

CHAPTER 9

Businesses and the Costs of Production

Learning Objectives

SL09.1

Explain why economic costs include both explicit and implicit costs.

LO9.2 Relate the law of diminishing returns to a firm's short-run production costs.

LO9.3

Distinguish between fixed and variable costs and among total, average, and marginal costs.

LO9.4

Use economies of scale to link a firm's size and its average costs in the long run.

LO9.5

Give business examples of short-run costs, economies of scale, and minimum efficient scale (MES).

LO9.1 Explain why economic costs include both explicit and implicit costs.

The economic cost of using a resource to produce a good or service is the value or worth of that resource in its best alternative use.

Economic costs include explicit costs, which flow to resources owned and supplied by others, and implicit costs, which are the opportunity costs of using resources that are already owned. One implicit cost is a normal profit for the entrepreneur. Economic profit occurs when total revenue exceeds total costs (= explicit costs + implicit costs, including a normal profit).

In the short run, a firm's plant capacity is fixed. The firm can use its plant more or less intensively by adding or subtracting units of variable resources. but it does not have sufficient time in the short run to alter plant size

LO9.2

Relate the law of diminishing returns to a firm's short-run production costs.

The law of diminishing returns describes what happens to output as a fixed plant is used more intensively. As successive units of a variable resource such as labor are added to a fixed plant, beyond some point the marginal product associated with each additional unit of a resource declines

LO9.3 Distinguish between fixed and variable costs and among total, average, and marginal costs.

Costs can be classified as variable or fixed in the short run. Fixed costs are independent of the level of output: variable costs vary with output. The total cost of any output is the sum of fixed and variable costs at that output.

Average fixed, average variable, and average total costs are, respectively, fixed, variable, and total costs per unit of output. Average fixed cost declines continuously as output increases because a fixed sum is being spread over a larger and larger number of units of production. A graph of average variable cost is U-shaped, reflecting increasing returns followed by diminishing returns. Average total cost is the sum of average fixed and average variable costs; its graph is also U-shaped.

Marginal cost is the extra, or additional, cost of producing one more unit of output. It is the amount by which total cost and total variable cost change when one more unit of output is produced. Graphically, the MC curve intersects the ATC and AVC curves at their minimum points.

Lower resource prices shift cost curves downward, as does technological progress.

Higher input prices shift cost curves upward.

LO9.4

Use economies of scale to link a firm's size and its average costs in the long run.

The long run is a period of time sufficiently long for a firm to vary the amounts of all resources used, including plant size. In the long run, all costs are variable. The long-run ATC, or planning, curve is composed of segments of short-run ATC curves, and it represents the various plant sizes a firm can construct in the long run.

The long-run ATC curve is generally U-shaped. Economies of scale are first encountered as a small firm expands. Greater specialization in the use of labor and management, use of the most efficient equipment, and the spreading of startup costs across more units of output all

contribute to economies of scale. As the firm continues to grow, it will encounter diseconomies of scale stemming from the managerial complexities that accompany large-scale production. The output ranges over which economies and diseconomies of scale occur in an industry are often an important determinant of that industry's structure.

A firm's minimum efficient scale (MES) is the lowest level of output at which it can minimize its long-run average cost. In some industries, MES occurs at such low levels of output that numerous firms can populate the industry. In other industries, MES occurs at such high output levels that only a few firms can exist in the long run.

LO9.5

Give business examples of short-run costs, economies of scale, and minimum efficient scale (MES).

Rising gasoline prices increase (shift upward) the AVC, ATC, and MC cost curves of firms like FedEx that use gasoline as an input in their production processes.

SaaS, Uber, Instagram, and many other successful startup firms reduced costs and shifted their cost curves down and to the right by spreading product-development and advertising costs over larger numbers of units and by exploiting the economies of scale that can be generated through learning by doing and increased specialization of labor, management, and equipment.