Foundation Course in Managerial Economics
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Lecture - 18
LR and SR Cost Curves

Hello and welcome back to our discussions on cost curves. We are going to in this module we are going to wind up our discussion on cost curves. We talked about the different the cost in different of its forms like the average cost curve the marginal cost curve etc. and we looked at their shapes and all. So now we are going to see if the cost curves change during the short run and the long run.

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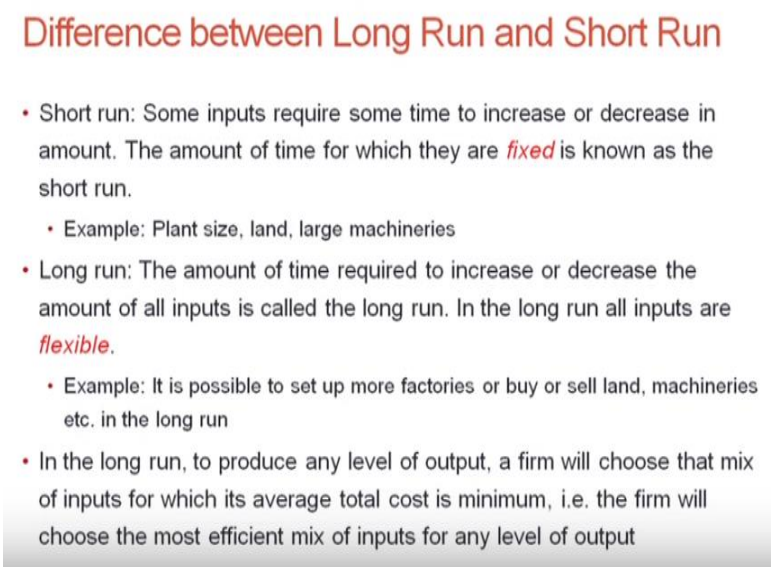

So difference between long run and short run. Now how are we going to be keep on using this long run and short run all the time and we are going to use it a lot in the future also. So let me explain what is the difference between long run and short run. Now short run is something some inputs require some time to increase or decrease in an amount. The amount of time for which they are fixed is known as the short run.

For example plant size, land, large machineries. So basically when we talked about costs and when we said that there is a fixed cost, there is variable cost. Now when we say fixed cost now this cost is not fixed forever but what we mean by fixed cost is basically that this these variables, these inputs require some time to change like we need some like the producer when the producer

is using these inputs like land, machinery etc, huge machinery, land or a certain factory size it is using its already created a capacity of capacity and there is a certain factory size that it is that he is operating in.

Now these are all fixed inputs in the sense that they cannot be changed very easily or quickly. So they are called fixed variables and short run is basically the time period for which these all these inputs are fixed and the variable the variable cost that we discussed is basically the inputs which vary with the amount of output.

So if we if you if the producer wants to increase the output he needs to increase the these variable inputs and this is called the variable cost that he incurs and this is flexible and this changes this can be changed in the short run also.

So in the short run some inputs require some time to increase or decrease in amount and the amount of time for which they are fixed is known as the short run for example plant size, land, large machineries etc. and long run is the amount of time required to increase or decrease the amount of all inputs and this is called the is called the long run. In the long run all inputs are flexible.

So basically the fixed inputs like plant size, land, machineries etc. they can be varied in the long run also. So a firm might like to increase its capacity, increase the plant size, increase the number of factories it has or increase the by a few more plots of land or large machineries but it requires some time to do that and that is the long run for a firm and the opposite can also happen.

A firm might decide to reduce its fixed cost and it may actually dispose of the land dispose of certain factories some of its factories or machineries. For doing that also it may require a little more time and that is called the long run.

So example of long run it is possible to set up more factories or buy or sell land, machineries etc. in the long run. So in the long run to produce any level of output, a firm will choose that mix of inputs for which its average total cost is minimum. That is the firm will choose the most efficient mix of inputs for any level of output. So let me explain this with the help of a figure.

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Say for example we had ended our discussion the previous module with saying that the average total cost curve is U shaped, the average total cost curve is U shaped and that is because in the so when output is gradually increasing from a very low level average fixed cost is falling so that pulls down the average total cost and as output is increasing average variable cost goes up and that pulls up the average total cost. So the average total cost looks something like this. It is again a U shaped curve and this is the long run average cost curve.

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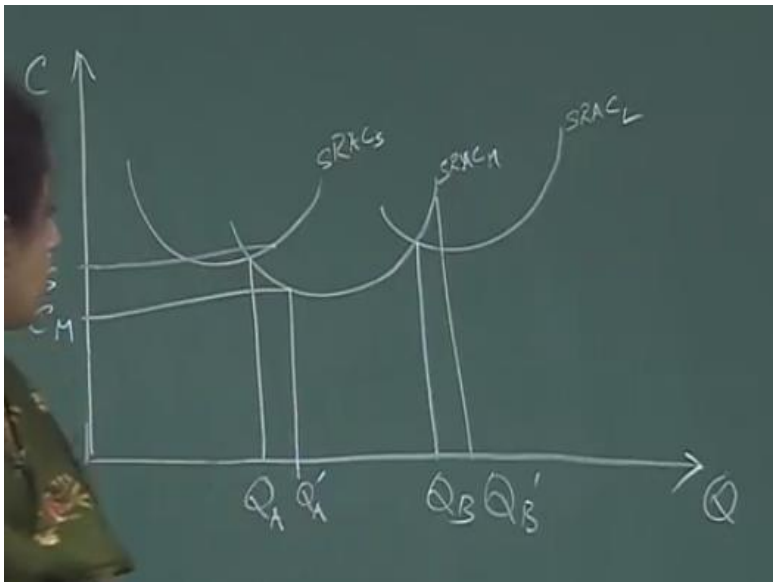

Now so this is just for recap and let me draw. Now say so this is the output and this is cost curve. Now say in the short run a firm is stuck with a certain factory size, a certain amount of land, a

certain machinery etc. So in the short run it can choose various levels of factory size. Say for example when a firm decides that it is going to start production it can make a choice of how much fixed inputs to install or how much fixed input it will start production with.

So say it has 3 choices and this is one factory size, this is another factory size, and this is another factory size. So say he has 3 choices. There is a these are short run average cost curves. Say it the size small size factory size. This is short run average cost with a medium factory size. This is short run average cost with a large factory size. So these are the options that the firm has. These are the options that the firm has. So in the short run the firm can start producing at either this level of factory size or the medium or the large but once it has chosen its fixed inputs that is once it has chosen its fixed chosen its factory size it is stuck with that in the short run.

So say for example now the firm starts with the small factory. It starts with a small factory and then let me show 2 levels of output Q A and Q B. Say a firm is has started its production with SRAC S this is the factory size or small factory size that the firm is operating with and it is producing a output which is less than Q A. So it is fine it is producing it here.

Now say for example the firm knows that given the demand situation in the market or whatever like the firm to maximize its profit it would like to increase the output. So given say there is huge demand for this product in the market and the firm would like to increase its production. So now if the firm wants to increase its production beyond Q A it can do so with the existing factory size or it can decide to move on to a medium size plant in the long run.

So in the short run if it has to increase its output beyond Q A it will operate on this small factory size and it incurs a cost say for example it produces Q A prime. So to produce Q A prime since in the short run it is stuck with this cost curve it will incur a cost which is here. So this is C S. This is the cost it will incur but in the long run if the firm realizes that its intention of producing output is beyond Q A in the long run it can decide to move on to the medium factory size and in that case its cost will reduce to C M. Cost will reduce to C M.

Similarly but if the output the production requirement is less than Q A it would not make sense for the firm to move on to a bigger factory size. Similar thing holds true for Q B if it moves on to a level in the medium when it is operating on the medium factory size and its production requirement goes beyond Q B then again it would make sense for it to change its factory size to the large one in the long run because in the short run in any case it is stuck with this factory size.

So in the long run it would make sense for it to change its factory size to the larger one and produce at a lower cost than the previous one. So depending on how much output it plans to produce in the long run the firm can change all its inputs. So when the firm does that it is basically producing at the minimum possible cost in the long run.

So in the long run since all the inputs are flexible the firm is going to choose that combination of all the inputs not only the variable cost inputs but the fixed cost inputs also because they are no longer fixed cost in the long run the firm is going to choose the that combination of input which makes its cost minimum in the long run. So in the long run the firm is going to choose that combination of inputs.

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So now here I have drawn 3 factory sizes but in the real world in reality it is possible to have it is possible to have numerous factory sizes. So for every unit of so for every unit of output it is possible to have various factory sizes and basically the firm will be choosing in the long run the firm will be adjusting its all its inputs and will be choosing the minimum of these cost curves which makes the firm's cost the minimum.

So basically the long run average cost is an envelope of all these short run cost curves. So the long run average total cost curve is an envelope of all these short run cost curves and in the long run to produce any level of output a firm will choose that mix of inputs for which its average total cost is minimum. That is a firm will choose the most efficient mix of inputs for any level of output.

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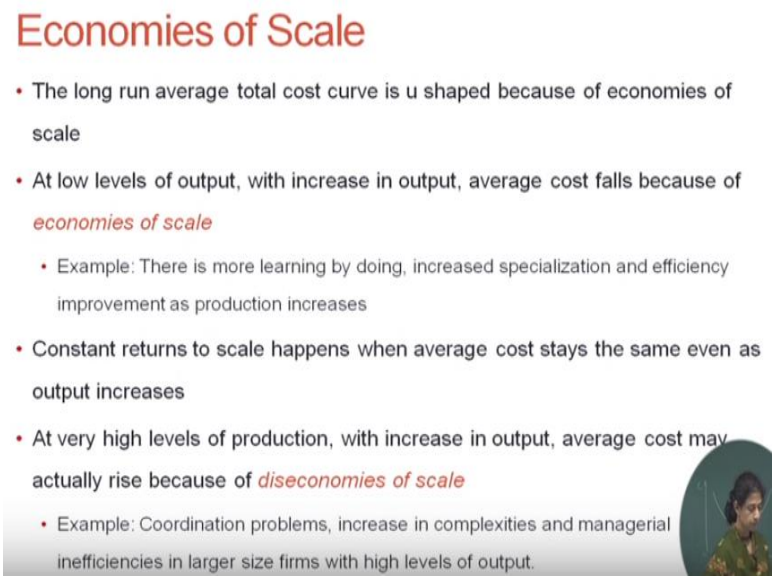

So now that brings us to another discussion about economies of scale. Now the long run average total cost curve is U shaped because of economies of scale.

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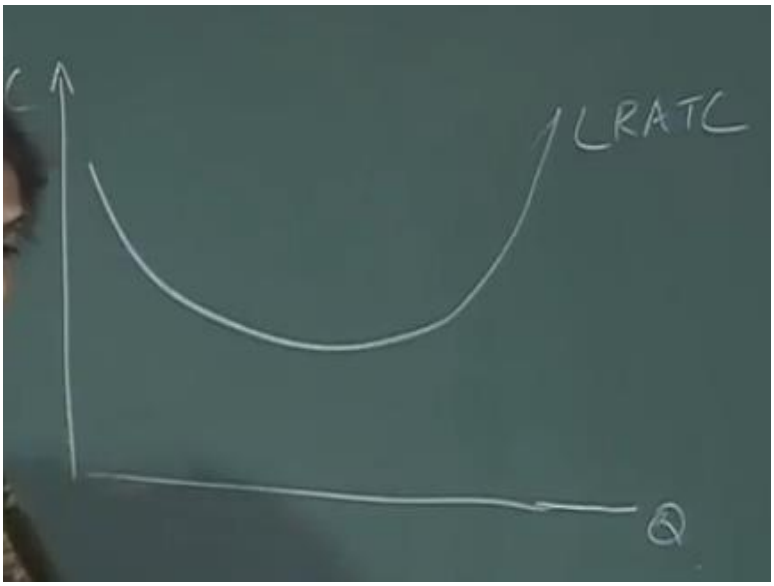

So as we have seen the long run average cost total cost curve that is again is U shaped because of economies of scale. Now at low levels of output with increase in output average cost falls because of economies of scale. So what we are saying here is a the so at low levels of output at low levels of output as the firm keeps on increasing the output the with rise in production there is economy of scale which means basically the average cost falls.

The reason for this is as the firm keeps on increasing its production there is a lot of efficiency improvement it is something called learning by doing where the firm basically gathers knowledge about producing more and producing better and producing more efficiently and there is a lot of cost advantages as the firm increases its output level.

Then it reaches a level where there is it that the advantage actually goes on till a certain level where they after which there is no more increase in or decrease in cost because of increase in output and beyond that there is diseconomy of scale where basically when output increases lot of inefficiencies creep in say for example if there is a huge organization which is bursting to its brims and producing a huge level of output lot of managerial inefficiencies, lot of miscommunications these kinds of problems can creep in which can actually reduce the which can actually increase the cost per unit of output.

So at low levels of output with increase in output average cost falls because of economies of scale. For example there is more learning by doing, increased specialization and efficiency improvement as production increases. Constant returns to scale happens when average cost stays the same even as output increases. At very high level of production with increase in output average cost may actually rise because of diseconomies of scale. For example coordination problems, increase in complexities and managerial inefficiencies in larger size firms with high levels of output.

So that completes our discussion on cost and we will be moving on to discussing about market structure but one thing that we need to remember is the all the cost structures, the cost curve, the cost, the relationships, the long run, the short run, the definition, our understanding of cost everything stays the same no matter which market structure we are discussing.

So in the following weeks when we take up different market structures of whether perfect competition or monopoly, oligopoly or monopolistic competition we are going to see that the cost structures, the cost curves as we have seen them in this week they all remain the same in all the market structures. What will basically change is the demand situation in each of these markets and what will change is how the price is determined in different markets and we move on to profit maximization objective of the firms and determine in each market structure how the firms decide how much to charge and how much to produce. Thank you.