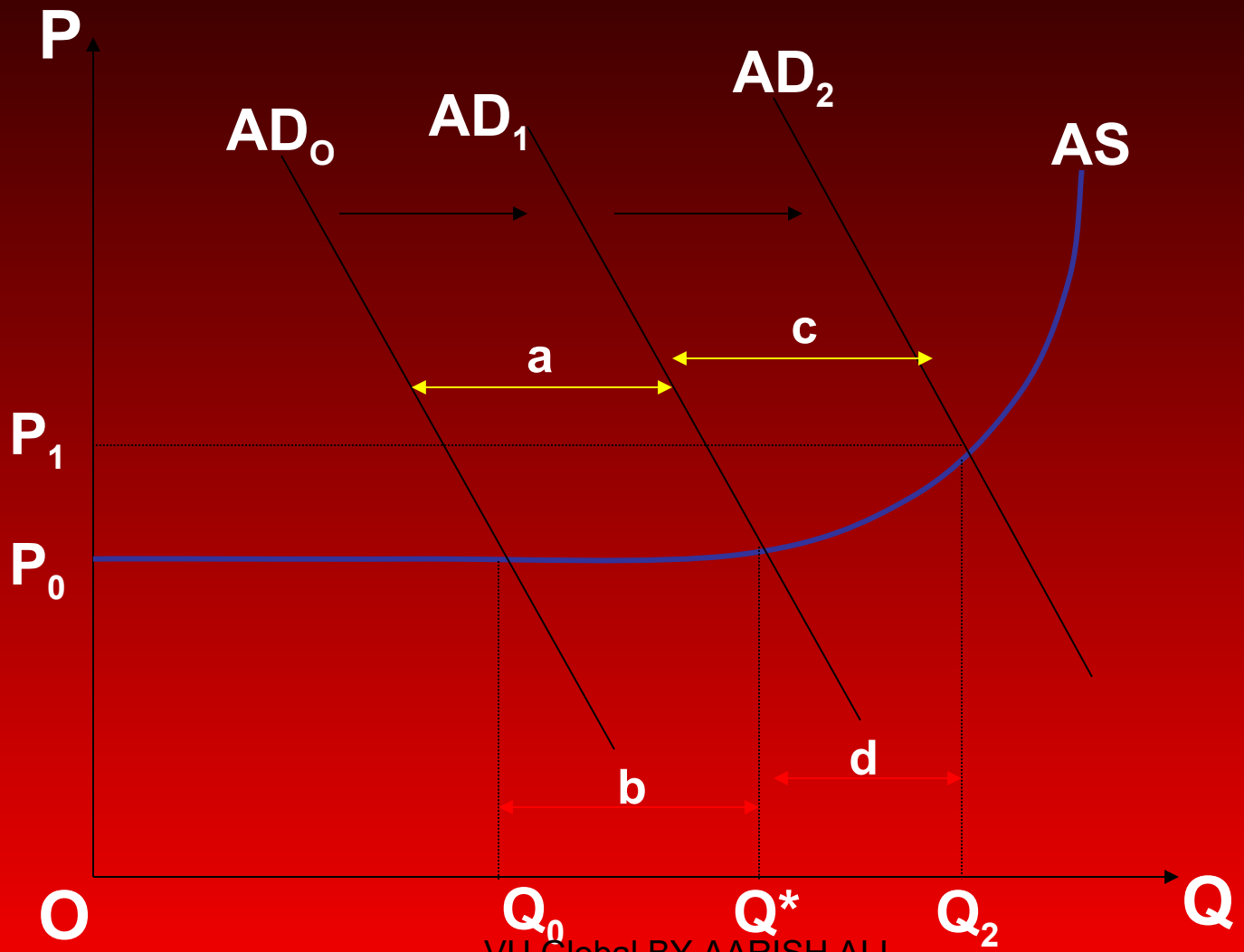
VU Global BY AARISH ALI
(+96569002641)

Classical



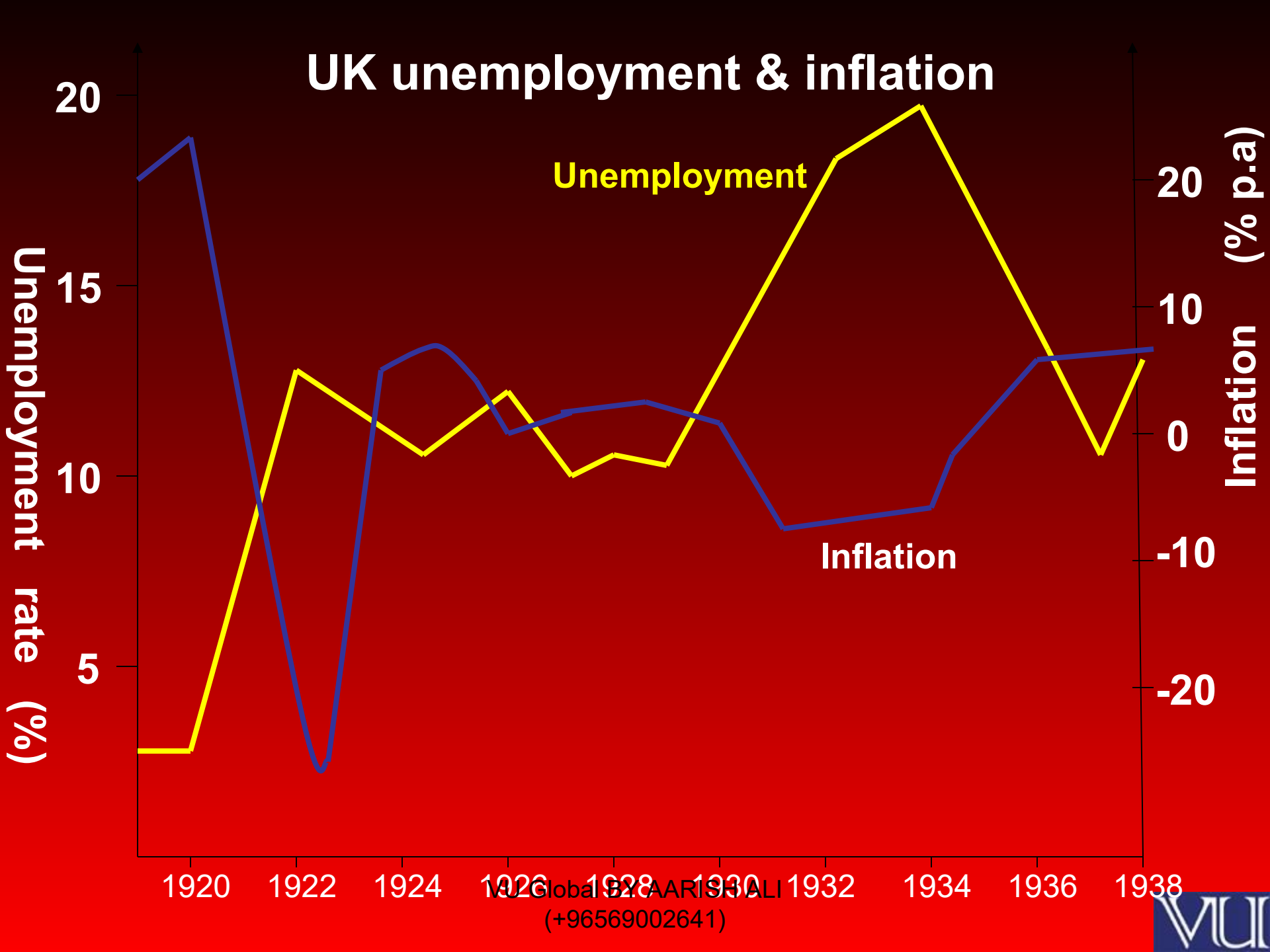
VU Global BY:AARISH ALI
(+96569002641)

Keynesian

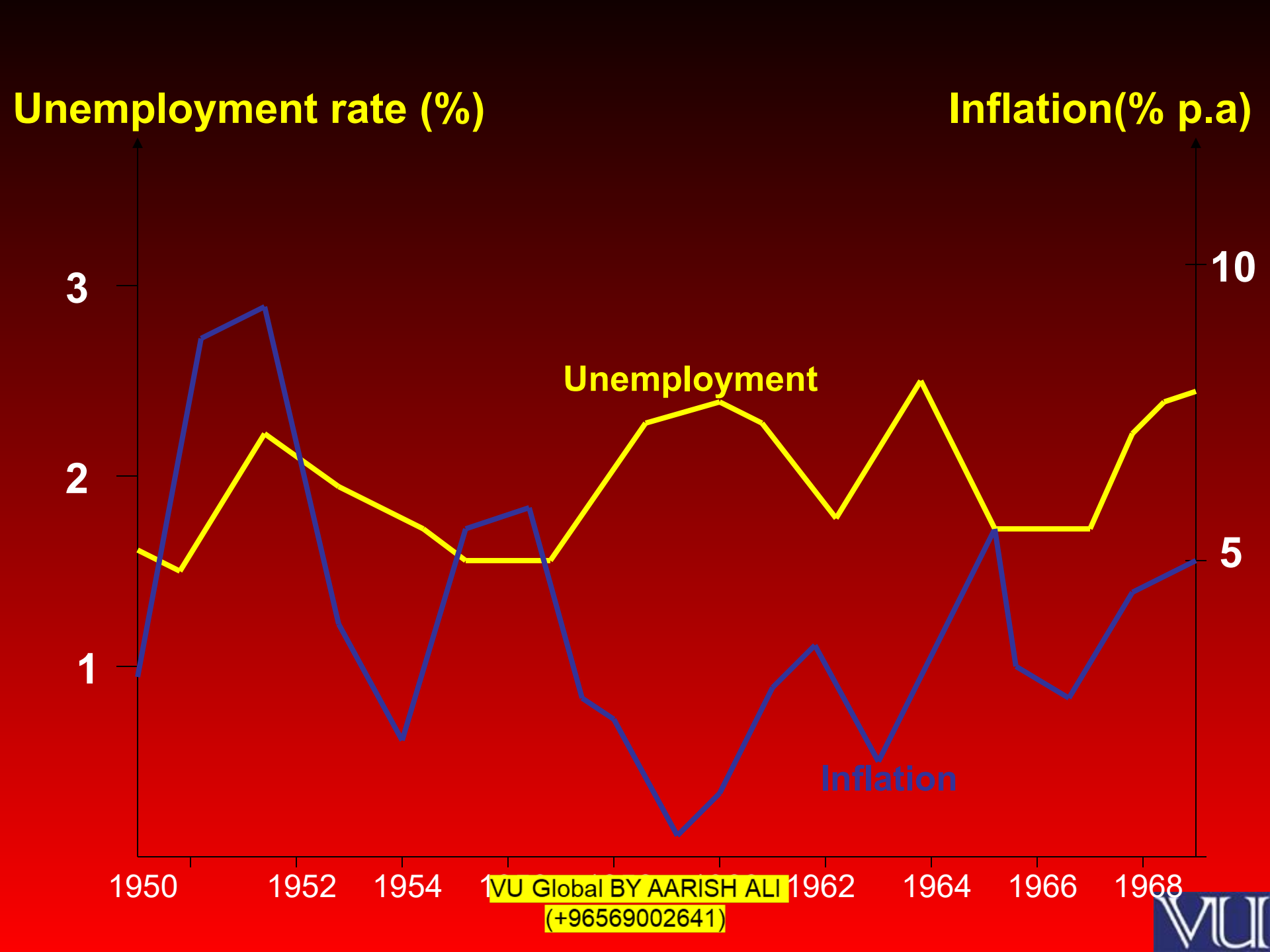


VU Global BY AARISH ALI
(+96569002641)

- Note: the two graphs in slide 6 & 7 are suppose to be a) displayed together and then b) individually zoomed



VU Global BY AARISH ALI
(+96569002641)

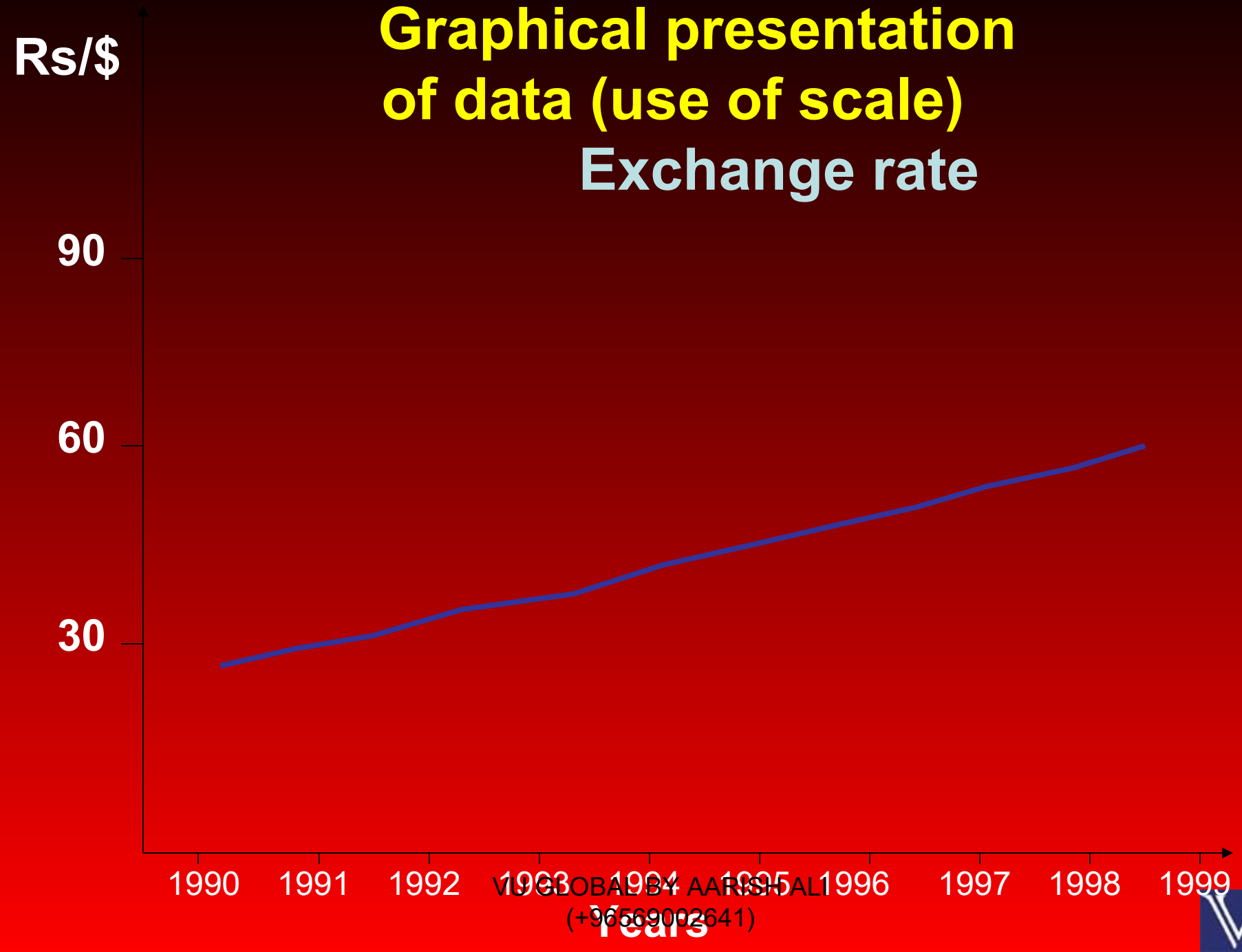


VU Global BY AARISH ALI
(+96569002641)

Lesson 28

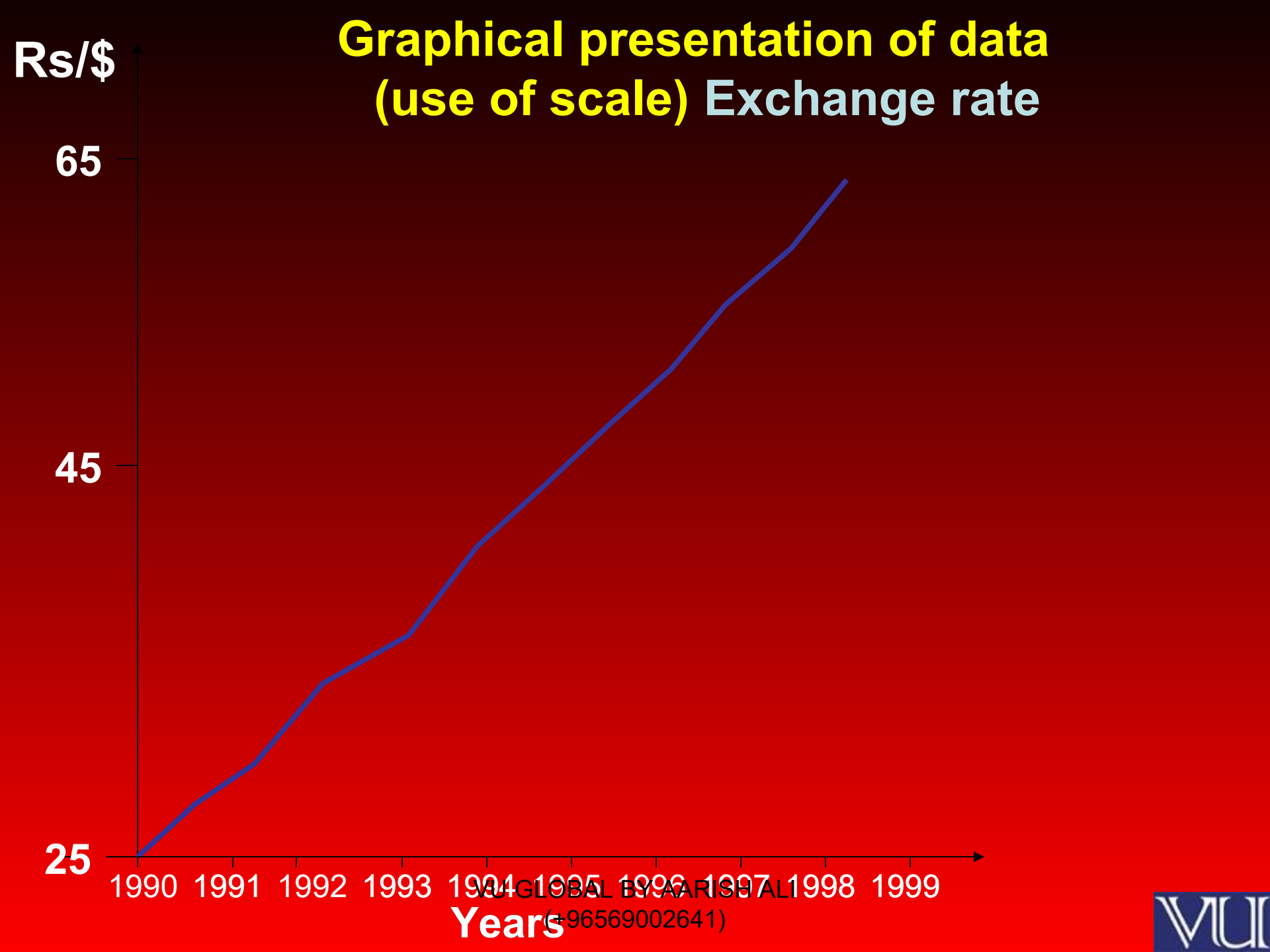
VU GLOBAL BY AARISH ALI
(+96569002641)

Graphical presentation of data (use of scale)



VU GLOBAL BY AARISH ALI
(+966590002641)

Graphical presentation of data (use of scale) Exchange rate



VU GLOBAL BY AARISH ALI
(+96569002641)

5 people in the economy

	Income in (000)s				
	A	**B**	**C**	**D**	**E**
Old government	100	110	120	130	140
New government	60	70	75	300	450

Mean (old government) = $\frac{610}{5}$ = 122

Median (old government) = 120

Mean (new government) = $\frac{955}{5}$ = 191

Median (new government) = 75

VU GLOBAL BY AARISH ALI
(+96569002641)

Year	1979	1980	1981	1982	1983	1984	1985	1986
Real GDP growth **rate**	1%	-5%	1%	3%	4%	5%	2%	1%

Between 1982 & 1985, average growth rate = 3.5%

Between 1979 & 1986, average growth rate = 1.5%

VU GLOBAL BY AARISH ALI
(+96569002641)

Difference between total value and value added

- Firm A: Produces steel from raw iron and sells it for Rs 100,000 to firm B.

- Firm B: Buys steel worth Rs 100,000 then processes it to produce a car body worth Rs 200,000.

- Firm C: Buys the car body, adds the other parts etc. and sells complete car for Rs 450,000.

Value added or GDP:

Value of transactions: 100,000 + 200,000 + 450,000
= 750,000

GDP = Sum of the value added by each of the firms:

= 100,000 + (200,000 – 100,000) + (450,000 – 200,000)
= 100,000 + 100,000 + 250,000 = 450,000→ GDP.

Also total expenditure of consumer on car = 450,000

Good Col 1	Seller Col 2	Buyer Col 3	Trans Value Col 4
Steel	Steel producer	Machine producer	100,000
Steel	Steel producer	Car producer	300,000
Machine	Machine producer	Car producer	200,000
Tyres	Tyre producer	Car producer	50,000
Cars	Car producer	Consumer	500,000
Total value of transaction	-	-	1,150,000

VU GLOBAL BY AARISH ALI
(+96569002641)

Lesson 29

VU GLOBAL BY AARISH ALI
(+96569002641)

Good Col 1	Seller Col 2	Buyer Col 3	Trans Value Col 4
Steel	Steel producer	Machine producer	100,000
Steel	Steel producer	Car producer	300,000
Machine	Machine producer	Car producer	200,000
Tyres	Tyre producer	Car producer	50,000
Cars	Car producer	Consumer	500,000
Total value of transaction	-	-	1,150,000

VU GLOBAL BY AARISH ALI
(+96569002641)

Good Col 1	Seller Col 2	Buyer Col 3	Trans Value Col 4	Value added Col 5
Steel	Steel producer	Machine producer	100,000	100,000
Steel	Steel producer	Car producer	300,000	300,000
Machine	Machine producer	Car producer	200,000	100,000
Tyres	Tyre producer	Car producer	50,000	50,000
Cars	Car producer	Consumer	500,000	150,000
Total	-	-	1,150,000	700,000

VU GLOBAL BY AARISH ALI
(+96569002641)

Good Col 1	Seller Col 2	Buyer Col 3	Trans Value Col 4	Exp on final goods Col 6
Steel	Steel producer	Machine producer	100,000	-
Steel	Steel producer	Car producer	300,000	-
Machine	Machine producer	Car producer	200,000	200,000
Tyres	Tyre producer	Car producer	50,000	
Cars	Car producer	Consumer	500,000	500,000
Total	-	-	1,150,000	700,000

VU GLOBAL BY AARISH ALI
(+96569002641)

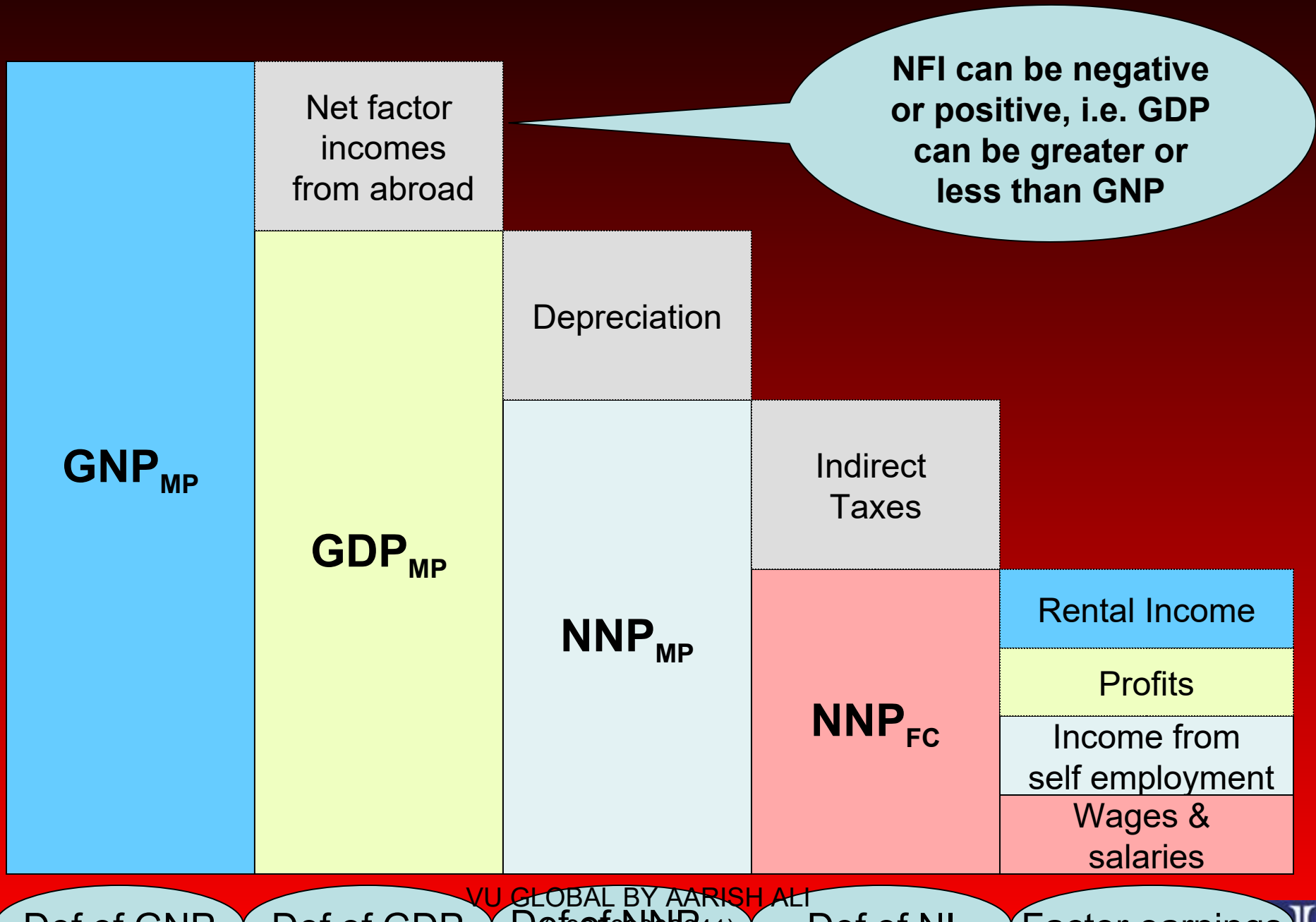
Good Col 1	Seller Col 2	Buyer Col 3	Value added Col 5	Factor earnings Col 7
Steel	Steel producer	Machine producer	100,000	100,000
Steel	Steel producer	Car producer	300,000	300,000
Machine	Machine producer	Car producer	100,000	100,000
Tyres	Tyre producer	Car producer	50,000	50,000
Cars	Car producer	Consumer	500,000	150,000
Total	-	-	700,000	700,000

VU GLOBAL BY AARISH ALI
(+96569002641)

Trans Value Col 4	Value added Col 5	Exp on final goods Col 6	Factor earnings Col 7
100,000	100,000	-	100,000
300,000	300,000	-	300,000
200,000	100,000	200,000	100,000
50,000	50,000		50,000
500,000	150,000	150,000	150,000
1,150,000	700,000	700,000	700,000

VU GLOBAL BY AARISH ALI
(+96569002641)

GDP



VU GLOBAL BY AARISH ALI
(PH96869002641)

$$\text{Real GDP}_{\text{year a}} = \text{Nominal GDP}_{\text{year a}} \times \frac{\text{Price Index}_{\text{base year}}}{\text{Price Index}_{\text{year a}}}$$

Example

- Nominal GDP was $150 billion in 1985

  & $300 billion in 1994.

- ASSUME that prices have risen by 50% over the period.

- **Real GDP in 1994 measured in 1985 prices:**

  - **= $300 billion x 100/150 = $200billion**

Hypothetical economy

	Year 1	Year 2
Apples produced	100	150
Chicken produced	100	140
cost per apple Rs	2	4
cost per chicken Rs	4	6

- Nominal GDP in year1 = (100 x 2) + (100 x 4) = 600
- Nominal GDP in year2 = (150 x 4) + (140 x 6) = 1440
- Growth rate in nominal GDP = $\frac{1440 - 600}{600}$ = 140%
- Year2 price index = $\frac{150 \times 2 + 140 \times 4}{290}$ = 2.966
  at Year1 prices
- Year2 price index = $\frac{150 \times 4 + 140 \times 6}{290}$ = 4.966 → Current year price index
  at Year2 prices

GDP deflator:

$$2.966X = 4.966 \times 100$$

$$X = 167.4\%$$

which is the price level in percentage terms prevailing in the current year (Year2) relative to the price level of Year1

$$\text{Real GDP} = \frac{1440 \times 100}{167.4} = 860$$

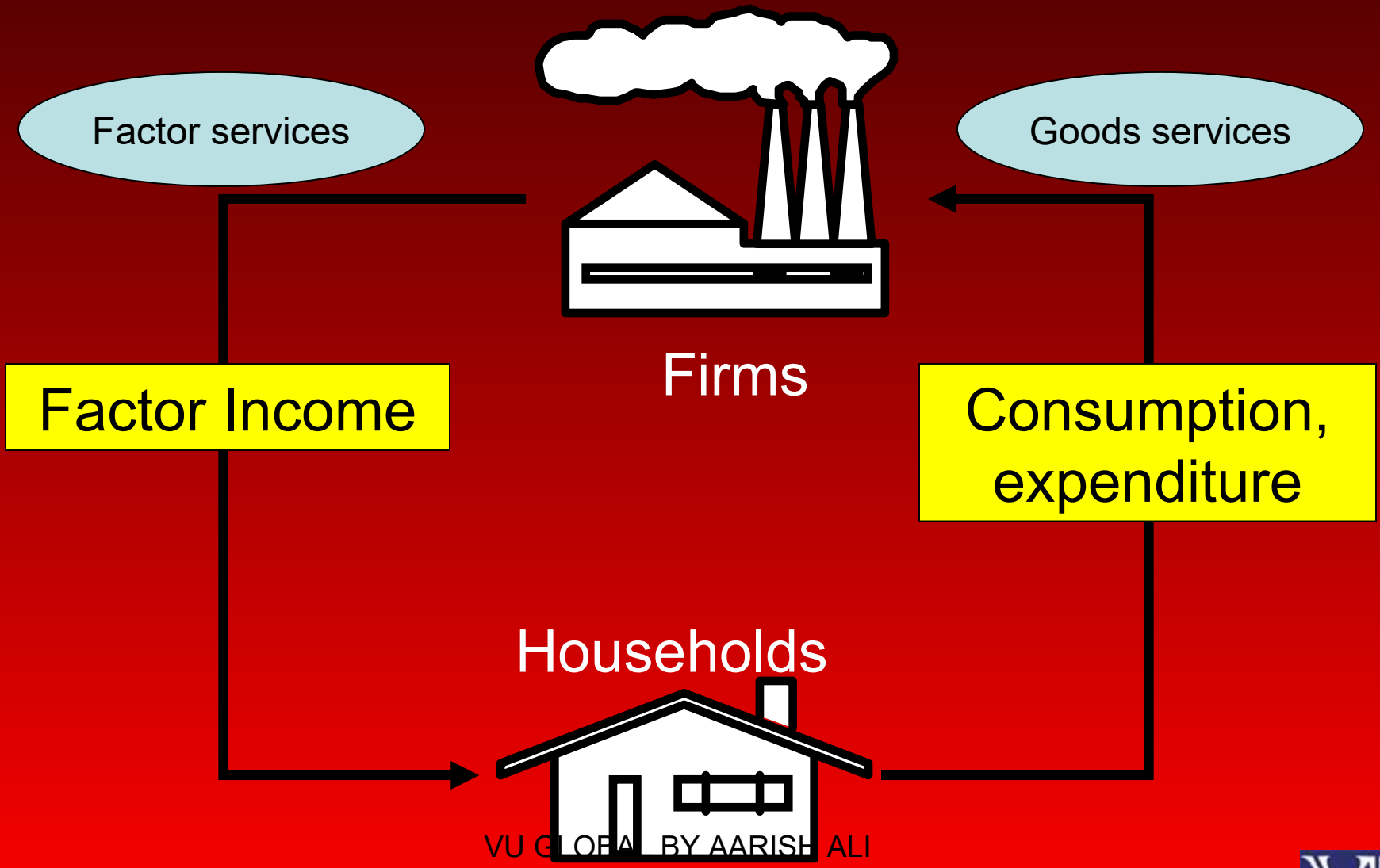
$$\text{Growth rate} = \frac{860 - 600}{600} = 43\%$$

VU GLOBAL BY AARISH ALI
(+96569002641)

Lesson 30

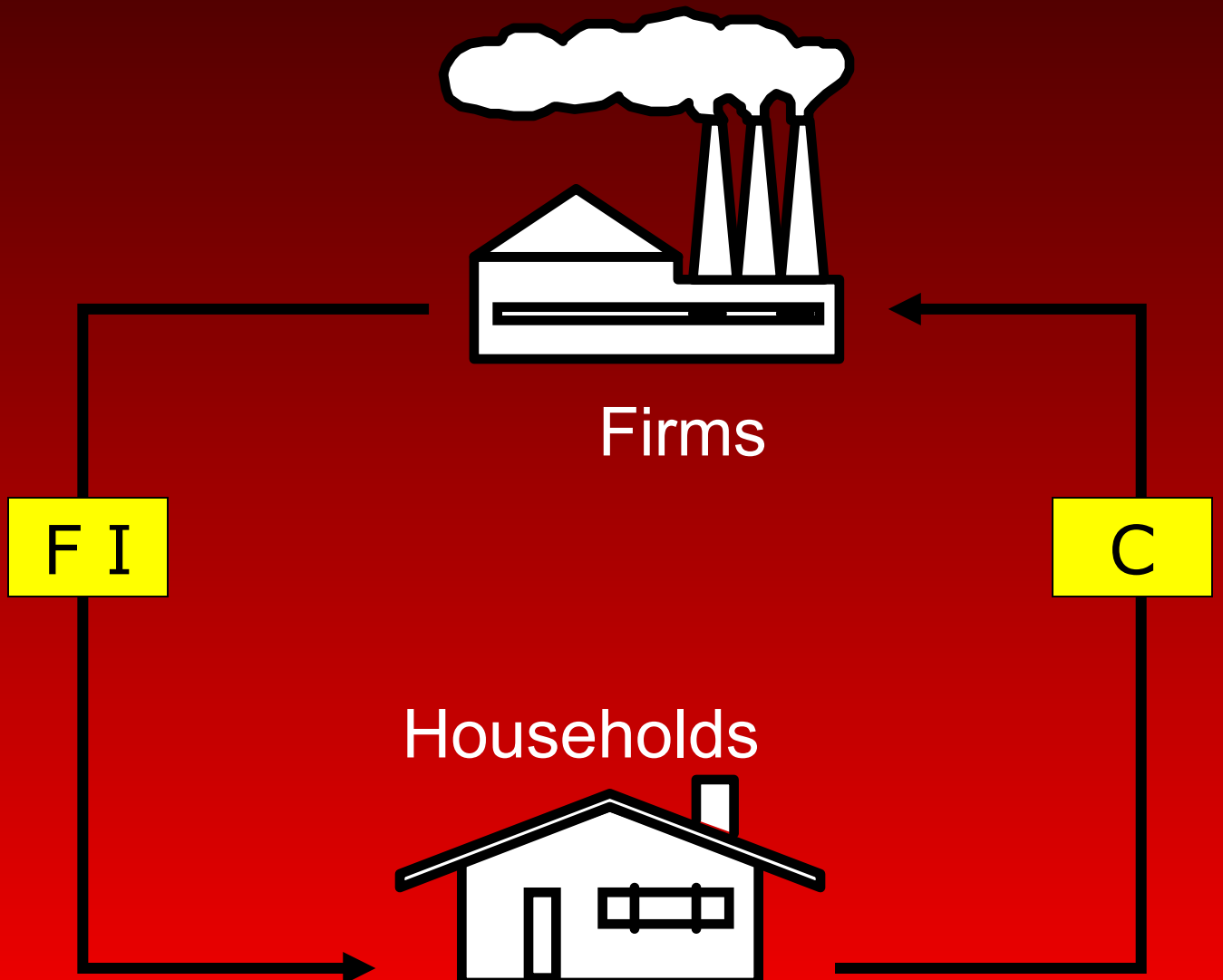
VU GLOBAL BY AARISH ALI
(+96569002641)

Background: **How does the money go around?**



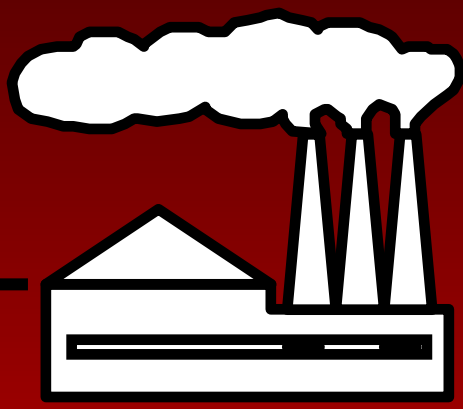
VU GLOBAL BY AARISH ALI
(+96569002641)

Money Payments



VU GLOBAL BY AARISH ALI
(+96569002641)

Leakages or withdrawals (W)



Firms

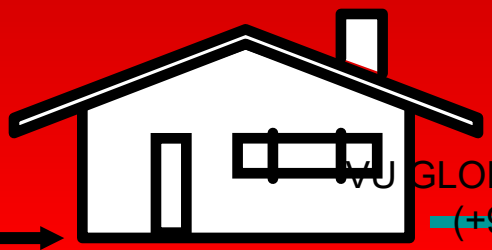
Money that is no longer recycled from Households to firms

FI

C

Banks

Households

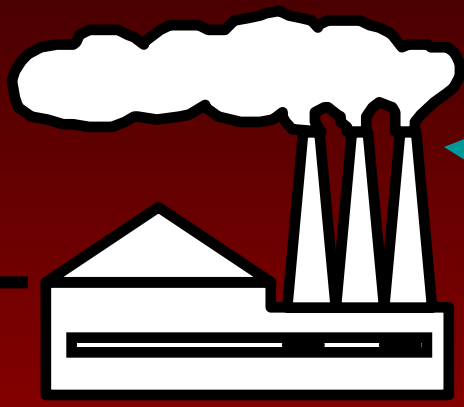


saving (S)

VU GLOBAL BY AARISH ALI
(+96569002641)

Injections

Payments to firms not originating from Households



Firms

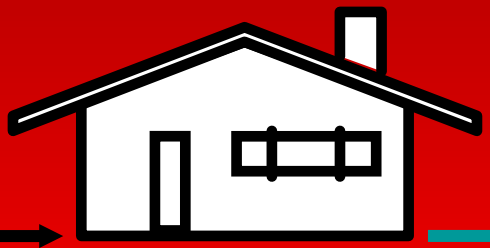
FI

C

Investment (I)

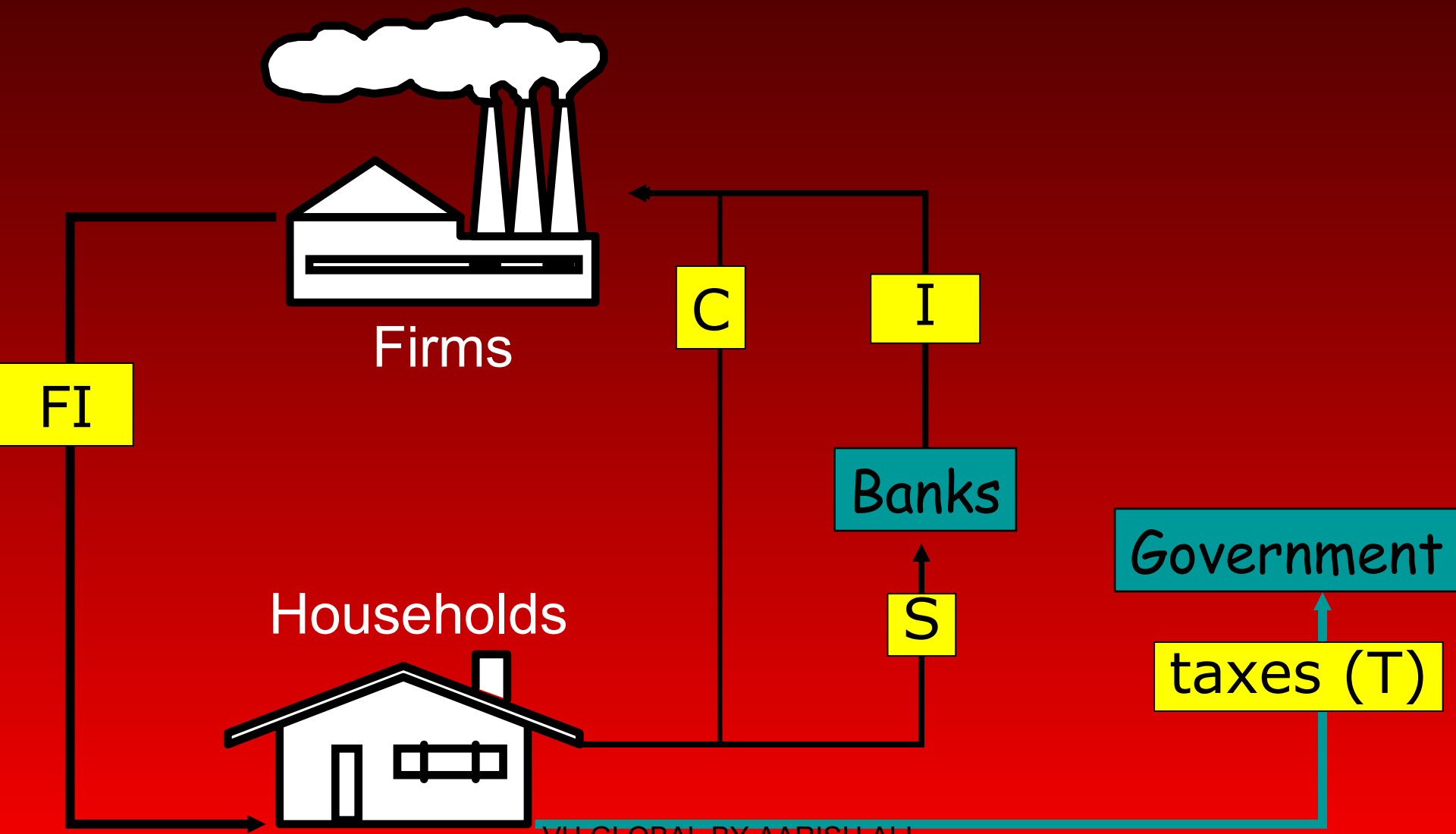
Banks

Households

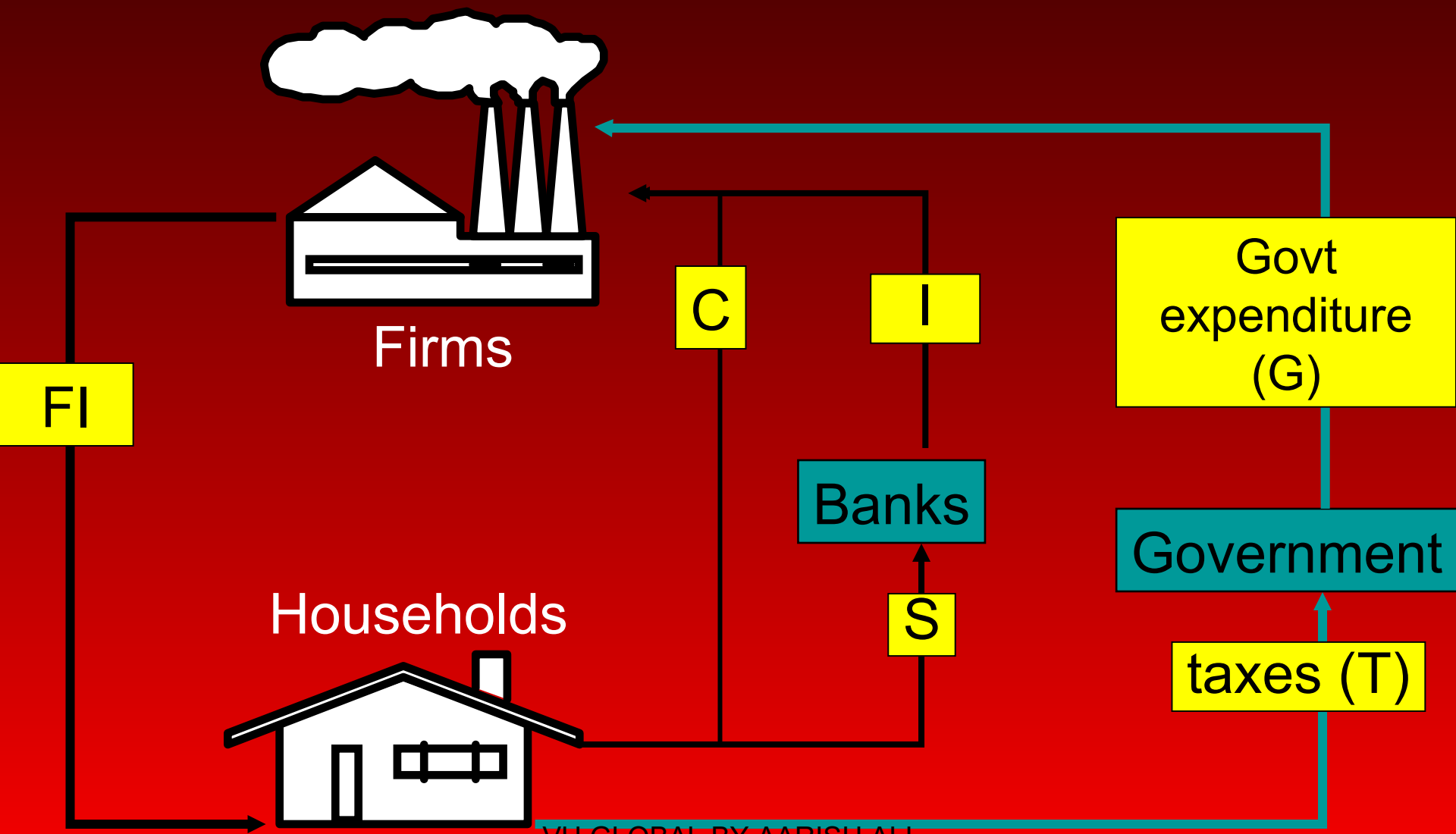


saving (S)

Taxes (T)



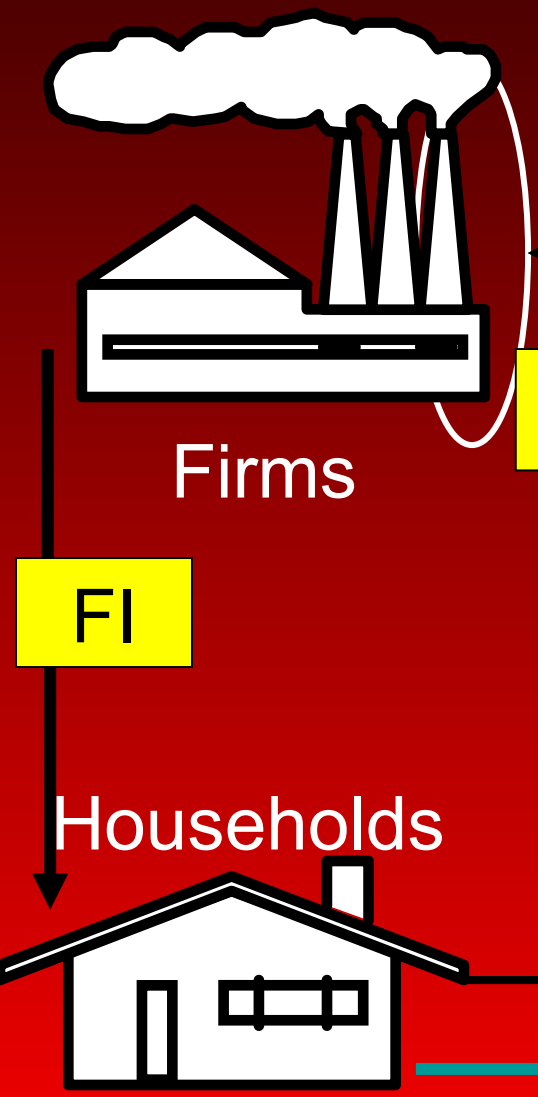
Govt spending (G)



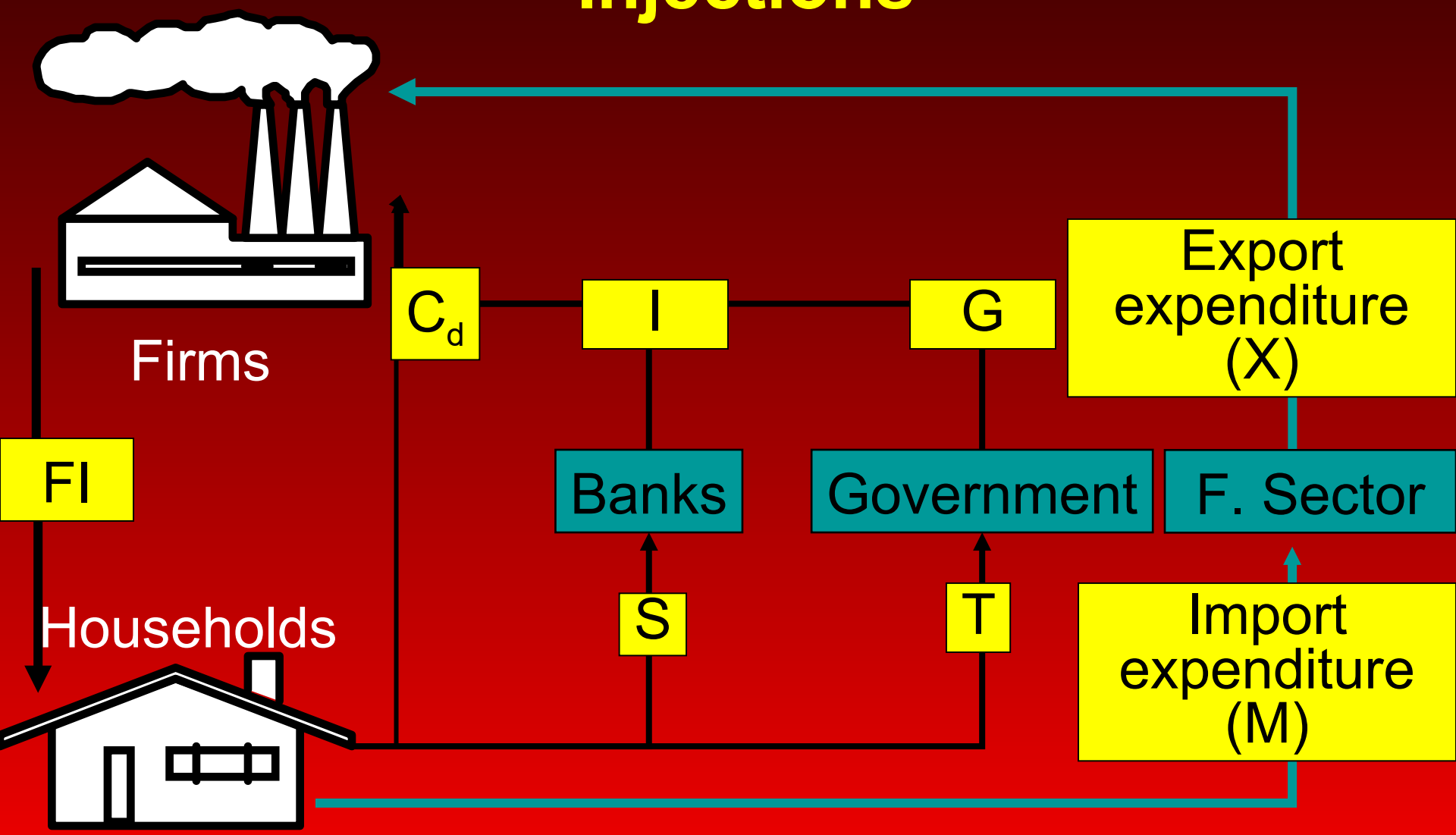
VU GLOBAL BY AARISH ALI
(+96569002641)

Withdrawal

ASSUME
G & I are only on domestic goods

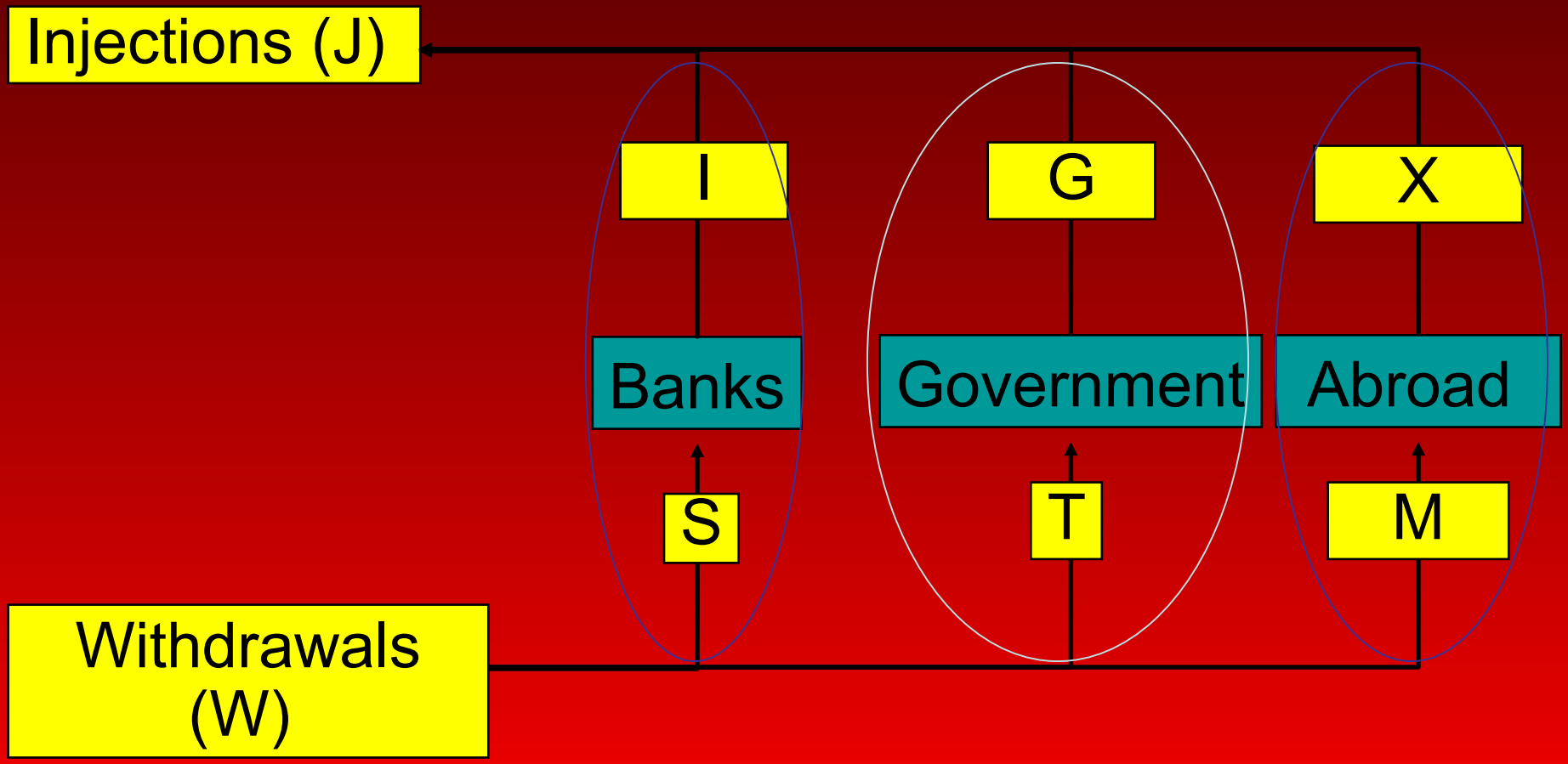


Injections


Firms
C_d
I
G
Export expenditure (X)
FI
Banks
Government
F. Sector
Households
S
T
Import expenditure (M)

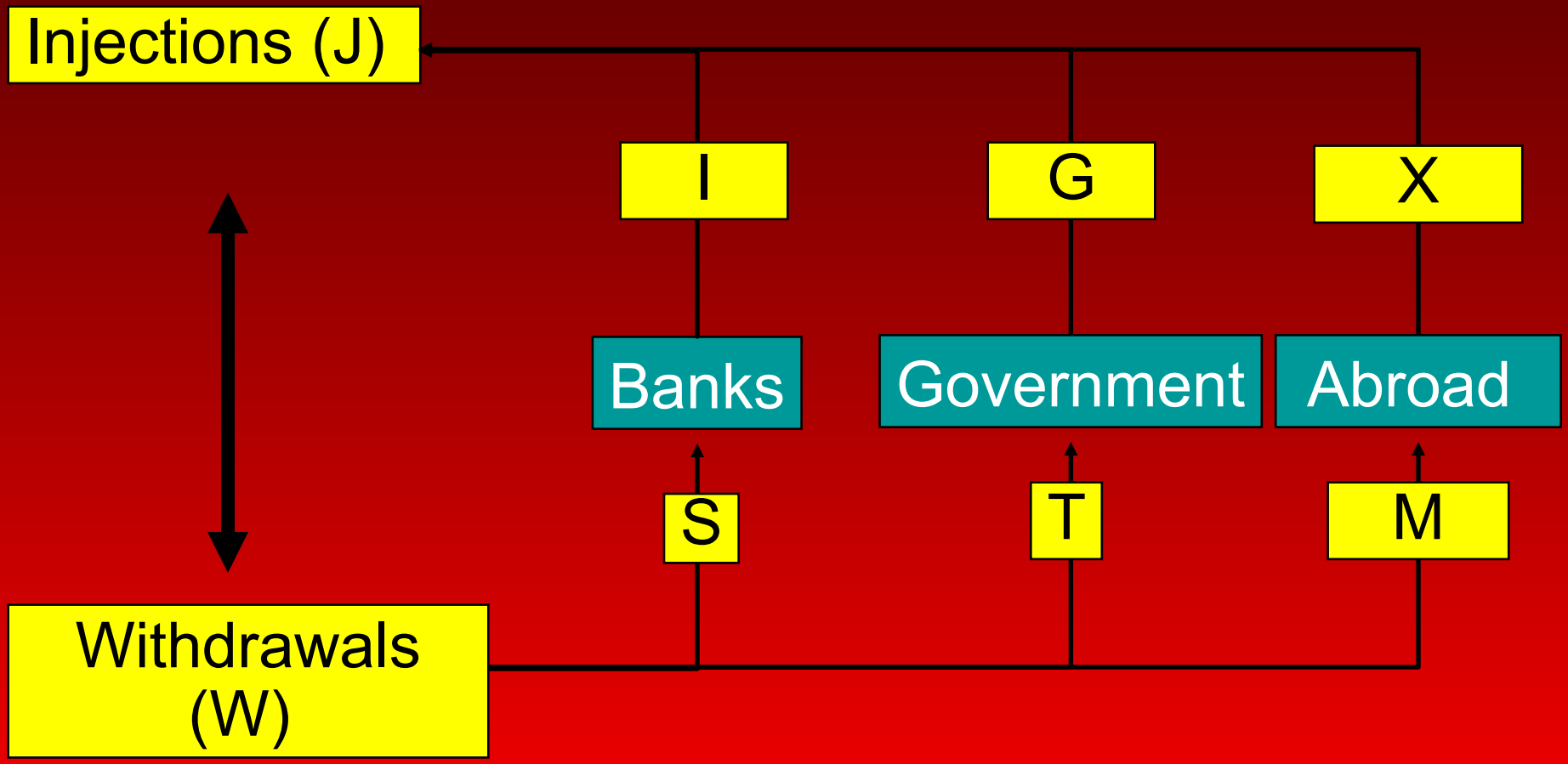
Economic equilibrium - classical view

Individual pairs brought into balance by the market



Economic equilibrium - Keynesian view

Total Injections must equal total withdrawals



Keynesian equilibrium

Withdrawal = Injection

- **By definition →** $S + T + M = I + G + X$

(adding C to both sides)

$C + S + T + M = C + I + G + X$ *(Now taking M on other side)*

$C + S + T = C + I + G + X - M$

$$M = C_f + I_f + G_f$$

$C_d = C - C_f$ $\quad I_d = I - I_f$ $\quad G_d = G - G_f$

$R.H.S = (C - C_f) + (I - I_f) + (G - G_f) + X$

$= C_d + I_d + G_d + X$ => **Total expenditure on domestic goods**

$$C_d + I_d + G_d + X = C + I + G + X - M$$

Total expenditure on domestic goods = AD

For Equilibrium

AD = AS

C + S + T = C + I + G + X – M

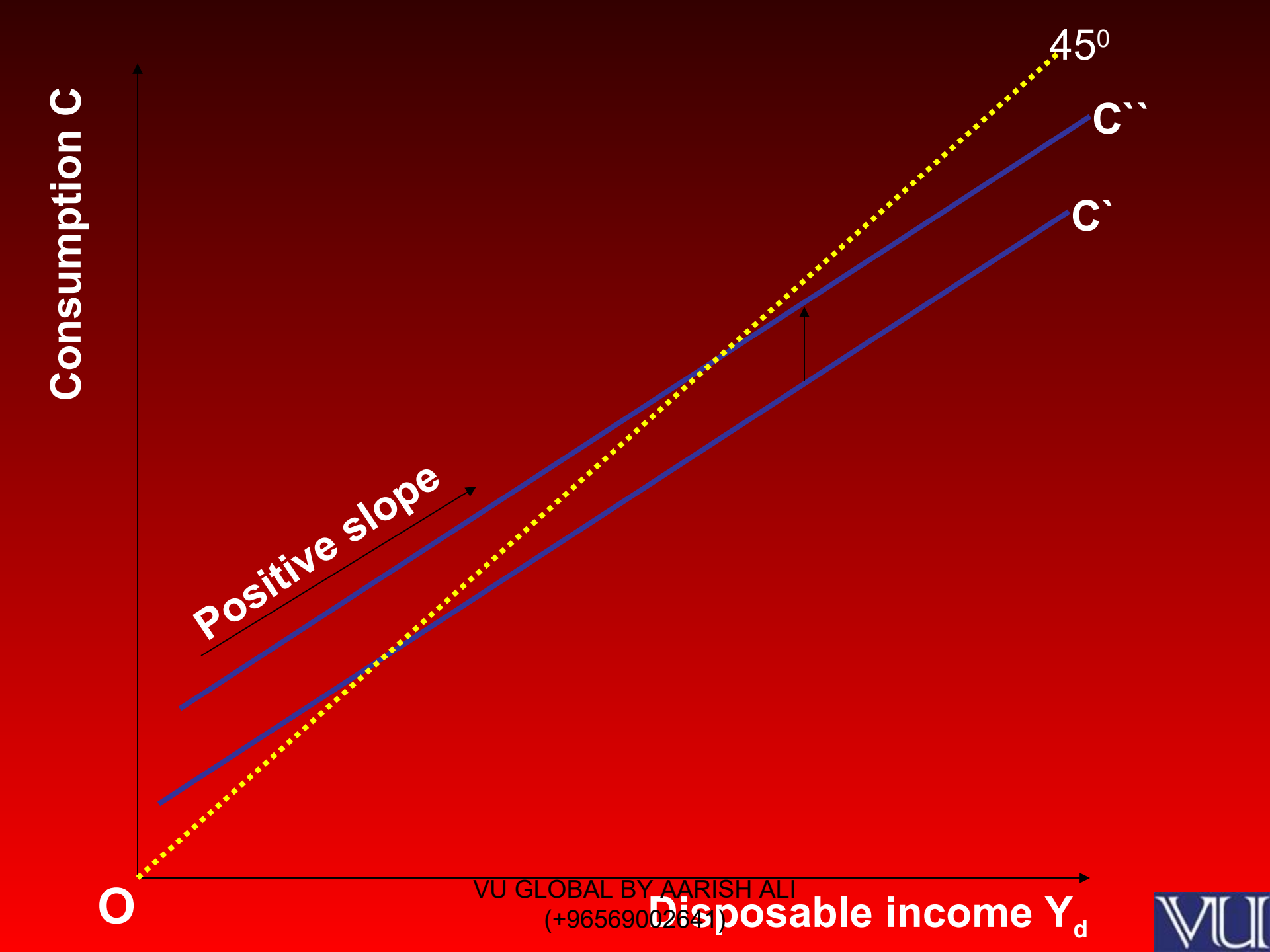
- In L.H.S
- C + S + T = Y *(total income = Y)*
- Therefore another way of viewing Keynesian equilibrium is:

Y = AD = AS

Income = Expenditure = Output

Disposable Income (Yd)	Consumption (C`)	Saving S = Yd – C`
500	500	0
550	540	10
600	580	20
650	620	30
700	660	40
750	700	50
800	740	60

VU GLOBAL BY AARISH ALI
(+96569002641)



VU GLOBAL BY AARISH ALI
(+96569002643)

- **Average propensity to consume:**

  APC = C / Y_d

- **Average propensity to save:**

  APS = S / Y_d

  or

  APS = 1 – APC

- **When Y_d** = $500 billion **APC** = 1 **APS** = 0

- **When Y_d** > $500 billion **APC** < 1 **APS** > 0

- Marginal propensity to consume:

$$MPC = \Delta C / \Delta Yd$$

- Marginal propensity to save:

$$MPS = \Delta S / \Delta Yd$$

or

$$MPS = 1 - MPC$$

APC = C/Y_d	APS	Y_d	C	MPC($\Delta C/\Delta Y_d$)
500/500 = 1.0	0	500	500	
540/500 = 0.98	0.02	550	540	40/50 = 0.8
580/600 = 0.97	0.03	600	580	40/50 = 0.8
620/650 = 0.95	0.05	650	620	40/50 = 0.8
660/700 = 0.94	0.06	700	660	40/50 = 0.8
700/750 0.93	0.07	750	700	40/50 = 0.8
740/800 = 0.92	0.08	800	740	40/50 = 0.8

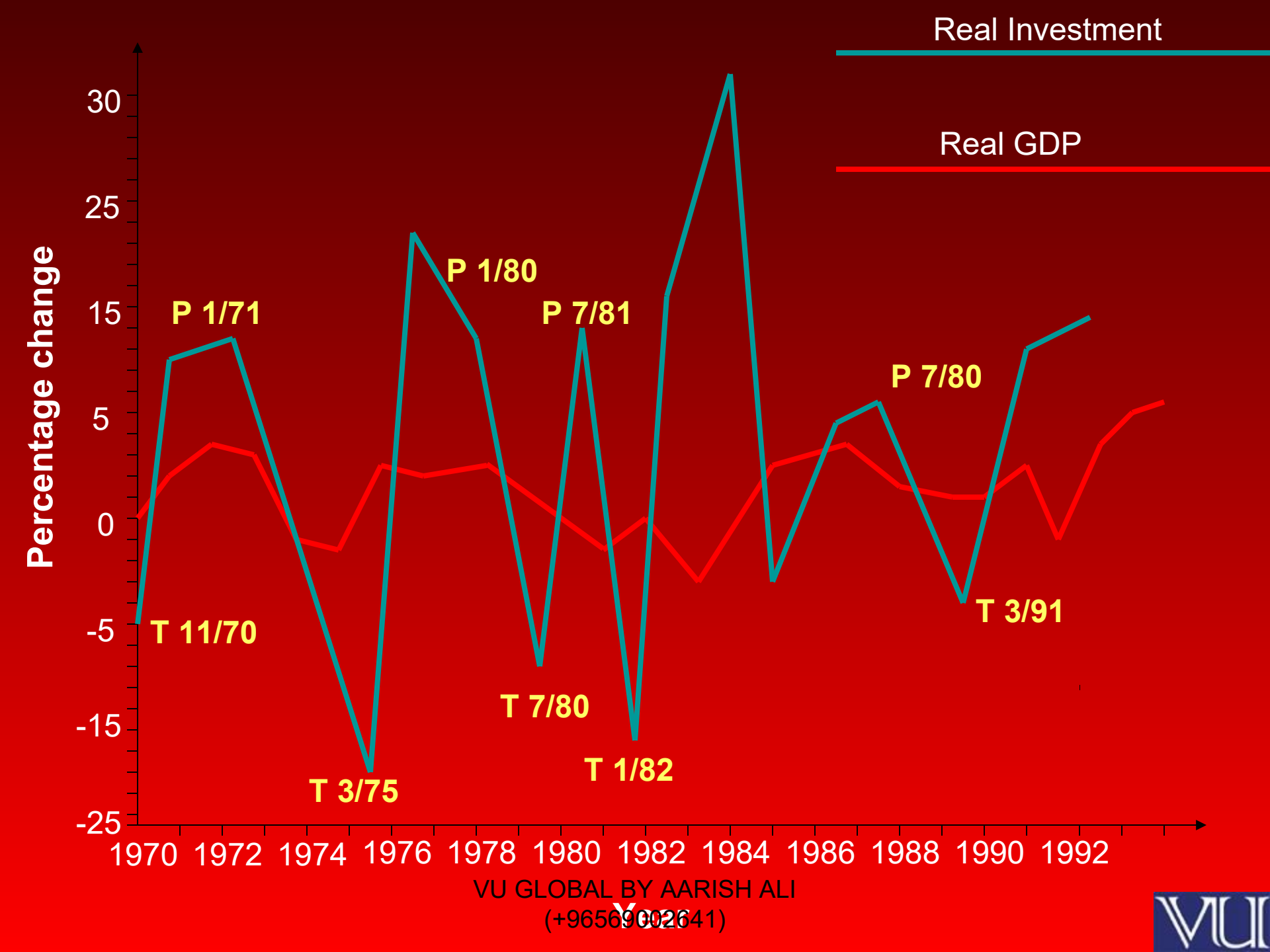
VU GLOBAL BY AARISH ALI
(+96569002641)

Lesson 31

VU GLOBAL BY AARISH ALI
(+96569002641)

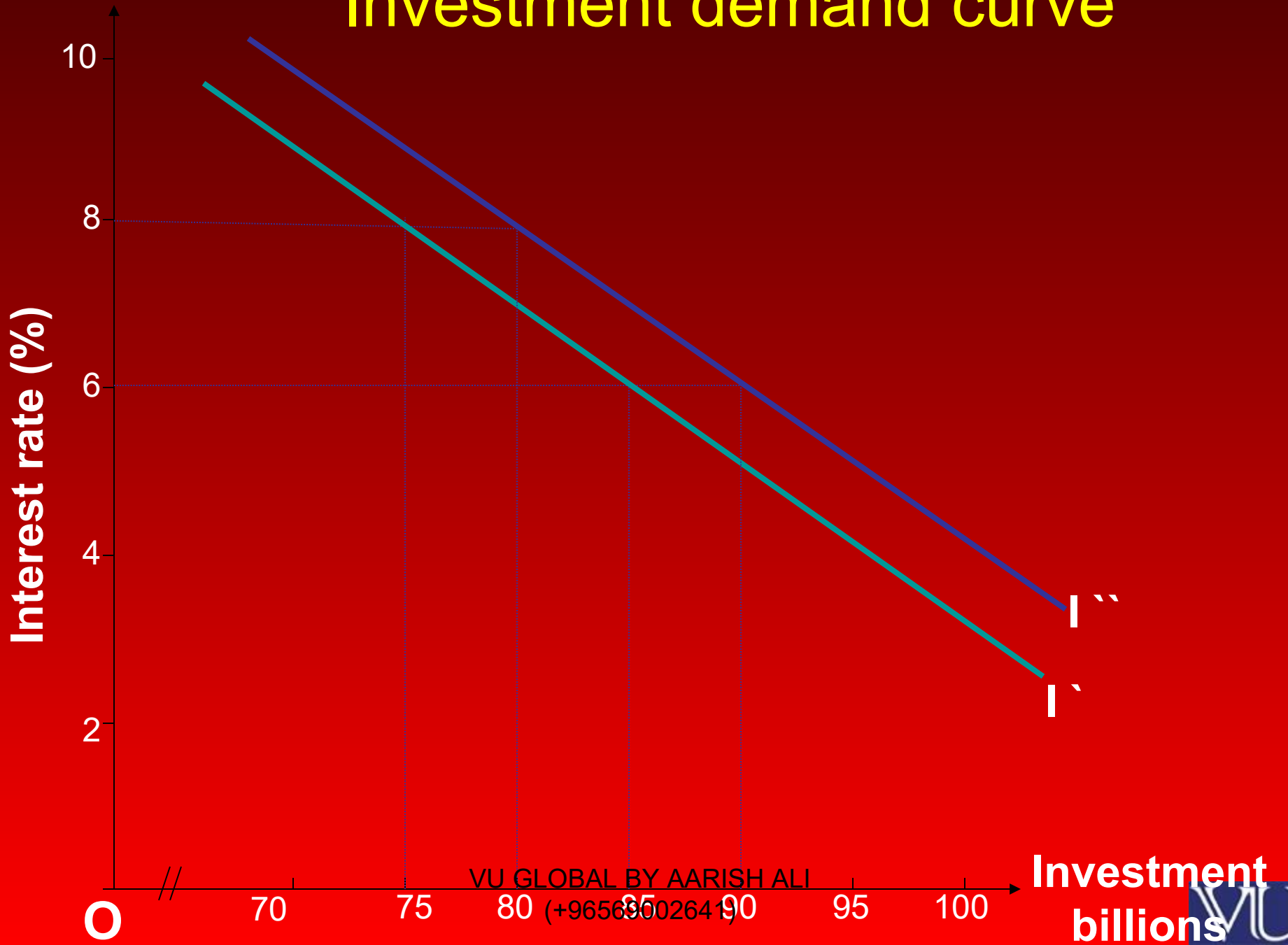
Recap

- Circular Flow of Income
- $W = J$
- $Q = Y = AD$
- $AD = C + I + G + NX$



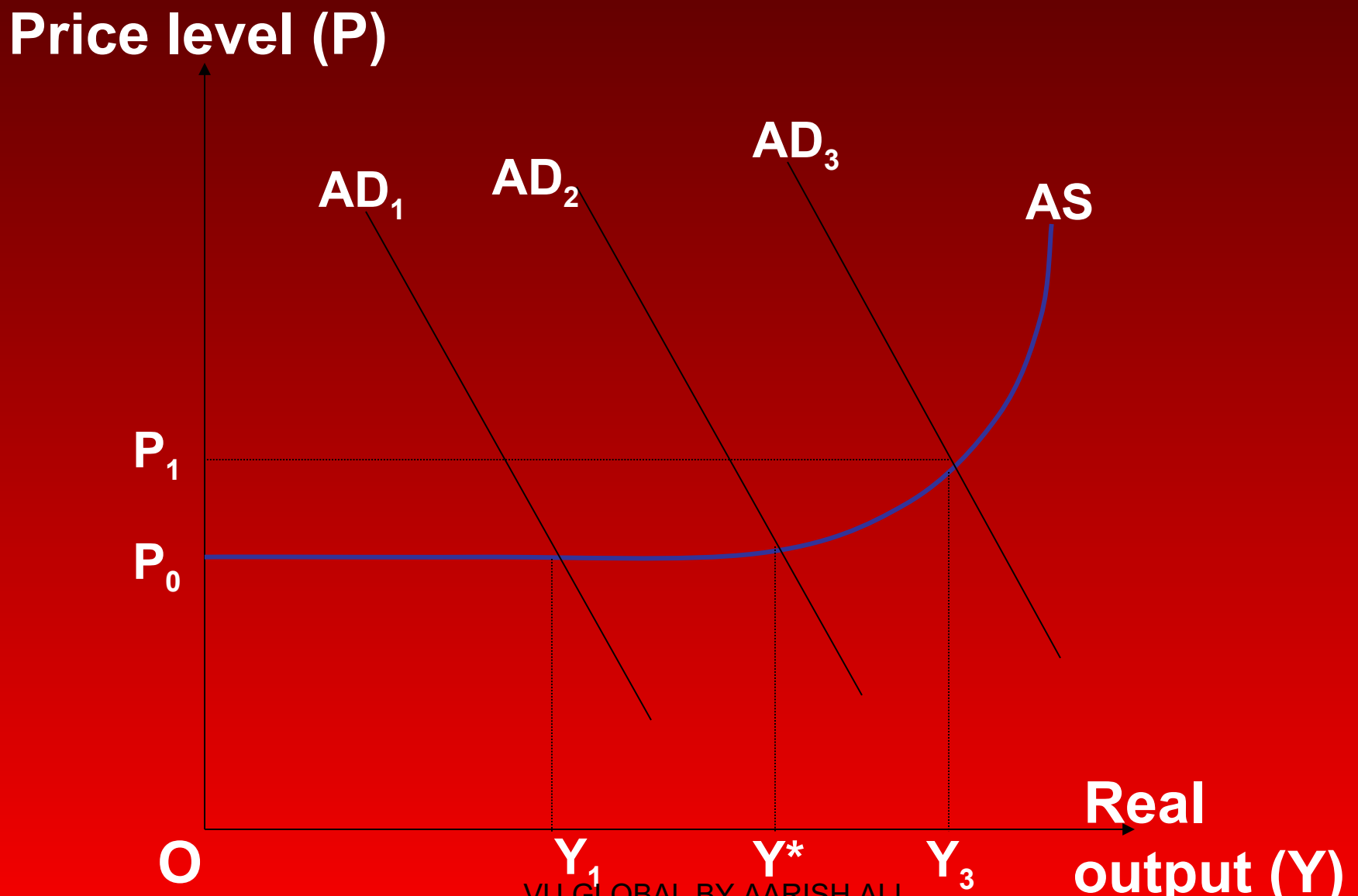
VU GLOBAL BY AARISH ALI
(+96569002641)

Investment demand curve



VU GLOBAL BY AARISH ALI
(+96569002641)

Keynesian

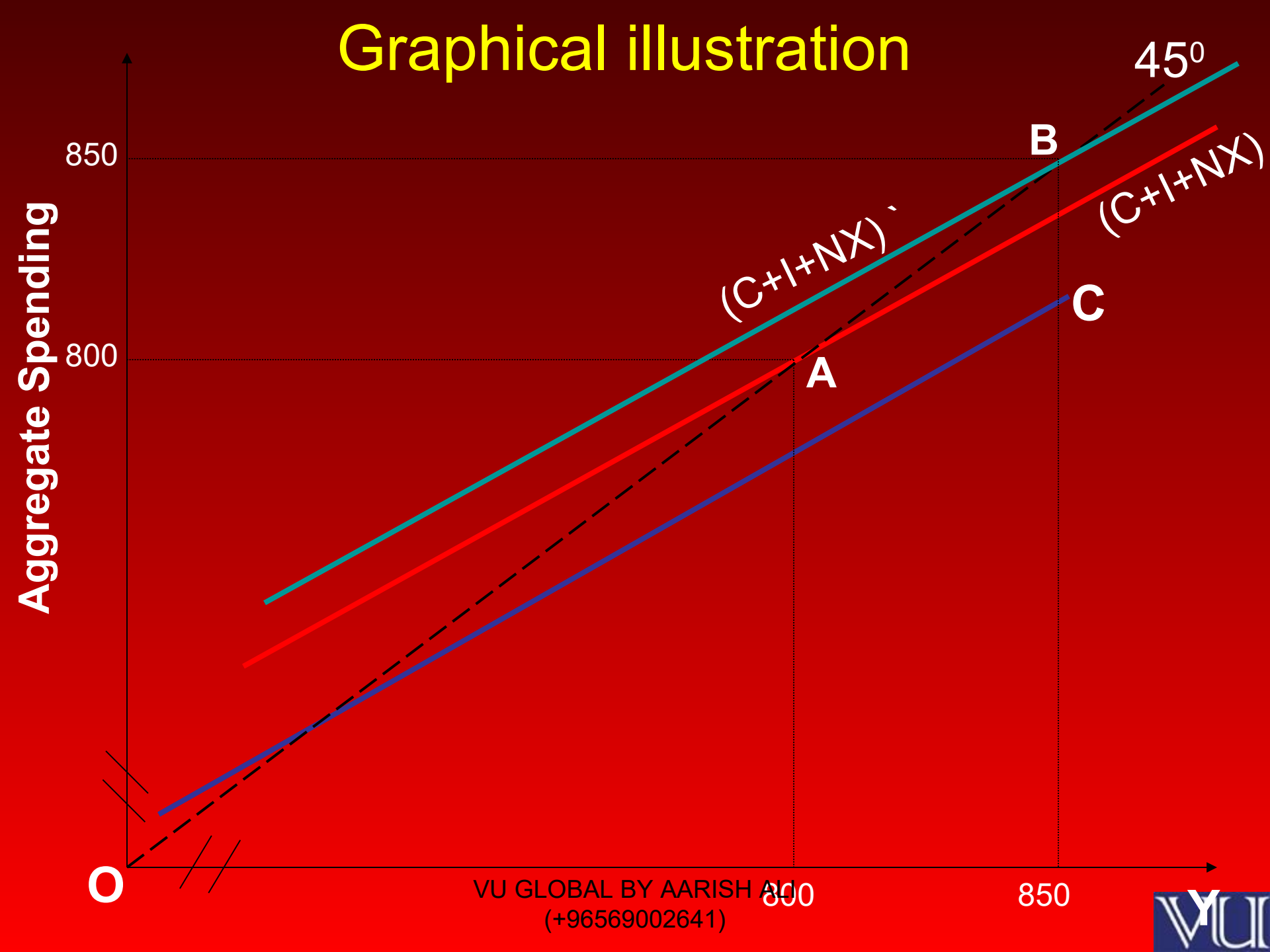


VU GLOBAL BY AARISH ALI
(+96569002641)

In Billions of $					
Output (Y) Col 1	Consumer spending (C) Col 2	Investment spending (I) Col 3	Net Exports (NX) Col 4	Aggregate spending (C+I+NX) Col 5	Surplus / Shortage (C+I+NX – Y) Col 6
650	570	100	10	680	30
700	610	100	10	720	20
750	650	100	10	760	10
800	690	100	10	800	0
850	730	100	10	840	-10
900	770	100	10	880	-20
950	810	100	10	920	-30

VU GLOBAL BY AARISH ALI
(+96569002641)

Graphical illustration



VU GLOBAL BY AARISH ALI
(+96569002641)

Algebraic determination of equilibrium

- $Y = C + I + G + NX$
- Output = Aggregate demand
- Income = Expenditure
- $G = 0$

- $Y = C + I + NX$

Consumption function
C = A + b Y

- A = Level of consumption
- b = MPC = $\Delta Y / \Delta C$
- Consumption function can be formed by :
- $\frac{650 - 610}{750 - 700} = \frac{C - 610}{Y - 700}$

- C = 0.8Y + 50

Y = C + I + NX

- Putting C = 0.8Y + 50

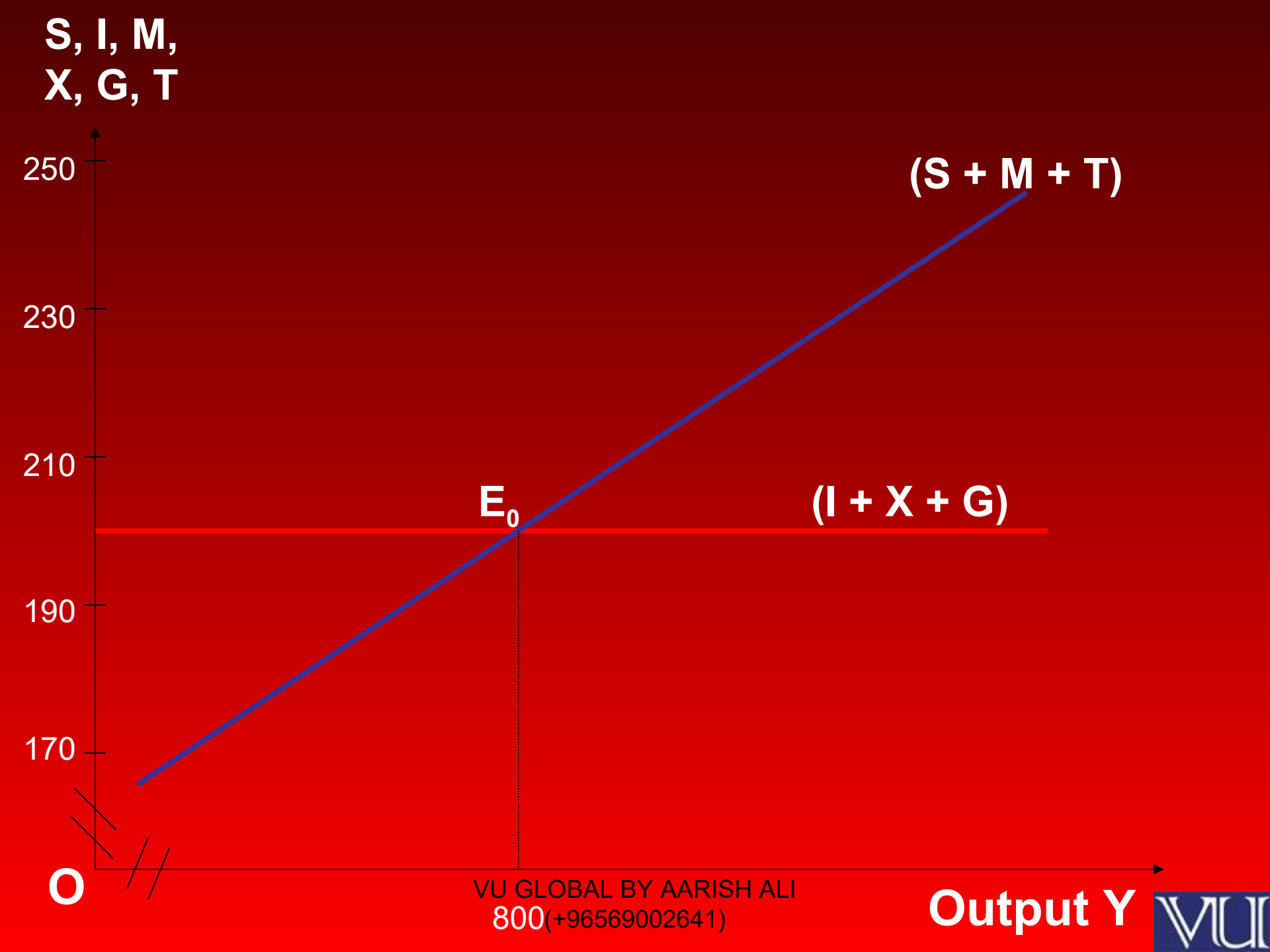
- Y = 0.8Y + 50 + 100 + 10
- 0.2Y = 160
- $Y = \frac{160}{0.2}$
- = 800 → Same Answer

Withdrawals - Injections approach

- W = J
- S + T + M = I + G + X

Output (Y) Col 1	Saving (S) Col 2	Gross Imports (M) Col 3	Gross investment (I) Col 4	Gross exports (X) Col 5
650	80	80	100	90
700	90	80	100	90
750	100	80	100	90
800	110	80	100	90
850	120	80	100	90
900	130	80	100	90
950	140	80	100	90

G Col 6	T Col 7	Withdrawals Leakages (S+M) + T Col 8	Injections (I+X) + G Col 9	Difference (Leakages - Injections) Col 10
10	10	170	200	-30
10	10	180	200	-20
10	10	190	200	-10
10	10	200	200	0
10	10	210	200	10
10	10	220	200	20
10	10	230	200	30



VU GLOBAL BY AARISH ALI
800(+96569002641)

The Keynesian multiplier

- $Y = C + I + G + NX$
- $C = a + bY$
- $Y = a + bY + I + G + NX$
- $Y - bY = a + I + G + NX$
- $Y = \frac{a + I + G + NX}{1 - b} = \frac{1}{1 - b}(a + I + G + NX)$
- $k = \frac{1}{1 - b}$

If any item in the numerator goes up by 10, Y will go up by 10 / 1 – b

VU GLOBAL BY AYISH, ALI
(+96569002641)

- If b = 0.8 $\Delta G = 10$

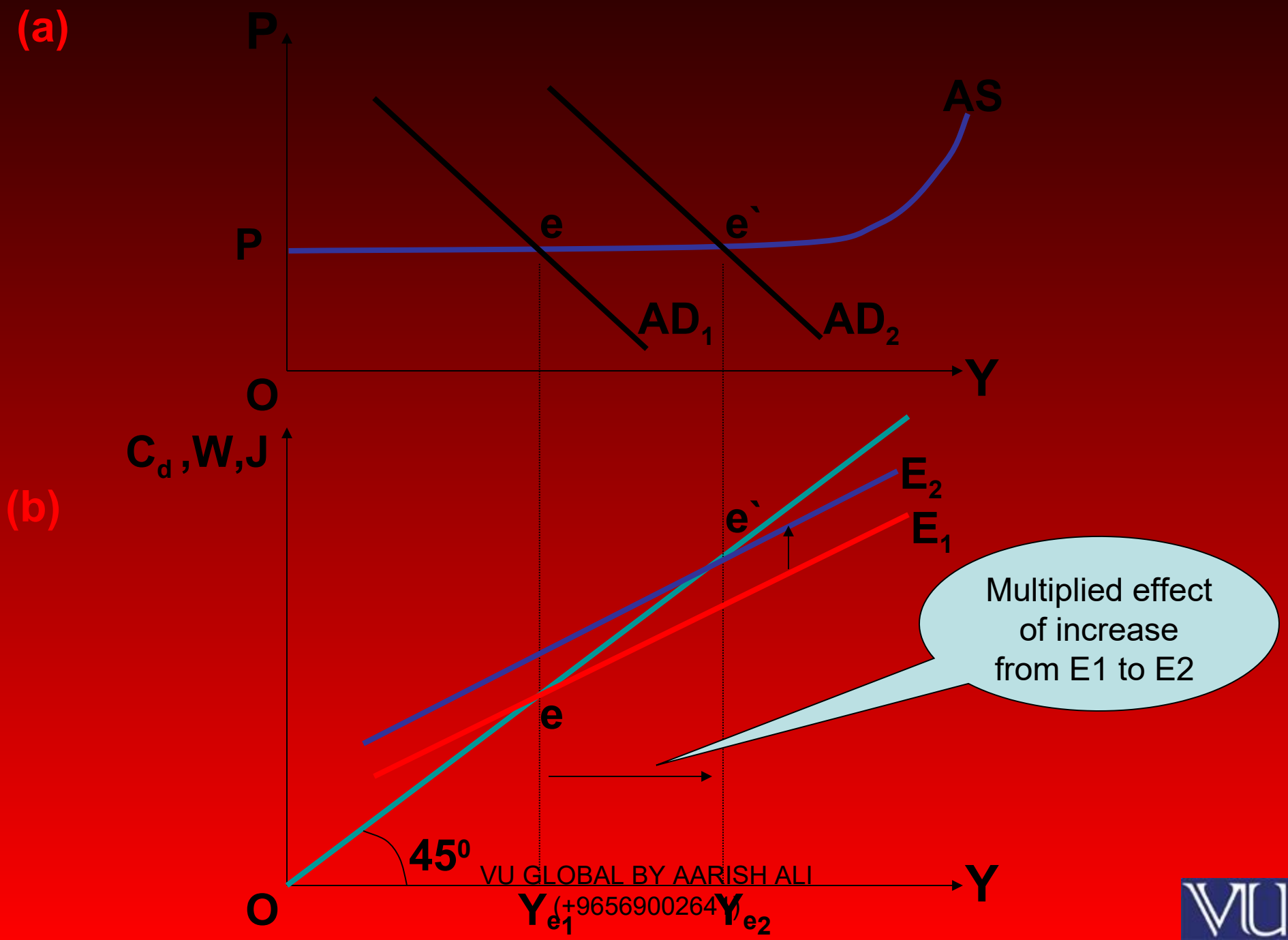
- $k = \dfrac{1}{1 - 0.8}$
- $\Delta Y = \Delta G \times b = 50$

- The higher the value of b, the bigger will be the size of the multiplier,
- The smaller the value of b, the lower will be the size of the multiplier.

VU GLOBAL BY AARISH ALI
(+96569002641)

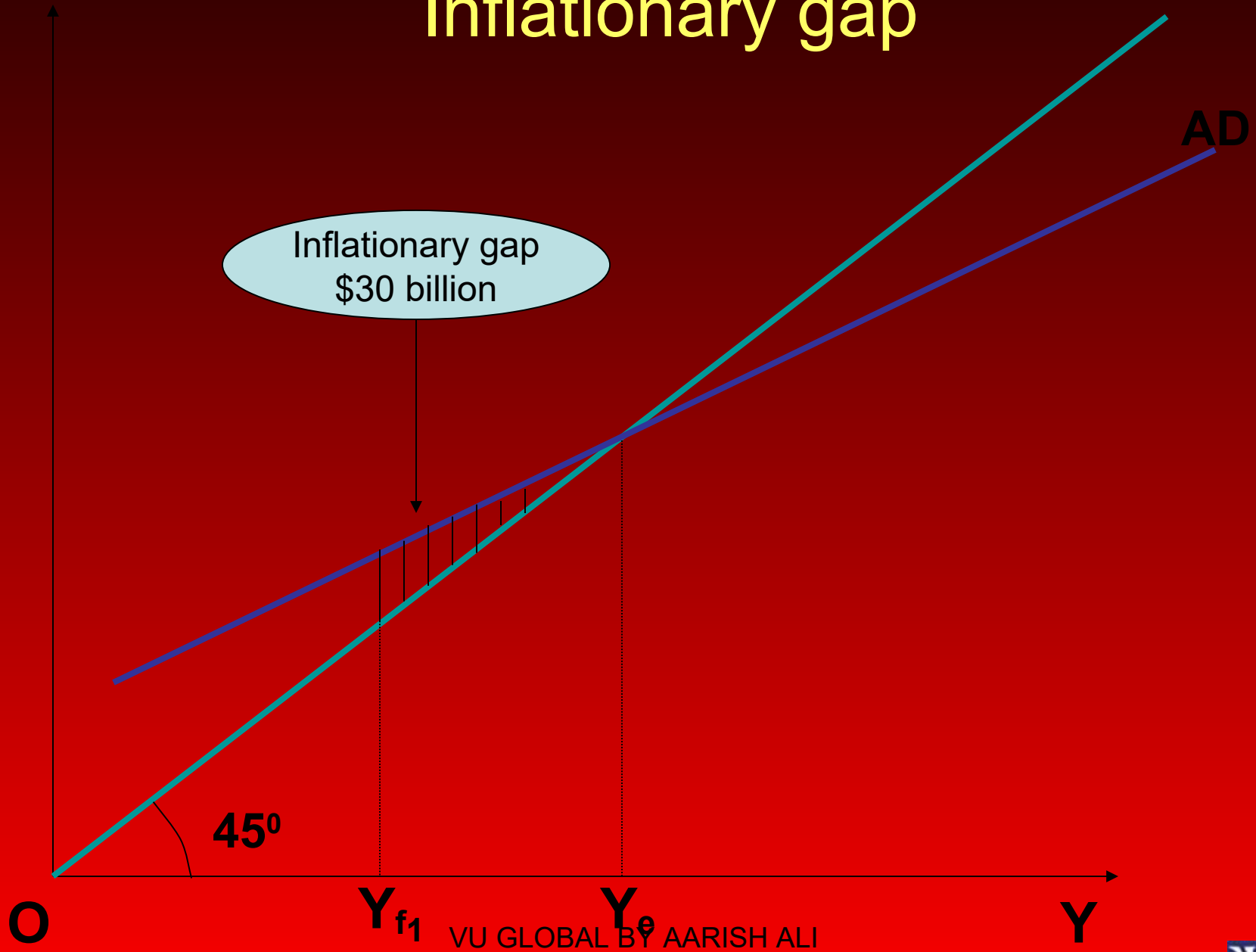
Lesson 32

VU GLOBAL BY AARISH ALI
(+96569002641)

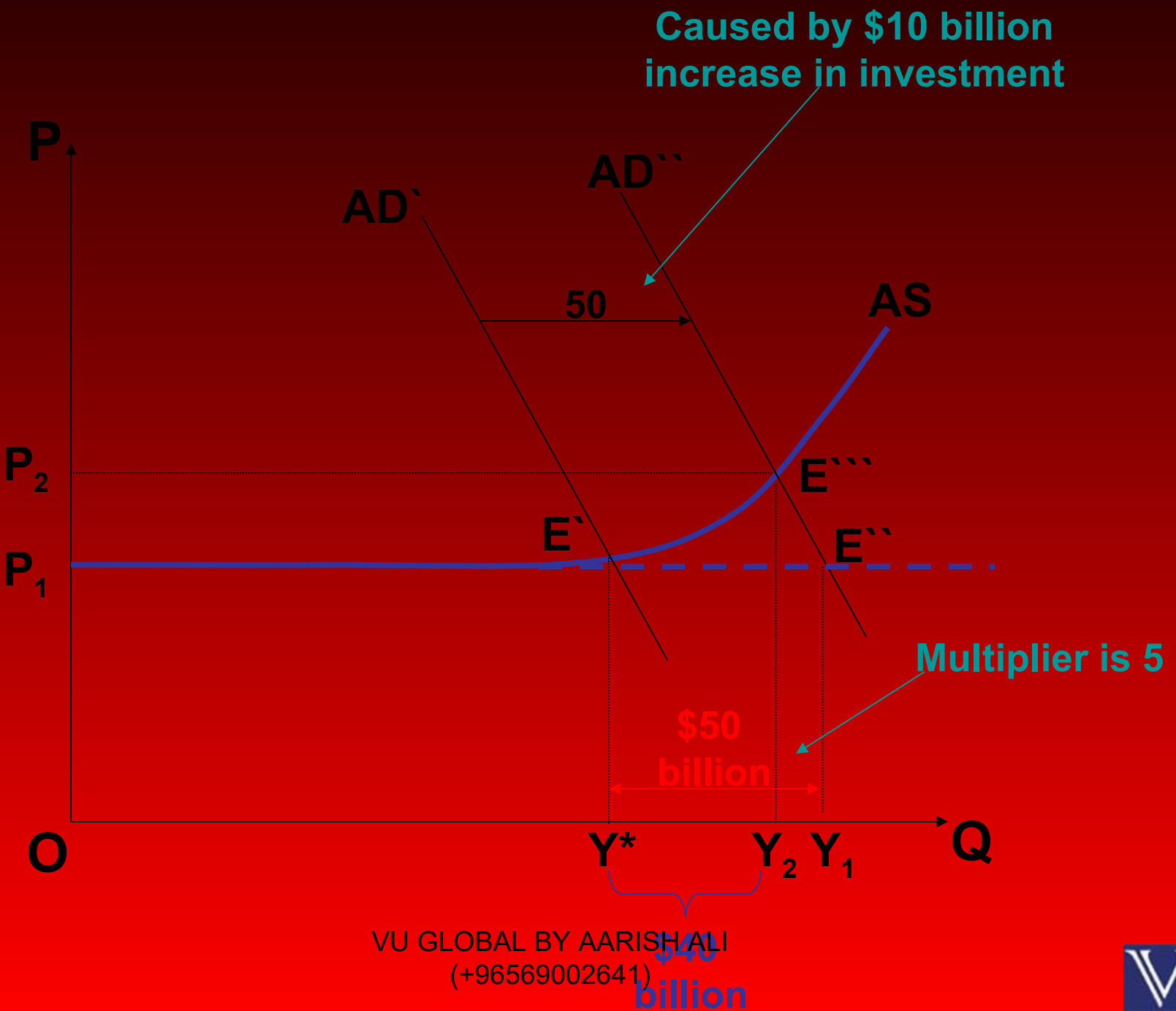


VU GLOBAL BY AARISH ALI
(+9656900264)

Inflationary gap

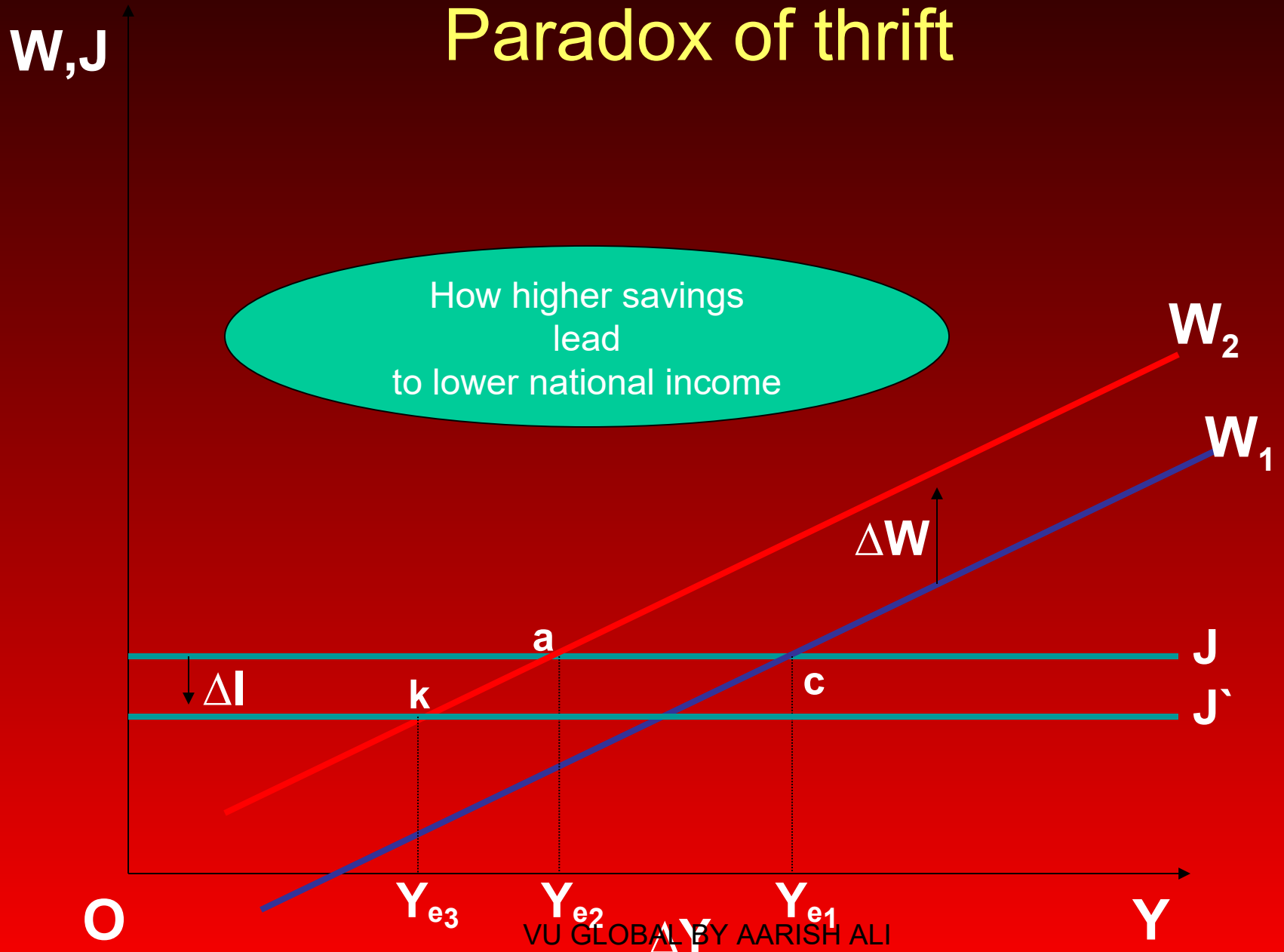


VU GLOBAL BY AARISH ALI
(+96569002641)



VU GLOBAL BY AARISH ALI
(+96569002641)

Paradox of thrift



VU GLOBAL BY AARISH ALI
(+96569002641)

Instability of Investment
The Accelerator

- $I = f(\Delta Y)$
- $I = \alpha Y$
- where α is the amount by which investment depends on changes in national income.α is known as the accelerator coefficient.

- Thus if a 1 million pound rise in national income caused the level of induced investment to be 2 million pound, the accelerator coefficient would be 2.

- The size of α will depend on the economy's marginal capital/output ratio ($\Delta K / \Delta Y$).

- This is the cost of extra capital required to produce a 1 pound increase in national output.

- Thus if an increase in the country's capital stock of 2 million pound (i.e. an investment of 2 million pound is required to produce 1 million pound extra national output, the marginal capital/output ratio would be 2.)

- It is easy to say that the accelerator coefficient and the marginal capital/output ratio are essentially the same.

$$\Delta K / \Delta Y = \alpha$$

Value of α:

- Why the value of α would be 2 or 3 and not 0.1 or 0.2 ?

- The machine may last for many years, and have a value considerably in excess of one year's output.
- A rise in consumer demand, therefore may lead to a much bigger rise in the capital stock (**∆K)**.

Interaction of Multiplier and accelerator

Period $_t$ J → Y	↑ ↑
Period $_{t+1}$ Y → I I → Y	↑ ↑ ↑ ↑
Period $_{t+2}$ if $Y_{t+1} > Y_t$ then I / ↑ if $Y_{t+1} = Y_t$ then I / stays the same if $Y_{t+1} < Y_t$ then I / ↓ This in turn will have a multiplied upward effect, no effect or a multiplied downward effect respectively on national income .	↑ ↑
Period $_{t+3}$ and so on	This will then lead to a further accelerator effect

VU GLOBAL BY AARISH ALI
(+96569002641)

Lesson 33

VU GLOBAL BY AARISH ALI
(+96569002641)

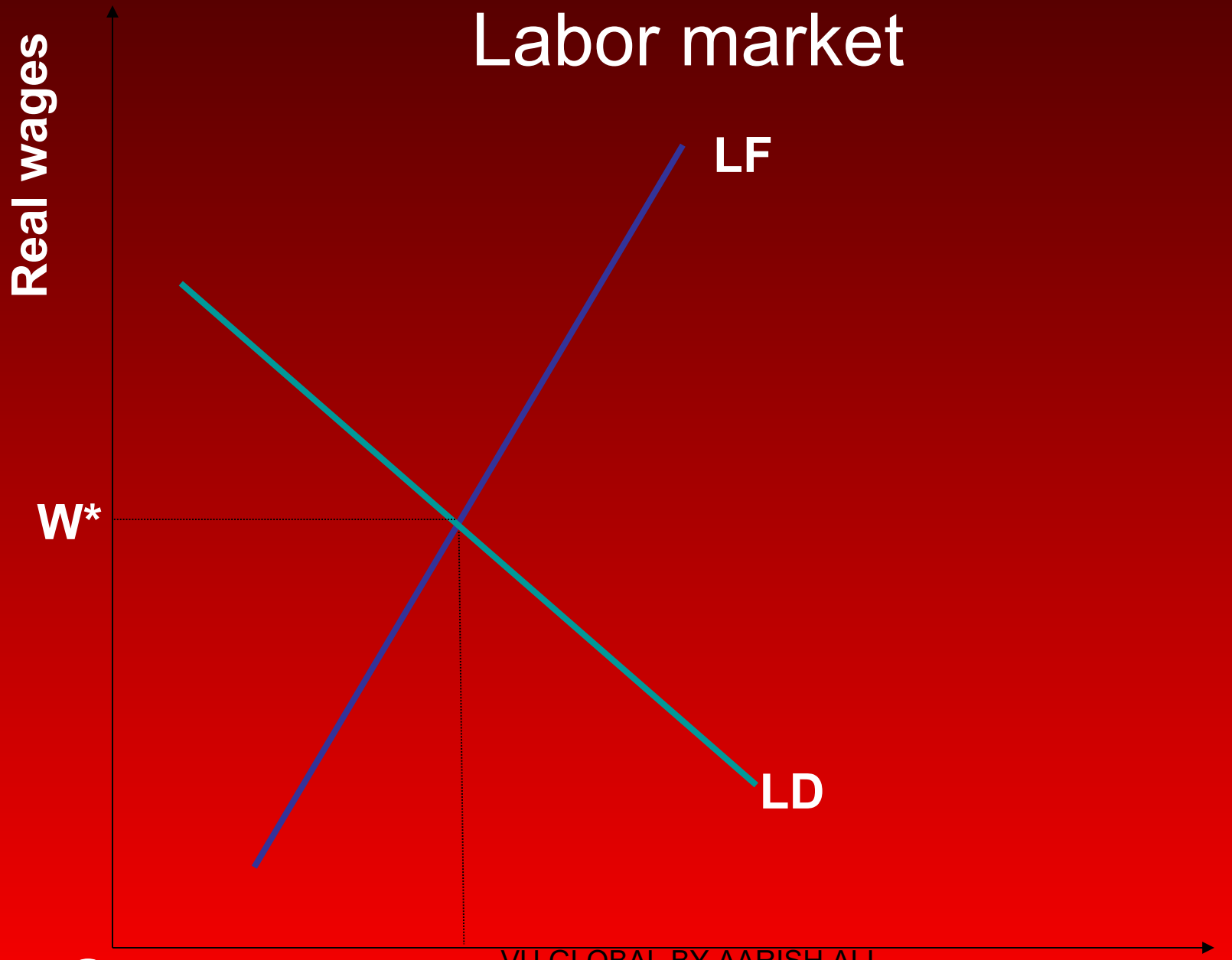


VU GLOBAL BY AARISH ALI
(+96569002641)

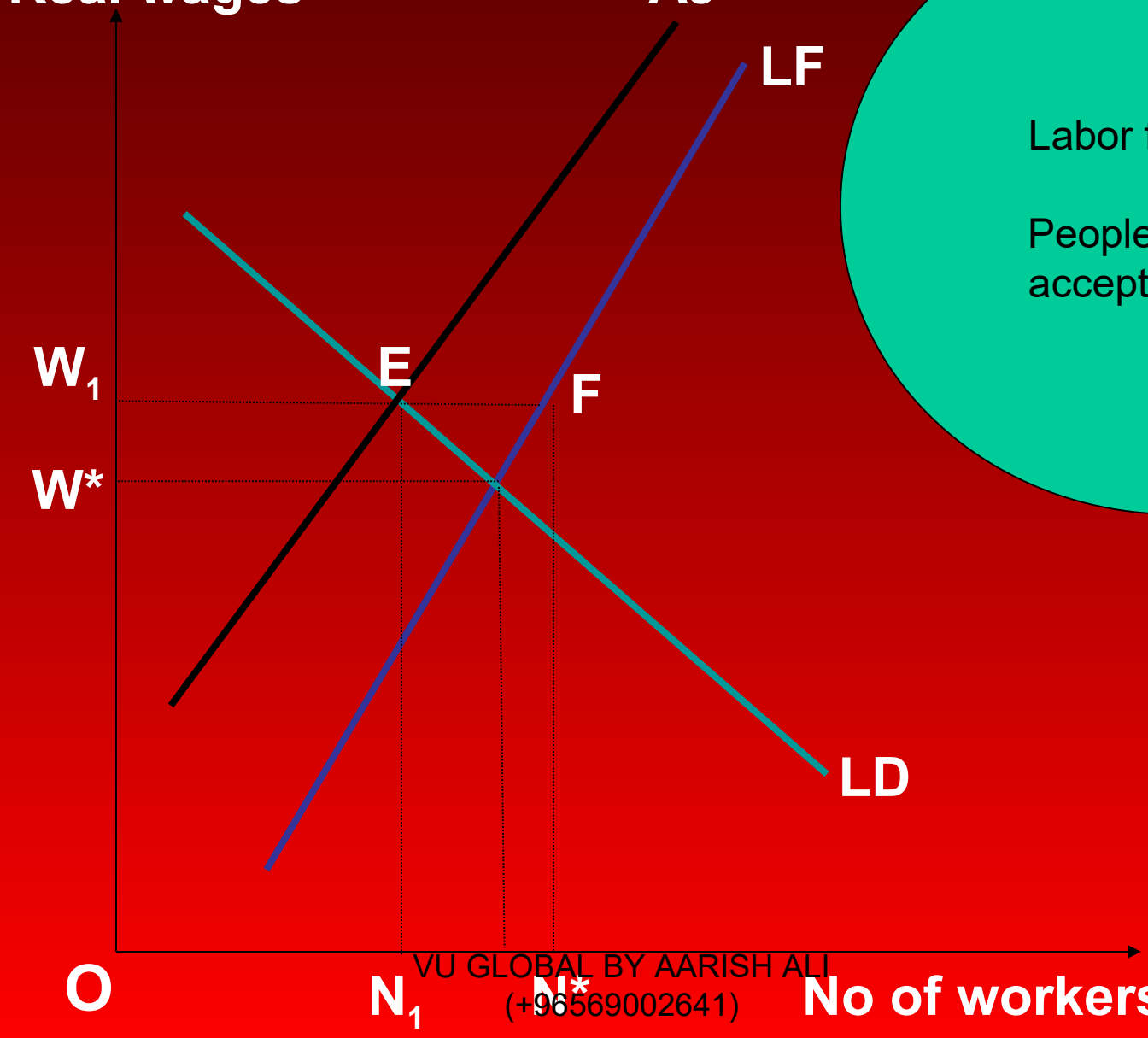
Unemployment

- Is unemployment costly?
  - Voluntarily vs. involuntarily
- Investigating the Causes of unemployment

Labor market



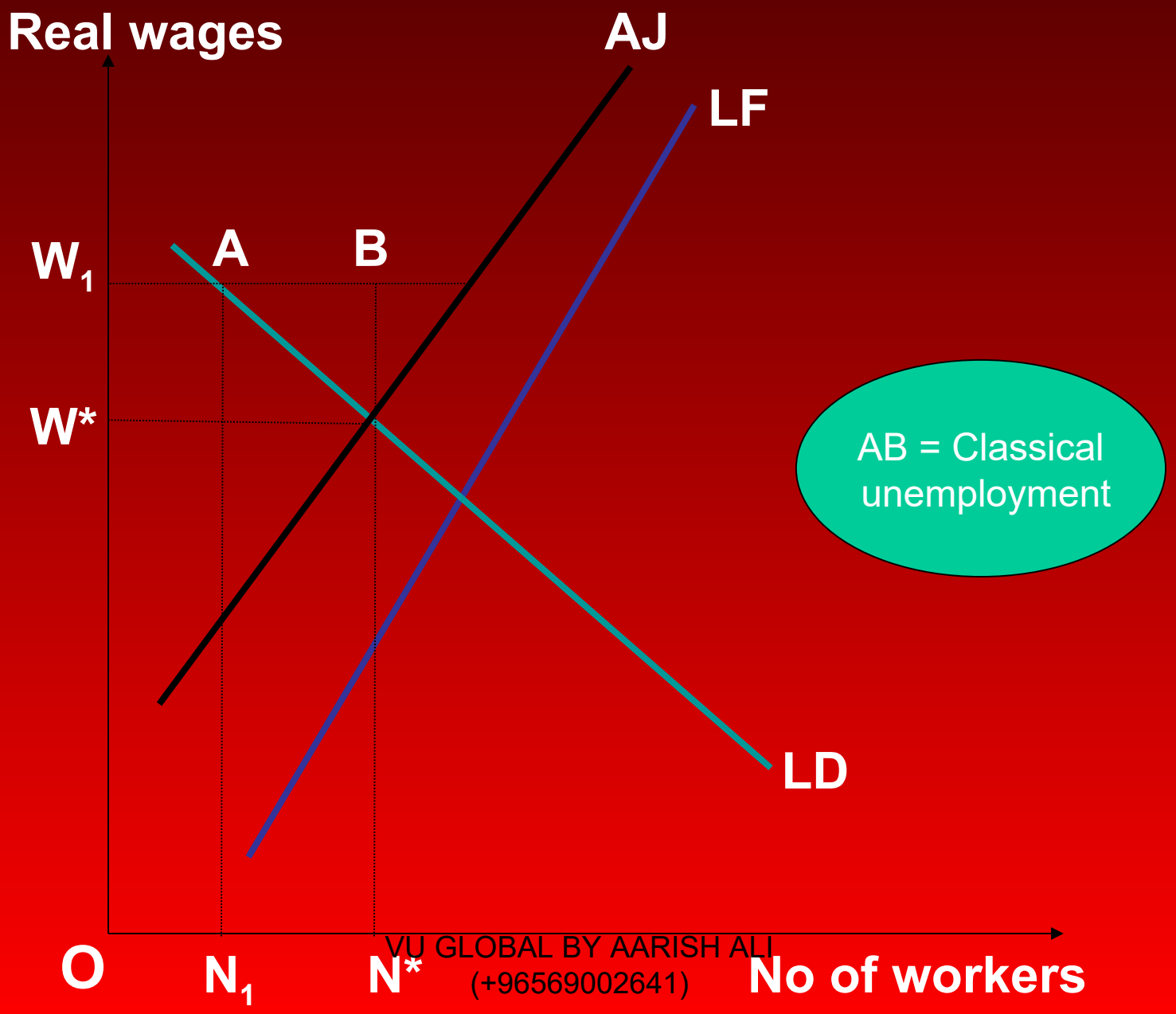
VU GLOBAL BY AARISH ALI
(+96569002641)



Labor force (LF)
VS
People willing to accept jobs (AJ)

VU GLOBAL BY AARISH ALI
(+96569002641)

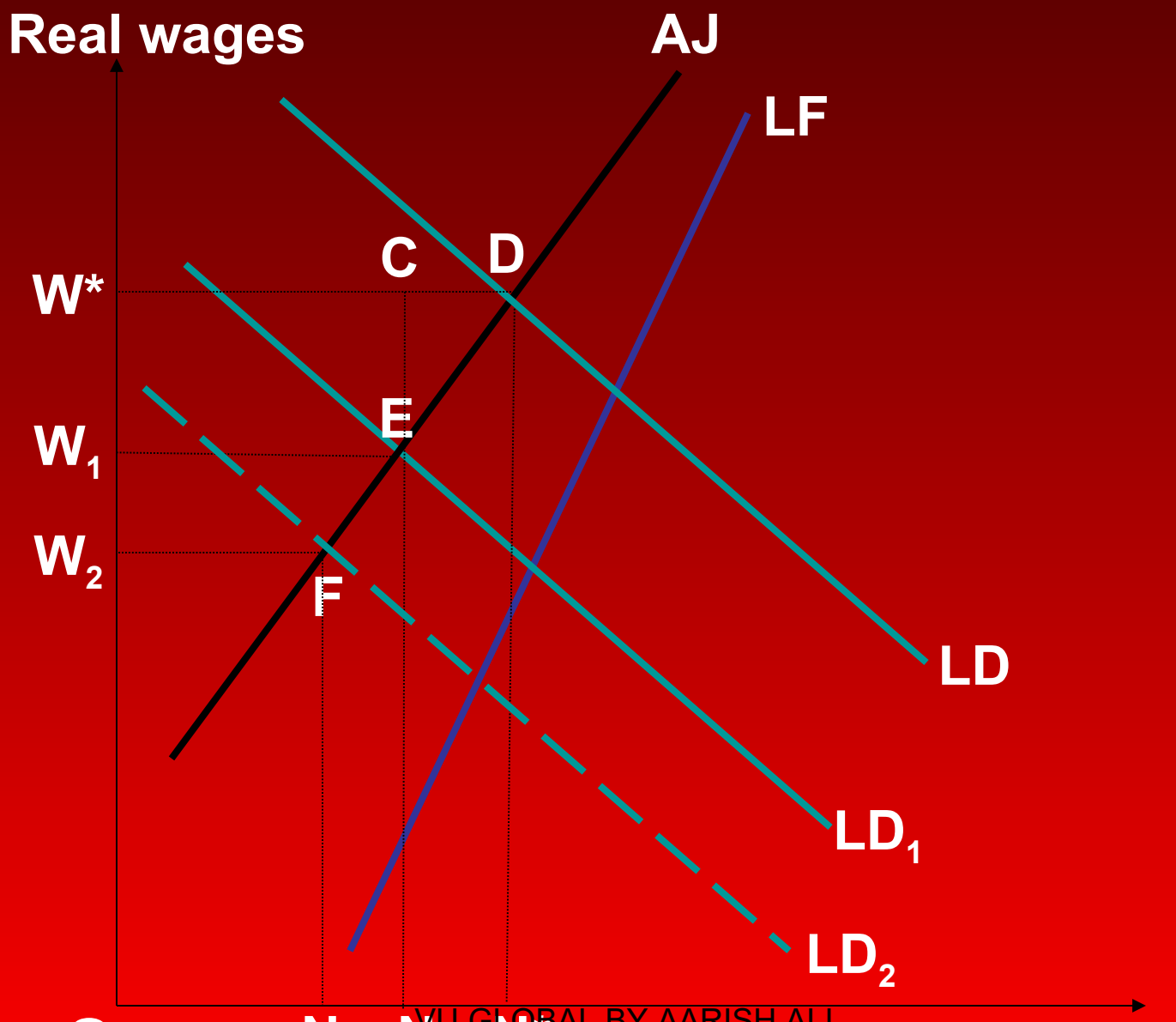
Classical view



AB = Classical unemployment

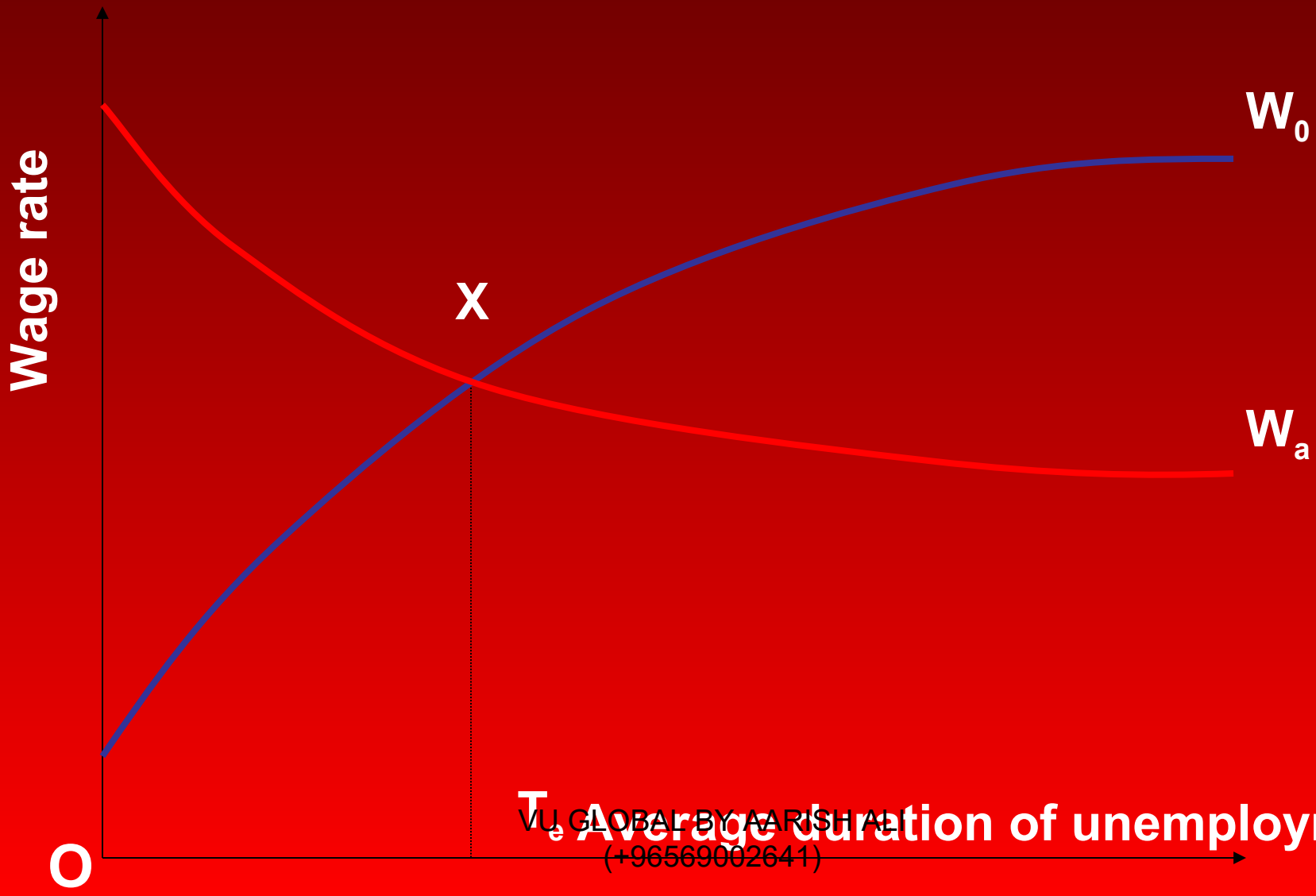
VU GLOBAL BY AARISH ALI
(+96569002641)

Keynesian view



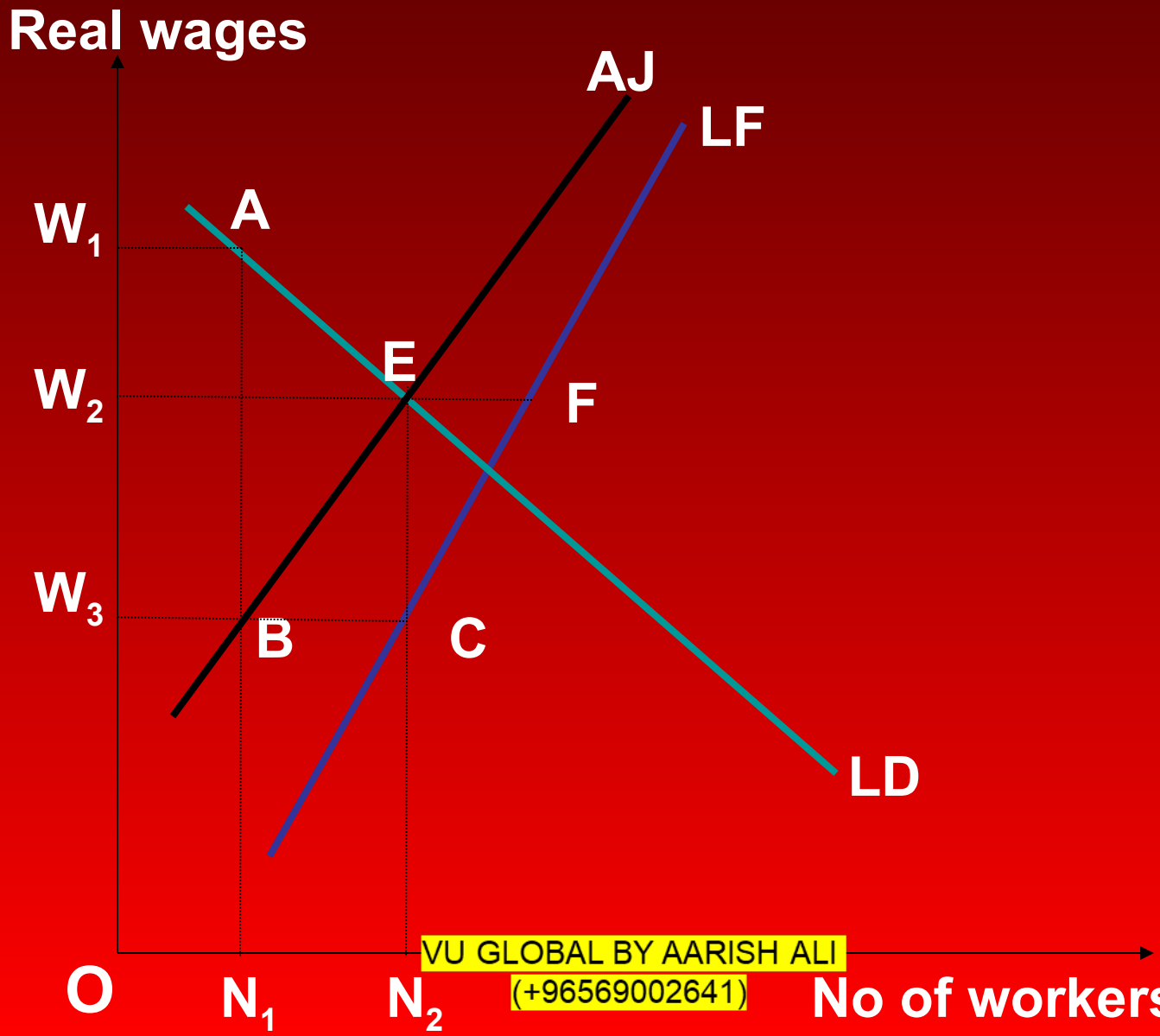
VU GLOBAL BY AARISH ALI
(+96569002641)

Understanding Frictional UE, Structural UE Seasonal UE



VU GLOBAL BY AARISH Ali
(+96569002641)

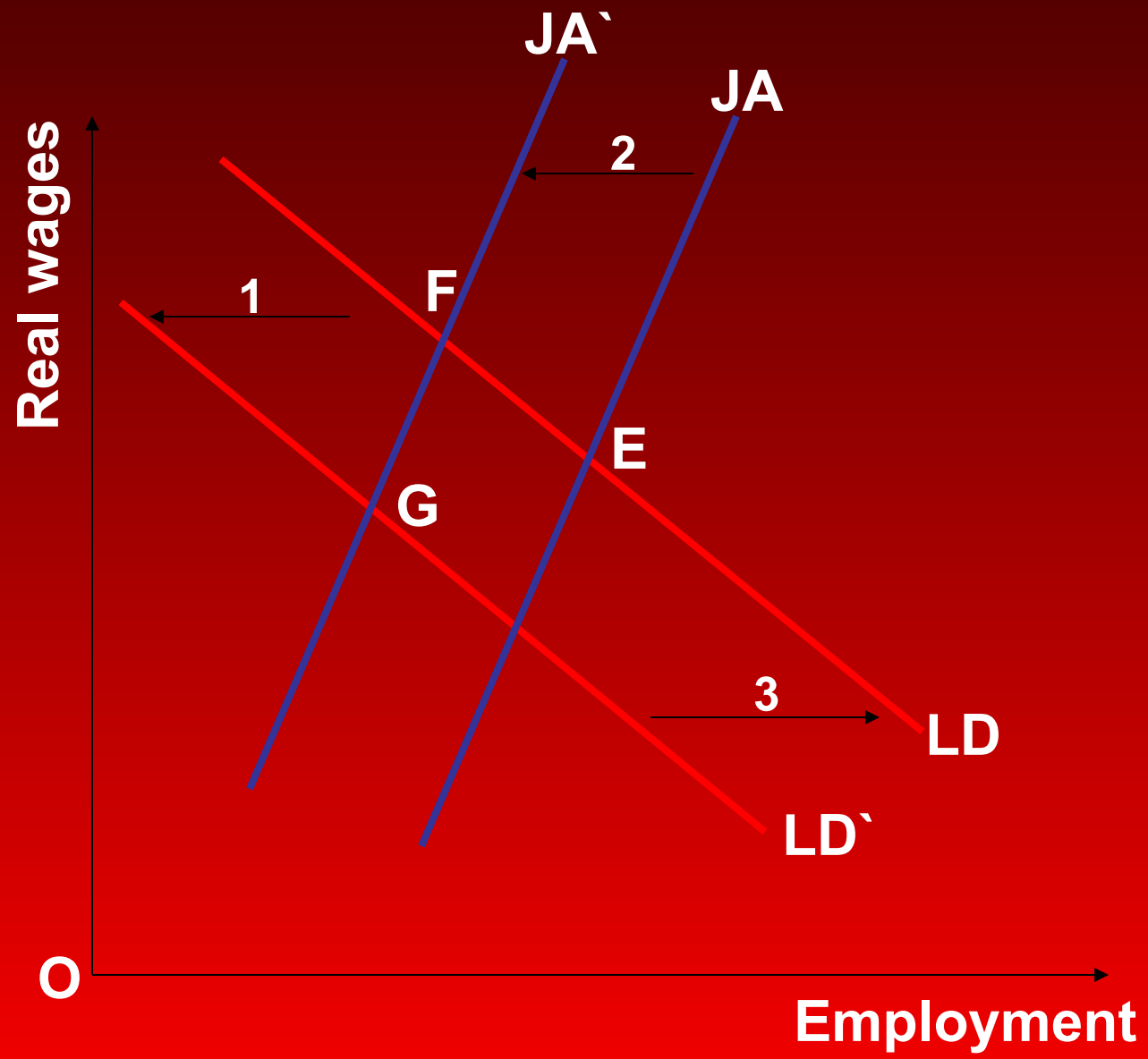
Marginal income tax rate & the incentive to work



VU GLOBAL BY AARISH ALI
(+96569002641)

Lesson 34

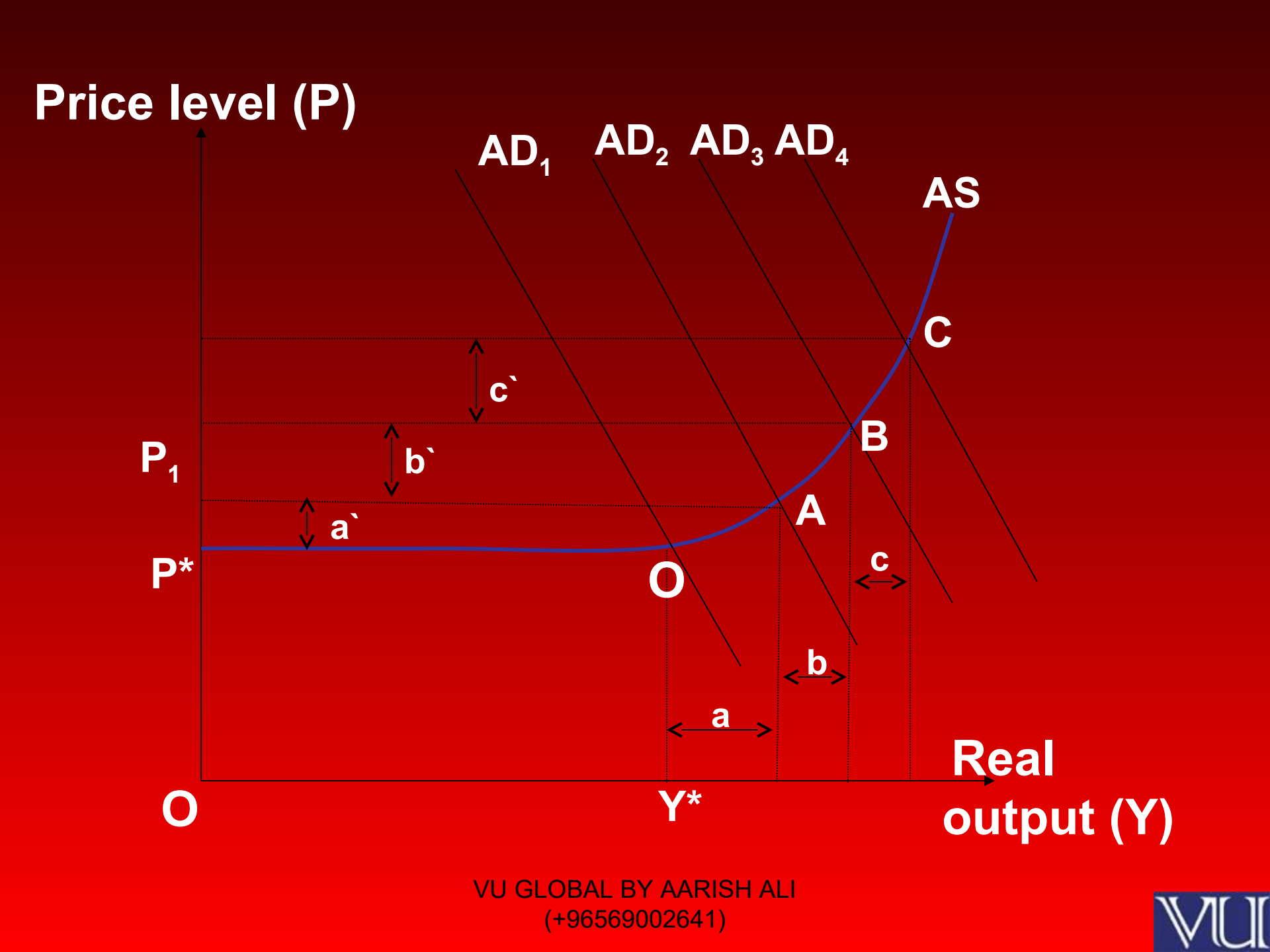
VU GLOBAL BY AARISH ALI
(+96569002641)


JA`
JA
2
1
F
E
G
3
LD
LD`
Real wages
O
Employment

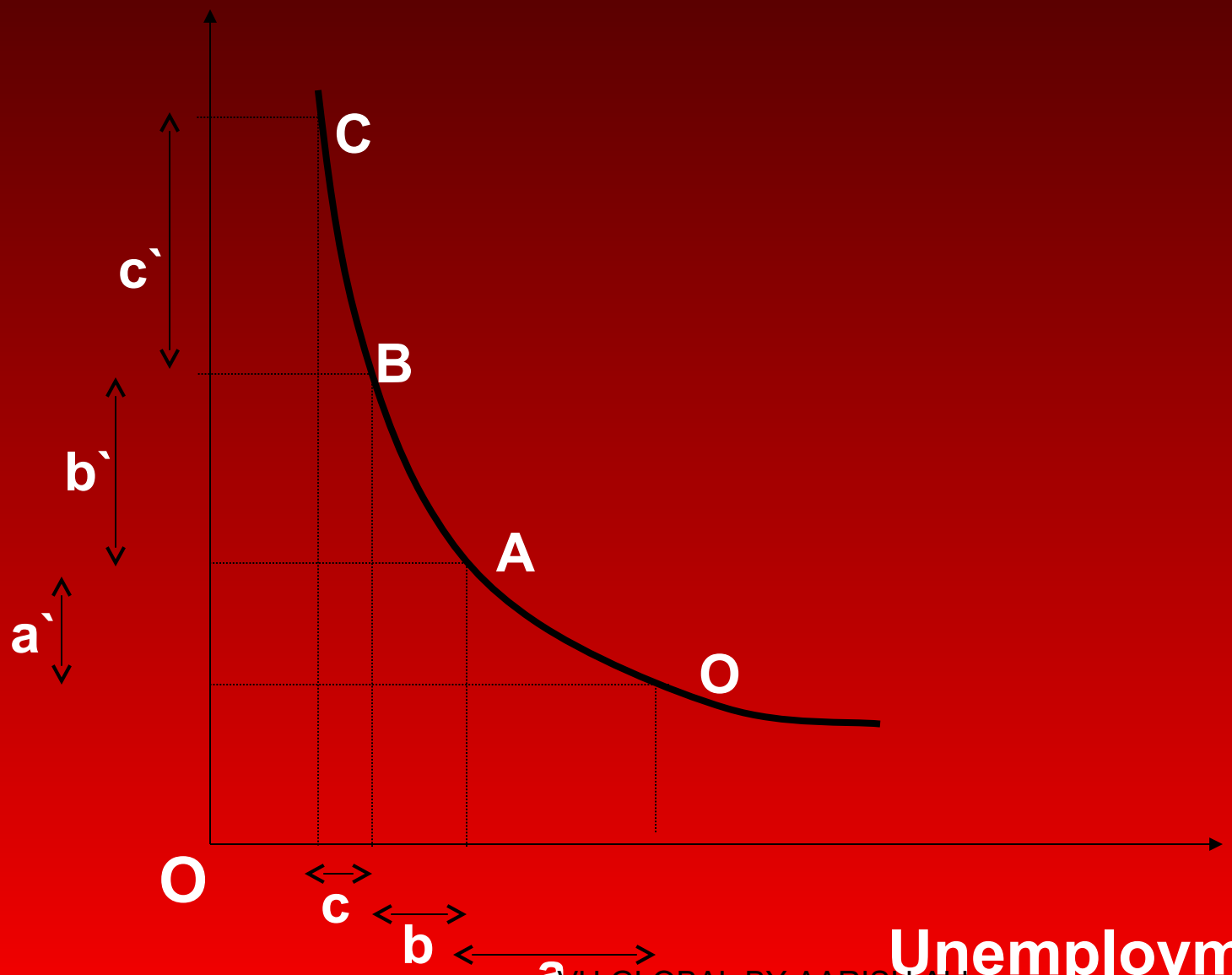
$$\text{Inflation} = \frac{P_t - P_{t-1}}{P_{t-1}} \times 100$$

Dates	Price level	Inflation (%)
30th June 2000	100	
30th June 2001	105	5%
30th June 2002	107	1.9%
30th June 2003	120	12.1%

VU GLOBAL BY AARISH ALI
(+96569002641)

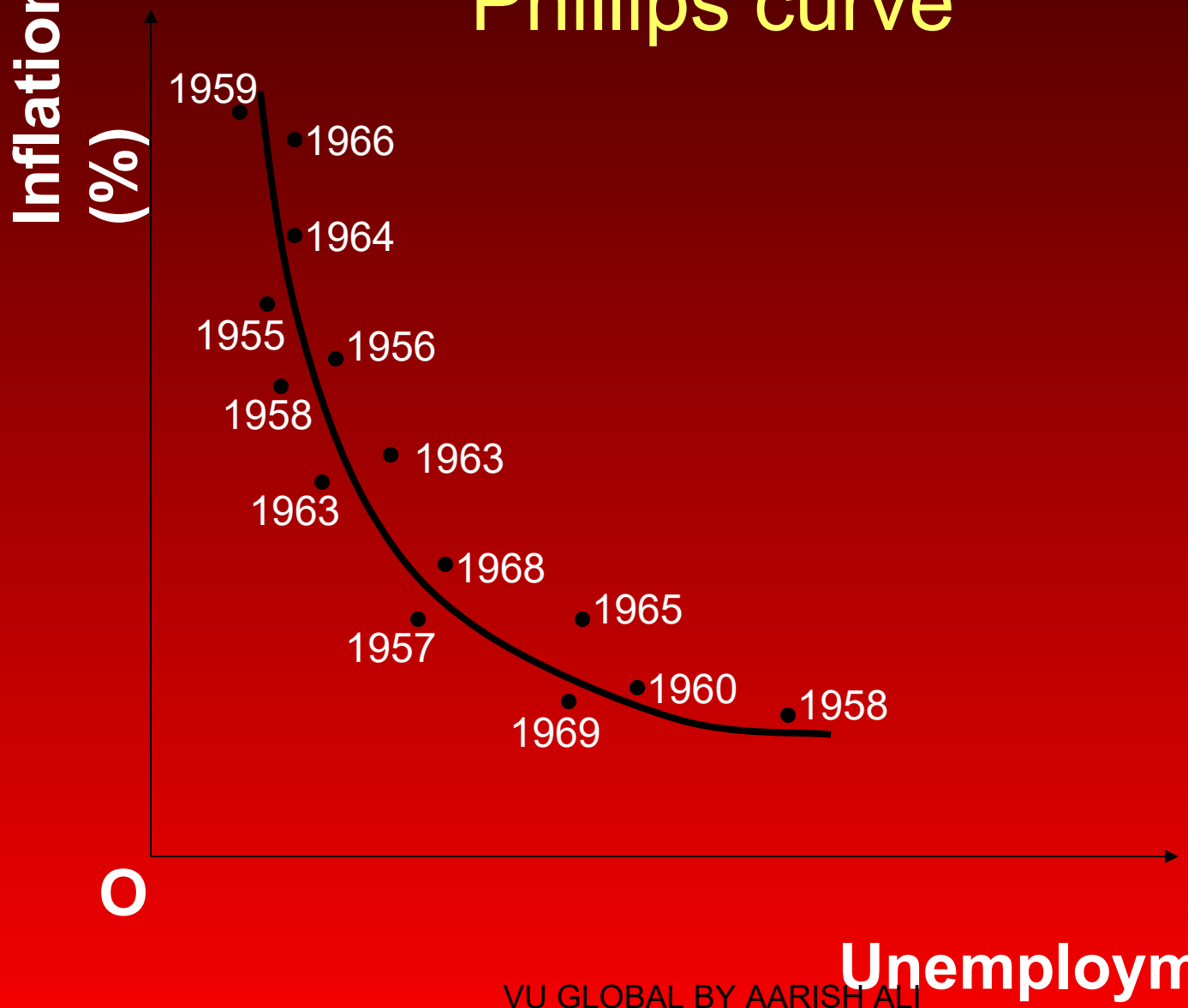


VU GLOBAL BY AARISH ALI
(+96569002641)

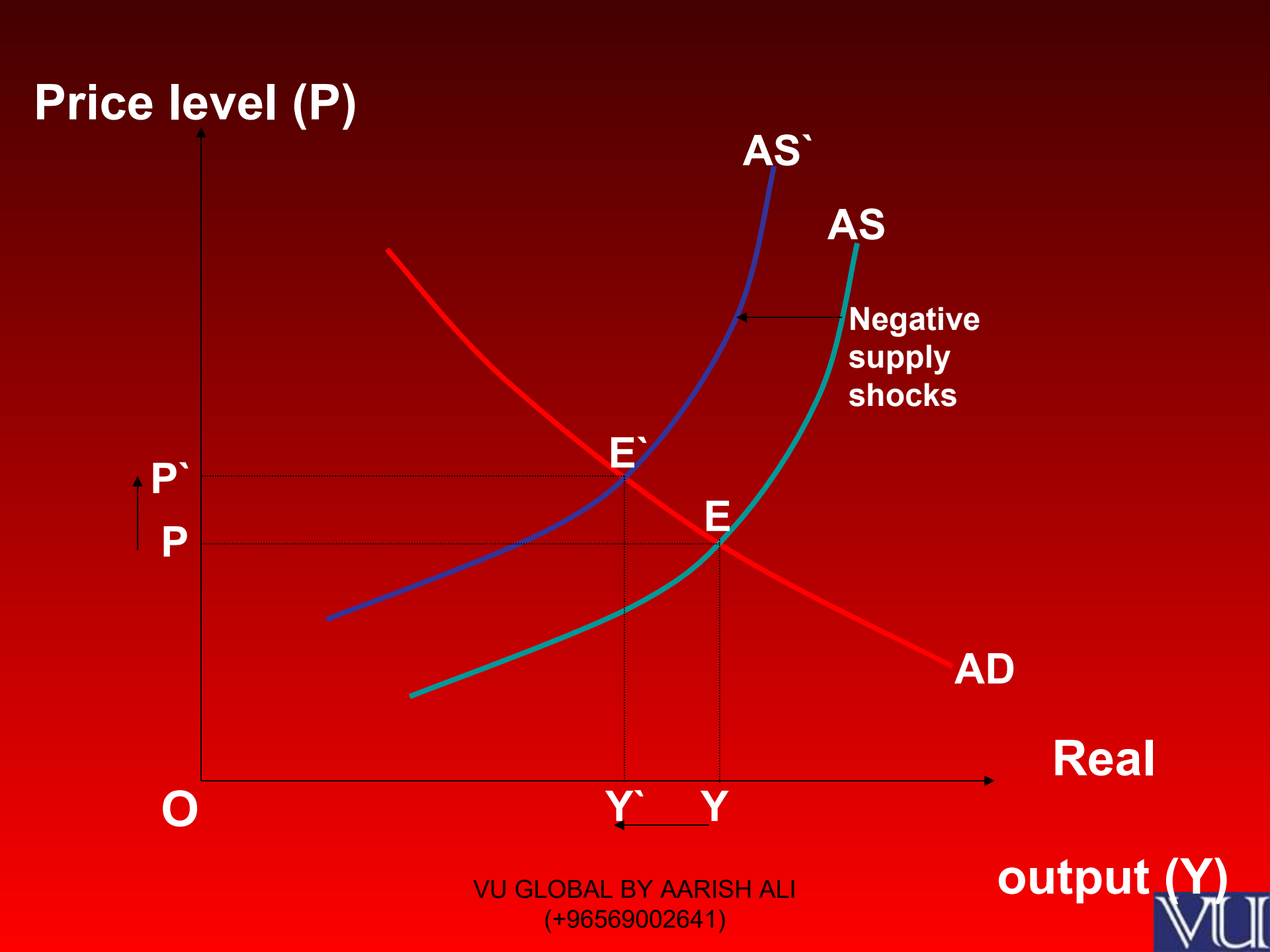


VU GLOBAL BY AARISH ALI
(+96569002641)

Phillips curve

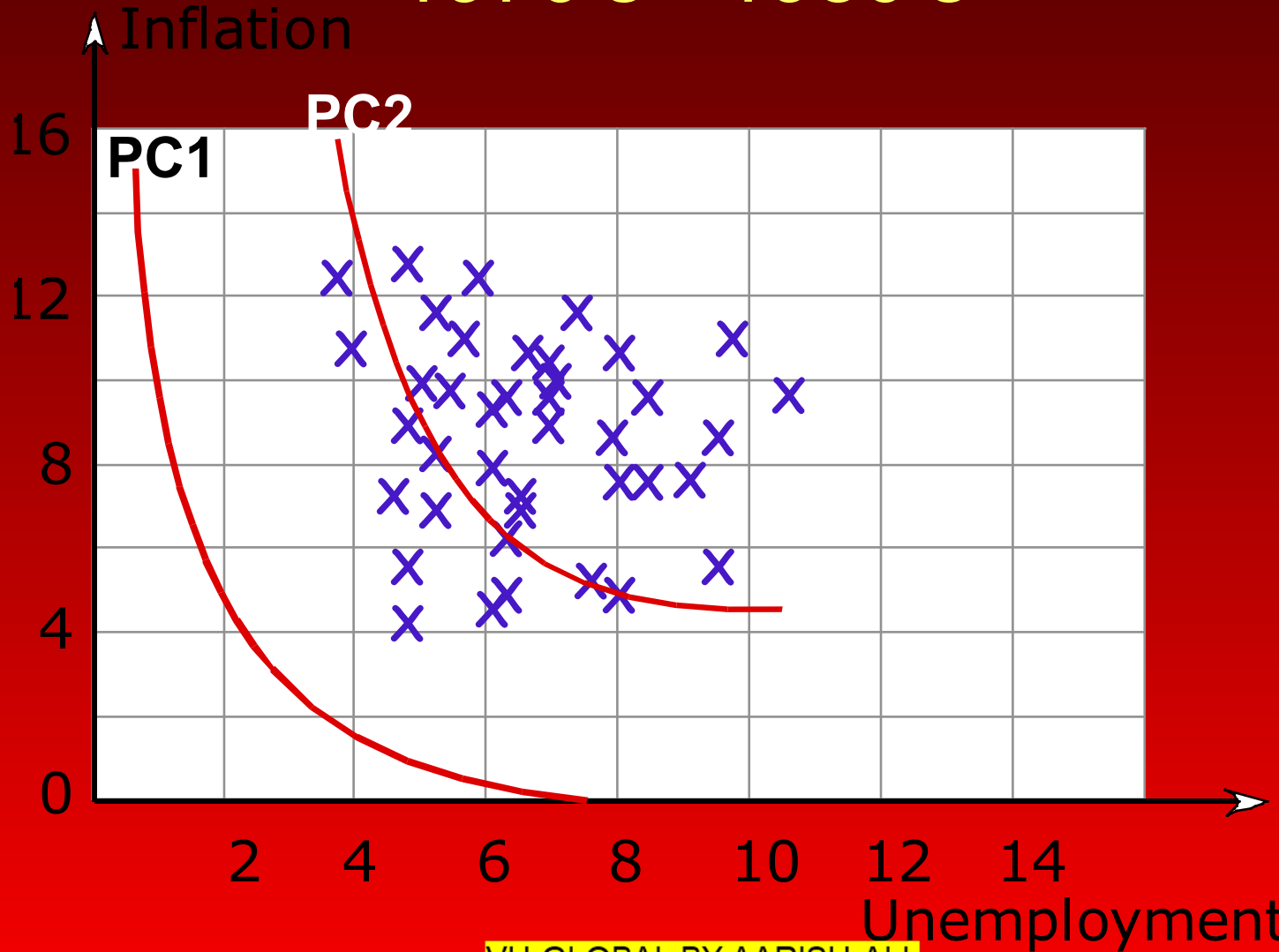


VU GLOBAL BY AARISH ALI
(+96569002641)

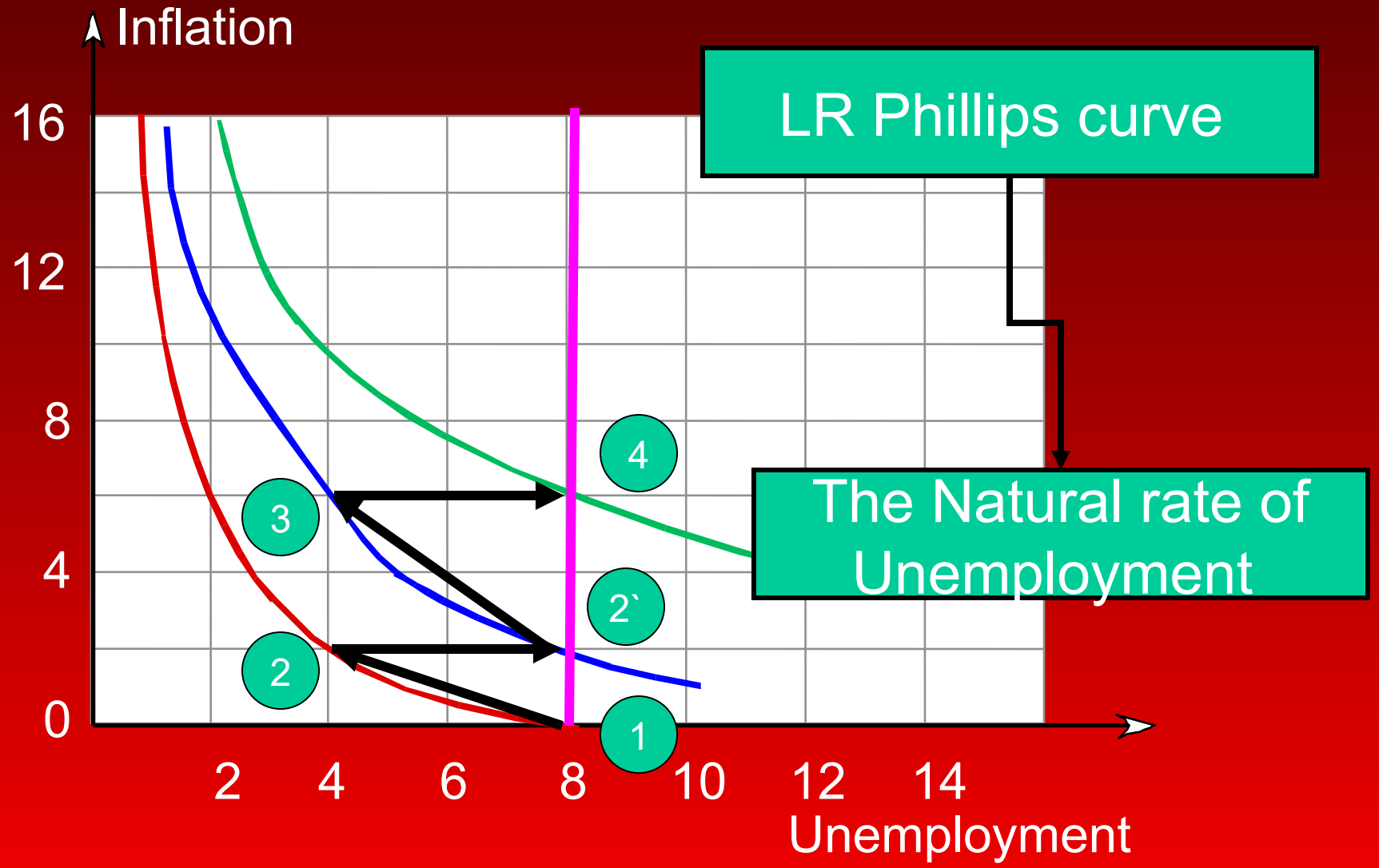


VU GLOBAL BY AARISH ALI
(+96569002641)

Keynesian explanation 1970's - 1980's



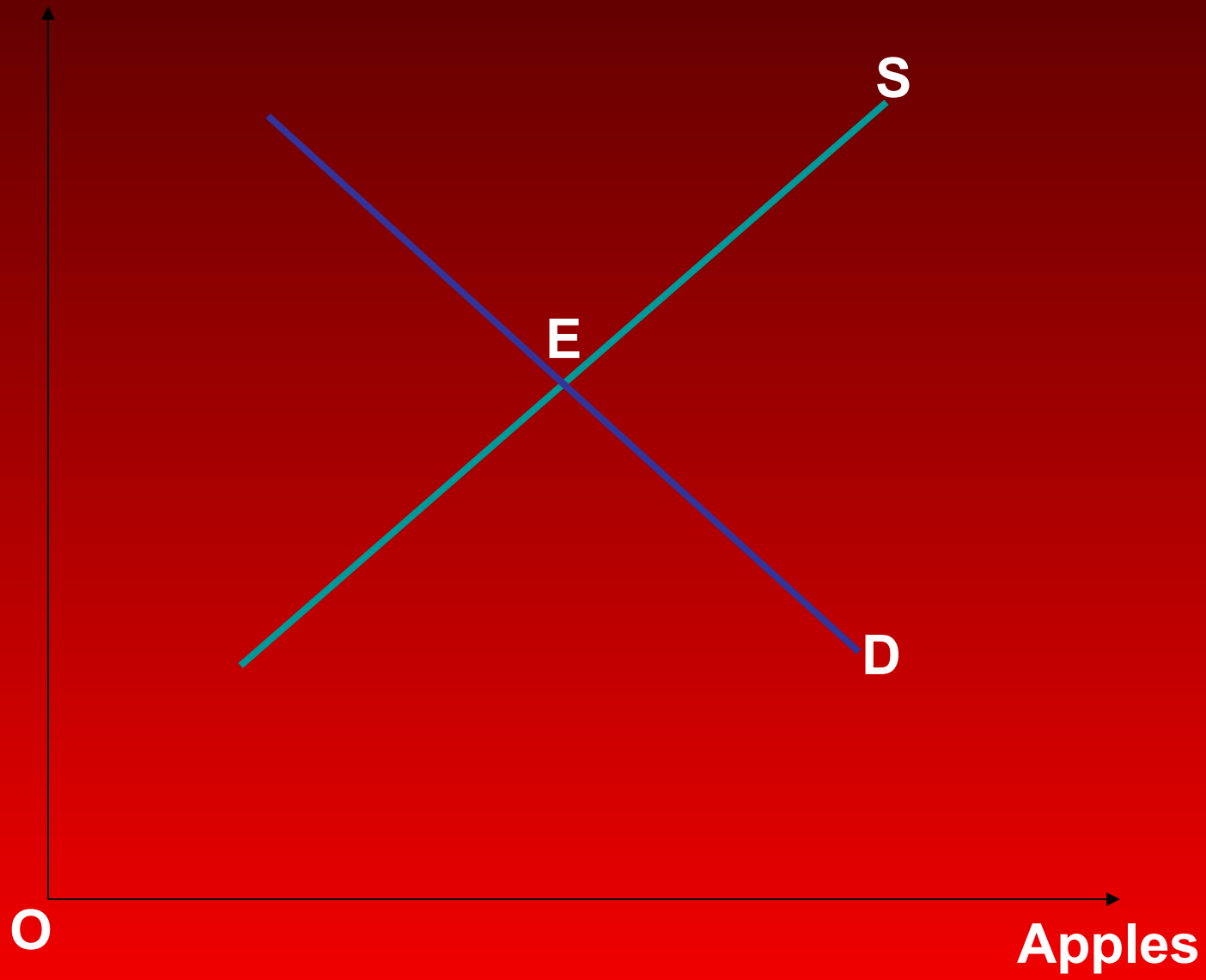
VU GLOBAL BY AARISH ALI
(+96569002641)



VU GLOBAL BY AARISH ALI
(+96569002641)

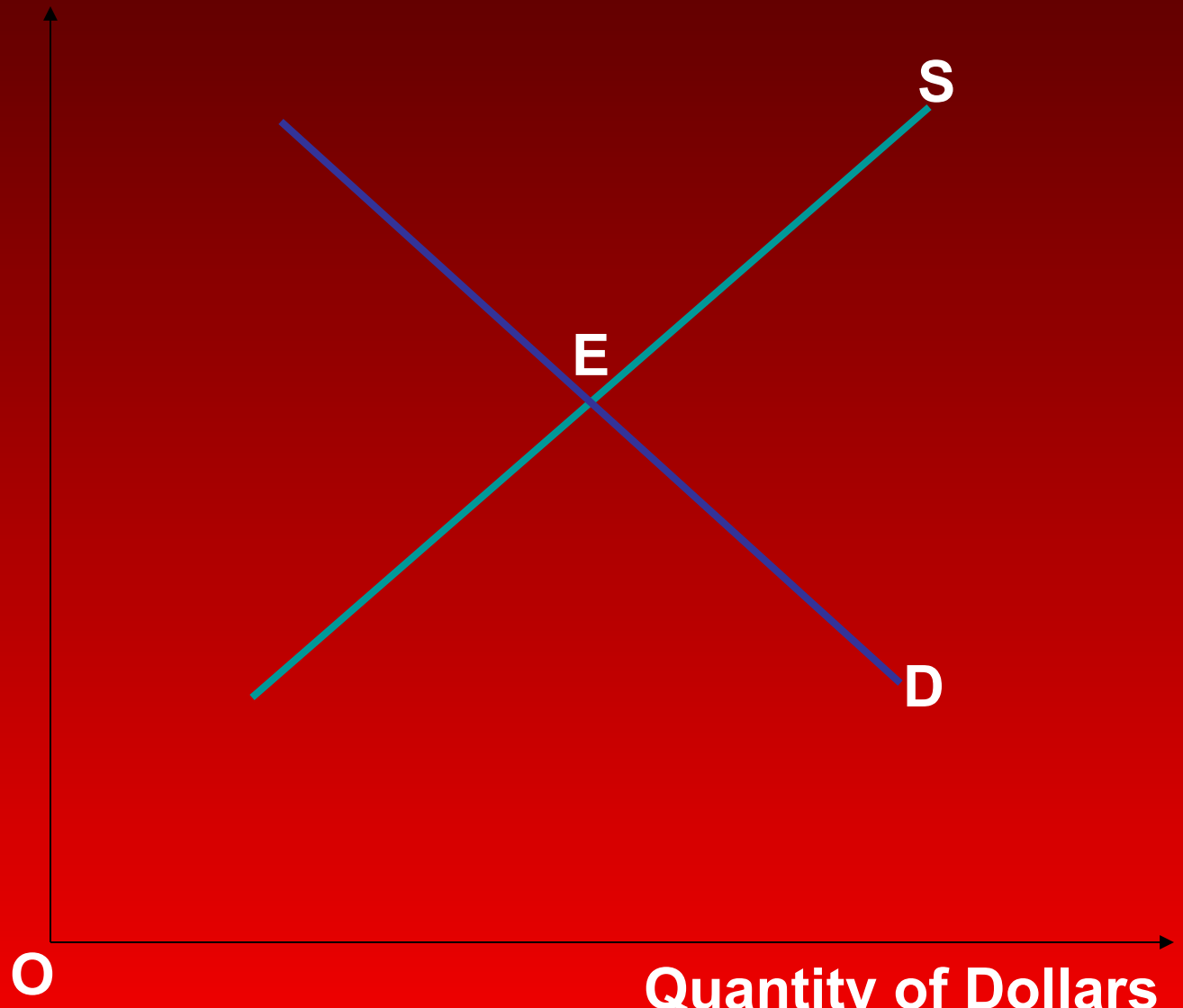
Lesson 35

VU GLOBAL BY AARISH ALI
(+96569002641)



VU GLOBAL BY AARISH ALI
(+96569002641)

Price per Dollar

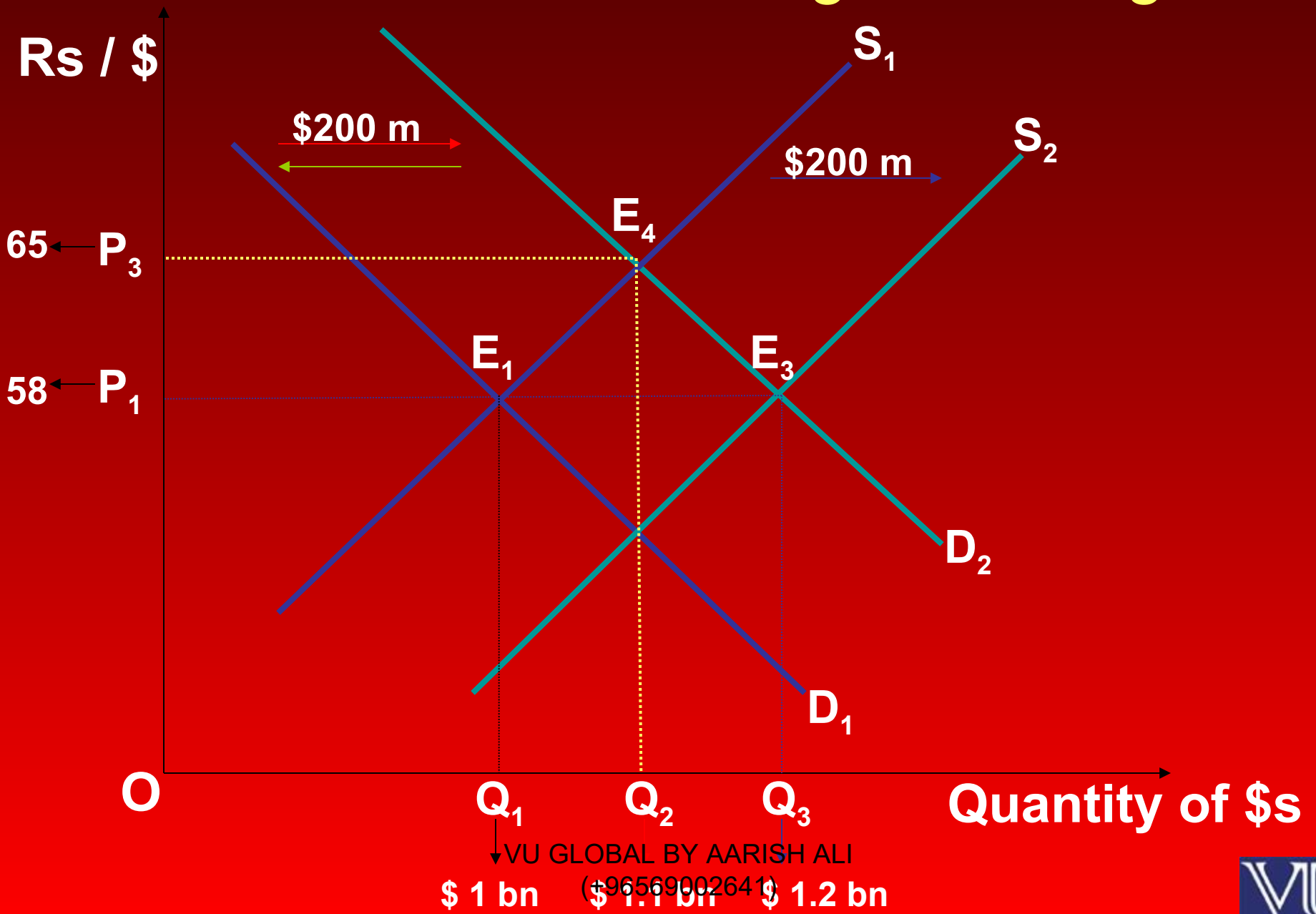


VU GLOBAL BY AARISH ALI
(+96569002641)

Lesson 36

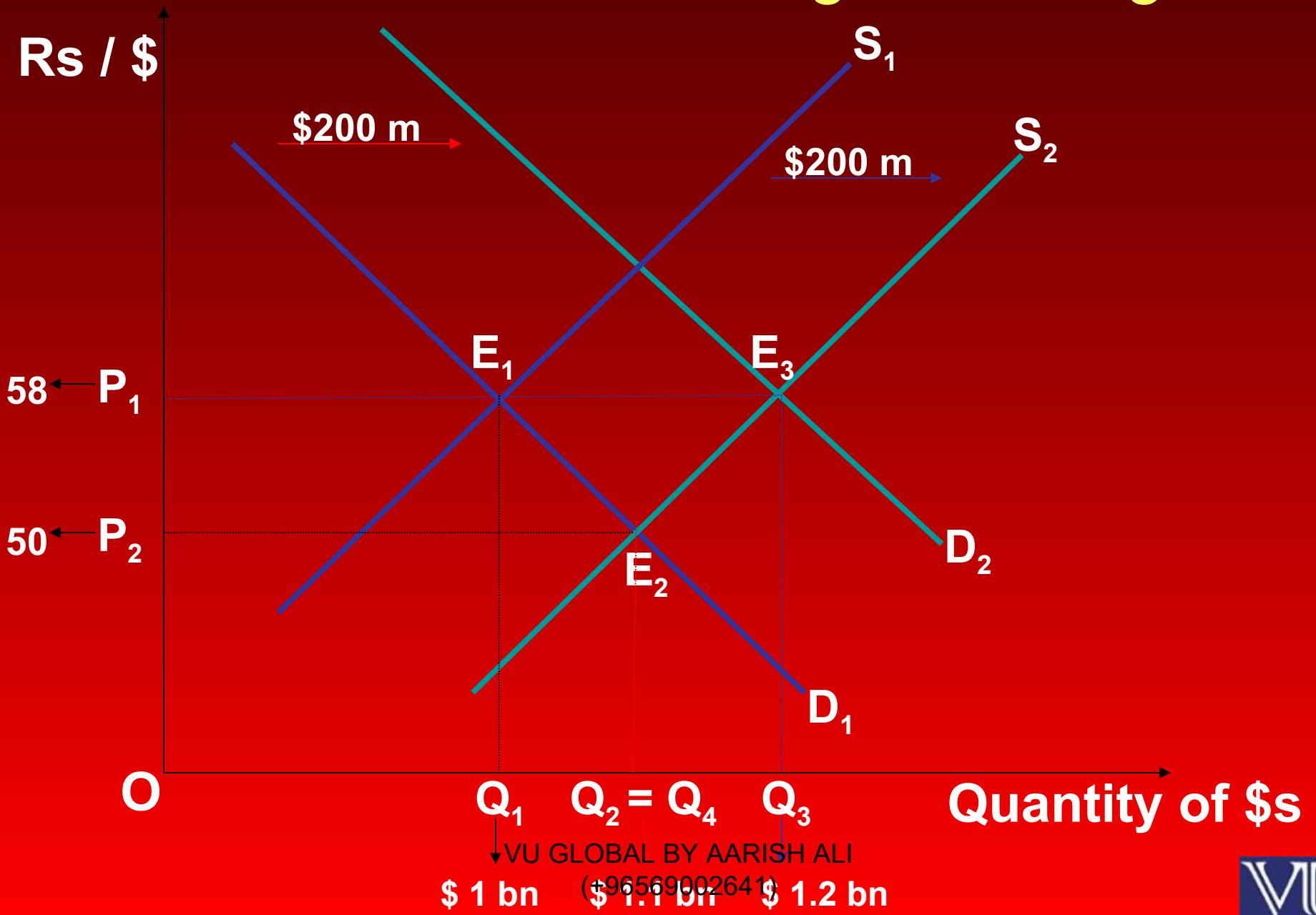
VU GLOBAL BY AARISH ALI
(+96569002641)

The market for foreign exchange



VU GLOBAL BY AARISH ALI
(+96569002641)

The market for foreign exchange



VU GLOBAL BY AARISH ALI
(+96569002641)

UNDERSTANDING THE BALANCE OF PAYMENTS

1. **Current account balance (+ or -)**

2. **Capital account (+ or -)**

UNDERSTANDING THE BALANCE OF PAYMENTS

1. **Current account balance (+ or -)**

   i. ***Goods or visible balance (+ or -)***

   (+) Exports

   (-) Imports

   ii. ***Services or invisible balance (+ or -)***

   (+) Exports

   (-) Imports

   iii. ***Income and transfers (+ or -)***

   (+) Factor income from abroad, e.g. worker remittances, dividends, interest

   (-) Factor payments, e.g., MNC profits, interest on debt

UNDERSTANDING THE BALANCE OF PAYMENTS

3.Changes to official foreign exchange reserves (+ or -)

(+) Sales of foreign exchange by government, i.e. drawdown of reserves

(-) Purchase of foreign exchange by government, i.e. build-up of reserves

Balance of payments (1+2+3 =0, or net errors and omissions)

2. **Capital account (+ or -)**

(+) Incoming FDI, FPI or other private capital

(-) Outgoing FDI, FPI or other private capital

(+) Borrowing, aid inflows

(-) Payments of debt principal, aid outflows

VU GLOBAL BY AARISH ALI
(+96569002641)

Lecture No.37
Economics

Syed Muhammad Ali Abbas

VU GLOBAL BY AARISH ALI
(+96526002641

$$C = RER = \frac{P_F}{P_D} \times NER$$

Competitiveness of a Pakistani good relative to a US good

where NER is Rs / $

- **P_F goes up** → For a given exchange rate our competitiveness goes up as Pakistani goods become relatively cheaper.

- **NER depreciates** → For given P_D and P_F Pakistani goods become cheaper for foreign buyers

Increase in D=domestic prices

- If $\frac{P_F}{P_D}$ falls

→RER falls, competitiveness falls.

→Current account deficit deteriorates.

→NER must adjust.

i.e. it must rise, in order to restore competitiveness.

Comparison of investment of $60, at home & in United States



Rs. 60



No conversion required

10% interest rate in PK

Gets Rs.66 at the end of one year

Investment at home is a better option

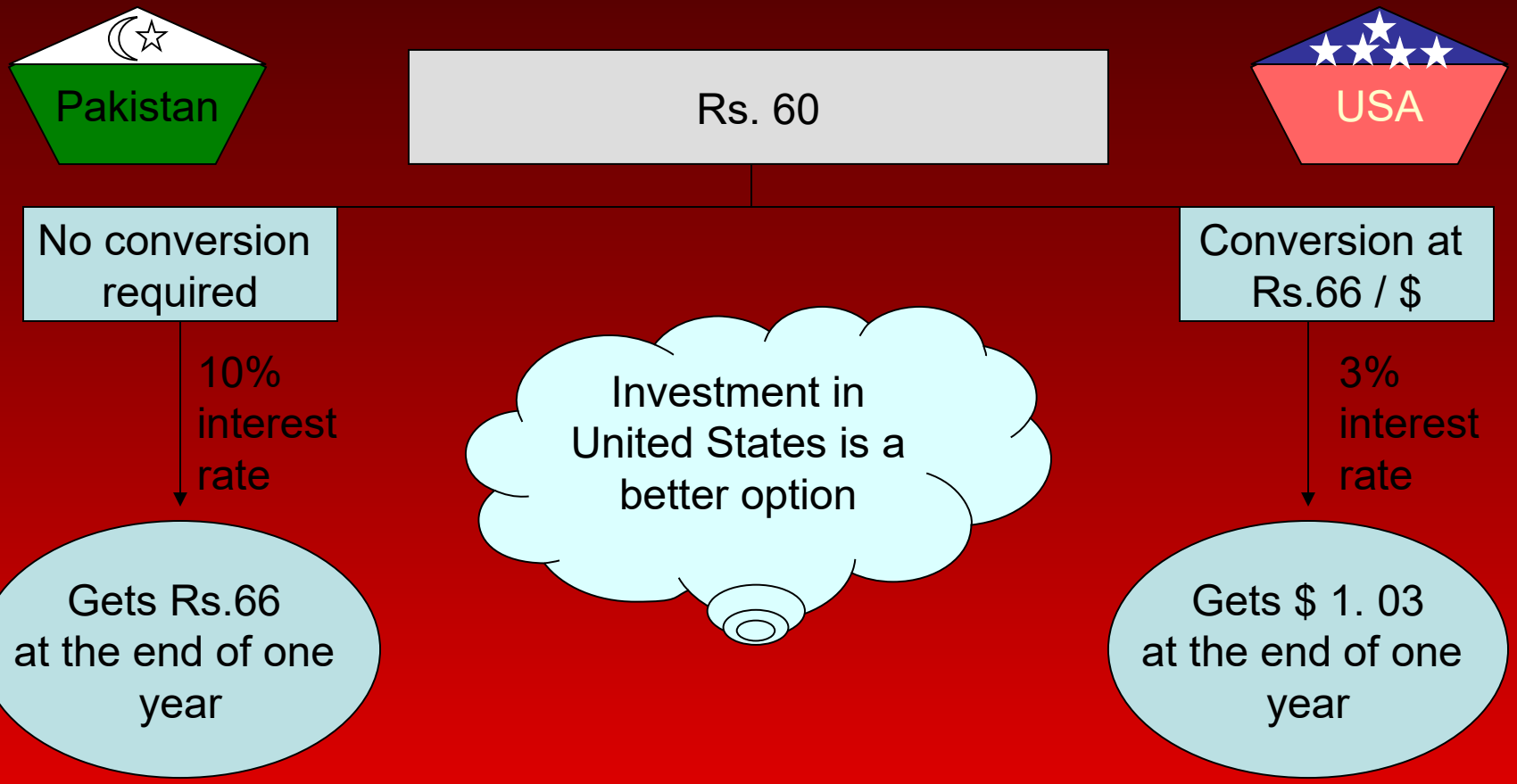
Conversion at Rs.60 / $

3% interest rate in US$

Gets $ 1. 03 at the end of one year

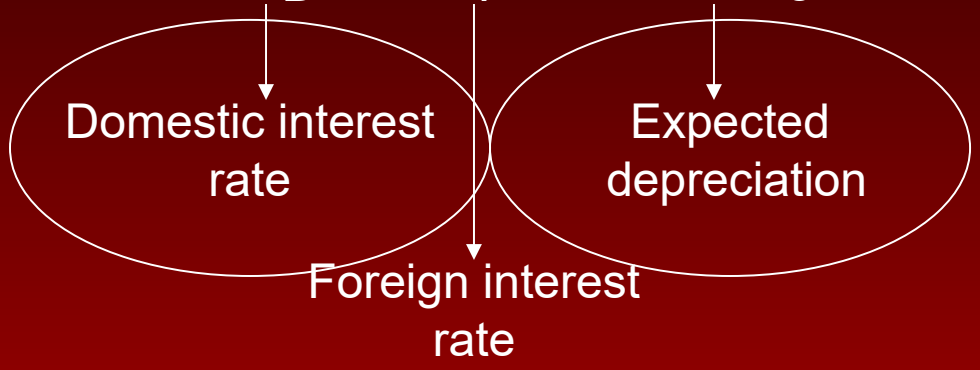
or **Rs 61.8** when converted at Rs 60 / $

Pakistani rupee depreciates



Interest parity condition

$$i_D \approx i_F + \Delta E_e$$



13% = 3% + 10%

IF $i_D > i_F + \Delta E_e$ ***Invest in Pakistan***

IF $i_D < i_F + \Delta E_e$ ***Invest in USA***

W = J

S + T + M = I + G + X

- M – X = I – S + G – T

Current account deficit

Private sector resource deficit

Government budget deficit

If G – T goes up M – X will also go up.

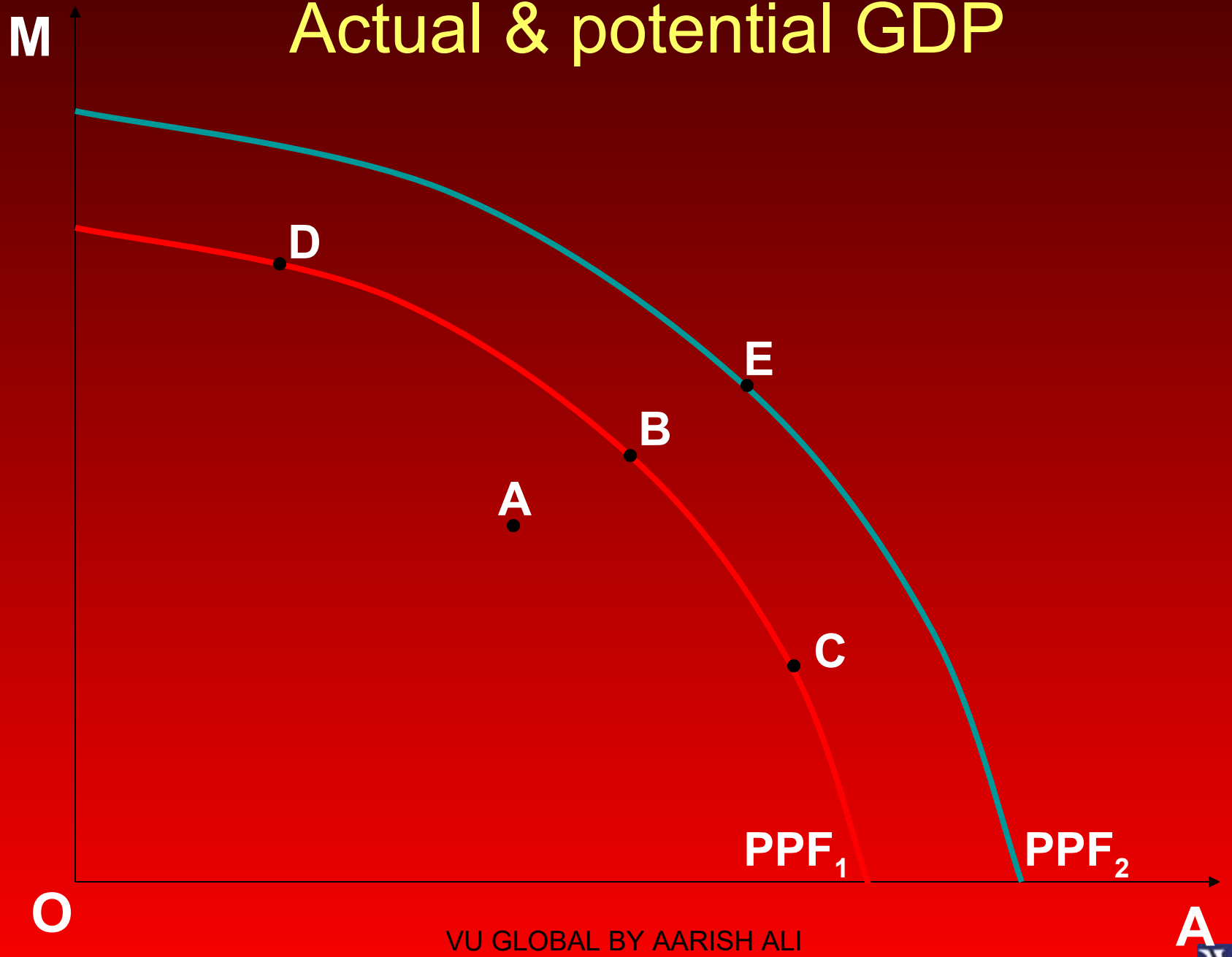
If I – S goes up M – X will al

VU GLOBAL BY AARISH ALI
(+96526002641

Lesson 38

VU GLOBAL BY AARISH ALI
(+96569002641)

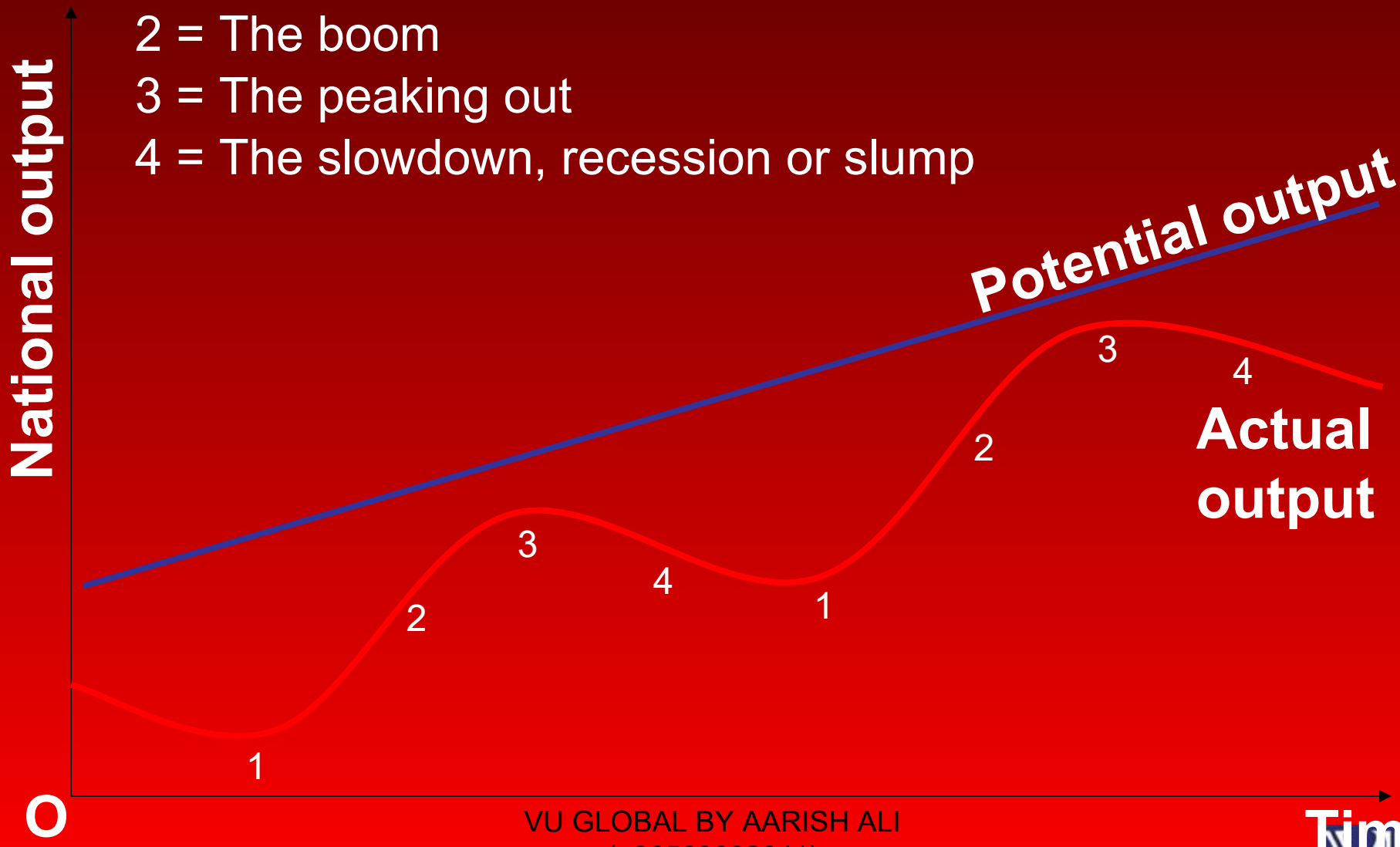
Actual & potential GDP



VU GLOBAL BY AARISH ALI
(+96569002641)

Trade cycle

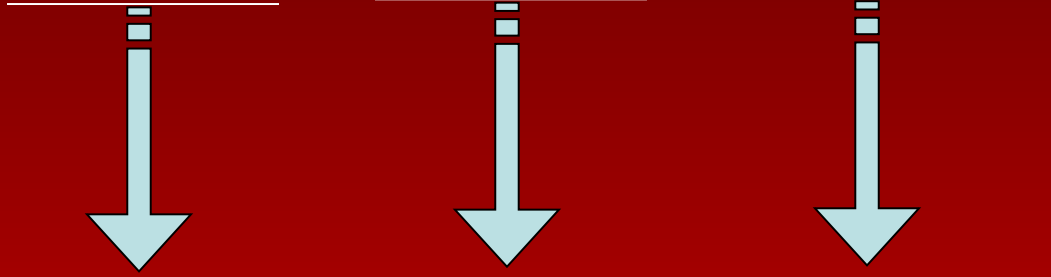
1 = The upturn
2 = The boom
3 = The peaking out
4 = The slowdown, recession or slump



Defining GDP growth rate

- $y = Y / L$
- Y = Total GDP
- L = Population
- y = Per capita GDP
- **Taking log of both sides:**
- $\ln y = \ln Y - \ln L$
- **Taking derivative *w.r.t.* time:**
- $\frac{1}{y}\frac{(dy/dt)}{} = \frac{(dY/dt)}{Y} - \frac{(dL/dt)}{L}$

$$1\ \frac{(dy/dt)}{y} = \frac{(dY/dt)}{Y} - \frac{(dL/dt)}{L}$$



Growth rate of per capita income

Growth rate of total output

Growth rate of population

$$g_y = g_Y - g_L$$

Real Gross Domestic Production figures

Countries	Ratio of 1999 / 1870	Annual growth
Japan	100	3.7
US	66	3.4
Australia	43	3.1
Sweden	33	2.8
France	15	2.2
UK	10	1.9

RGDP per capita figures

Countries	Ratio of 1999 / 1870	Annual growth
Japan	27	2.7
US	10	1.8
Australia	4	1.2
Sweden	14	2.2
France	10	1.9
UK	5	1.3

Pakistan's growth rate statistics since independence

Era	Aggregate Real GDP	Per Capita RGDP	Population
60s	6.7	4	2.7
70s	4.8	1.7	3.1
80s	6.4	3.3	3.1
90s	4.7	2	2.7

VU GLOBAL BY AARISH ALI
(+96569002641)

REMEMBER IN PRAYERS

KEEP SMILING

SAY NO TO CURRUPTION

HELP TO OTHERS

Regards,

AARISH ALI & TEAM

"VU GLOBAL STUDY GROUP"

+96569002641