Quadrant II – Notes

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| | Decreasing and Constant Cost Industry |
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Introduction to Long Run Industry Supply Curves under Perfect Competition

Supply curve depicts the seller's quantity reaction to various prices. The shape of the long-run supply curve depends on the extent to which increases and decreases in industry output affect the prices that firms must pay for inputs into the production process. In cases in which there are economies of scale in production or cost savings associated with the purchase of large volumes of inputs, input prices will decline as output increases. In cases where diseconomies of scale are present, input prices may increase with output. The third possibility is that input costs may not change with output.

Assumptions

To determine long-run supply, we assume that all firms have access to the available production technology. Output is increased by using more inputs, not by invention. We also assume that the conditions underlying the market for inputs to production do not change when the industry expands or contracts. For example, an increased demand for labour does not increase a union's ability to negotiate a better wage contract for its workers.

Three Types of Industries

In our analysis of long-run supply, it will be useful to distinguish among three types of industries: constant cost, increasing cost, and decreasing cost. Constant-Cost Industry is an industry whose long-run supply curve is horizontal. Increasing cost industry is an industry whose long run supply curve is upward sloping while a decreasing cost industry has a downward sloping long run supply curve.

LONG-RUN SUPPLY IN A CONSTANT-COST INDUSTRY

A firm's output choice is given in panel (a), while industry output is shown in panel (b). The x axis measures output and the y axis measures rupees per unit of output. A firm's output choice is given in (a), while industry output is shown in (b). The industry is initially in equilibrium at the intersection of market demand curve D1 and short-run market supply curve S1 at point A which is on the long-run supply curve S_L because it tells us that the industry will produce Q1 units of output when the long-run equilibrium price is P1.

A typical firm is initially producing at an output of q1, where P1 is equal to long-run marginal cost and long-run average cost. The market demand for the product unexpectedly increases

because of a reduction in personal income taxes. This causes a shift in the market demand curve from D1 to D2. Demand curve D2 intersects supply curve S1 at C. As a result, price increases from P1 to P2.



When price increases to P2, the firm increases its output to q2. This output choice maximizes profit because it satisfies the condition that price equals short-run marginal cost. This profit will cause existing firms to expand operations and new firms to enter the market.

As a result, in Figure (b) the short-run supply curve shifts to the right from S1 to S2. This causes the market to move to a new long-run equilibrium at the intersection of D2 and S2 where the new equilibrium is at point B at which price is equal to P1, i.e. the original price. In a constant-cost industry, the prices of inputs have not changed, hence the firms' cost curves also remain unchanged. Thus the long-run supply curve is the red colour horizontal line SL passing through the equilibrium points A and B.

LONG-RUN SUPPLY IN AN INCREASING-COST INDUSTRY

Next, we will see how the long run supply curve is derived in an increasing cost industry. As in the previous diagram, you have the Firm and the industry with the respective units measured on the x and y axis respectively.

The industry is initially in equilibrium at A where demand curve D1 intersects supply curve S1. A typical firm as shown in part (a) produces q1 output at price P1. Its short run marginal cost curve is MC1 and short run average cost curve is AC1.

When the demand curve unexpectedly shifts from D1 to D2, the price of the product increases in the short run to P2, and industry output increases from Q1 to Q2. A typical firm, as shown in part (a), increases its output from q1 to q2 in response to the higher price by moving along its short-run marginal cost curve. The higher profit earned by this and other firms induces new firms to enter the industry, causing an increase in the demand for inputs. This leads to an increase in the price of some or all input prices. The short-run market supply curve shifts to the right and new equilibrium is reached at point B, resulting in price P3 that is higher than the initial price P1. Because the higher input prices raise the firms' short-run and long-run cost curves, the average cost curve shifts up from AC1 to AC2, while the marginal cost curve shifts to the left, from MC1 to MC2.



The new equilibrium at B in figure (b) is, therefore, on the long-run supply curve SL for the industry. Thus, the long-run industry supply curve in an increasing cost industry is an upward sloping curve passing through the equilibrium points A and B.



LONG-RUN SUPPLY IN A DECREASING-COST INDUSTRY

Next, we will see how the long run supply curve is derived in a decreasing cost industry. As in the previous diagram, you have the Firm and the industry with the respective units measured on the x and y axis respectively.

The industry is initially in equilibrium at A in part (b) where demand curve D1 intersects supply curve S1. A typical firm as shown in part (a) produces q1 output at price P1. Its short run marginal cost curve is MC1 and short run average cost curve is AC1.

When the demand curve unexpectedly shifts from D1 to D2, the price of the product increases in the short run to P2, and industry output increases from Q1 to Q2. A typical firm, as shown in part (a), increases its output from q1 to q2 in response to the higher price. The higher profit induces new firms to enter the industry resulting in an increase in the demand for inputs which causes the industry output to expand. The short-run market supply curve shifts to the right and the new equilibrium at B results in a price P3 that is lower than the initial price P1. But as the industry grows larger, it can take advantage of its size to obtain some of its inputs more cheaply. This lowers the firm's short-run and long-run cost curves. Thus, the average cost curve shifts down from AC1 to AC2, while the marginal cost curve shifts to the right, from MC1 to MC2.

Thus, in our decreasing-cost industry, the long-run industry supply curve SL is a downward sloping curve passing through the equilibrium points A and B.