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Basic Producer Theory

Abstract: This chapter covers basic producer theory, including demand and supply, cost curves, and the firm’s profit maximizing decision rule for production. The two types of market structures to be covered are perfectly competitive markets and oligopolies. The music industry is an oligopoly market with a handful of large firms that control the market. There are several barriers to entry that enable these firms to maintain persistent economic profits, namely high startup costs, ownership of intellectual property, and economies of scale. There are also game theoretic implications for firms in an oligopoly, and basic games of strategy (Prisoner’s Dilemma and the Cournot Model) will be discussed. A thorough grounding in producer theory is necessary to understand the production of music.

We return to standard microeconomic theory to understand a theoretical firm’s costs of the production of music (physical albums). For the sake of convenience and relevance, we consider the example of manufacturing of blank compact discs (CDs) in our examination of the theory of the firm. But this analysis can be used for any type of good. We start with some basic cost curves.

3.1 Cost functions

The firm has two basic types of costs it must consider: Fixed costs and Variable costs. Fixed costs (FC) are those costs that the firm incurs regardless of how much it is producing. Even when the firm is producing zero units, it still must pay fixed costs. Some examples of fixed costs are the physical building to manufacture CDs, necessary equipment, and so forth. Even before the firm begins manufacturing CDs, it must incur these fixed costs, so they are nonzero from the start. The firm has to buy the factory, equipment, machinery, and the like before it can begin manufacturing the CDs. Fixed costs are sometimes called startup costs (the costs to start a business, including the physical infrastructure needed to manufacture the goods). Variable costs (VC) are costs that vary depending on how many units the firm is producing. The more that the firm wants to produce, the more variable costs it must pay. Examples of variable costs are raw materials (such as plastic materials to make the CDs), hours of labor (hiring more workers to work more hours to manufacture more CDs), utilities bills (electricity to run the machinery), and so forth. Basically, variable costs are the firm’s input costs. If the firm is producing zero CDs, its variable costs are zero. The firms’ Total Cost of production (TC) is its fixed cost plus variable costs, or \( TC = FC + VC \).

An important type of cost to understand is the Marginal Cost (MC) of production. Marginal cost is the additional cost incurred if the firm produces one more unit of the good. So in the CD example, if the firm wants to manufacture one more disc, its costs go up by some amount (for the raw materials, additional labor costs, electricity to run the machines, etc.). Marginal cost is defined as the change in Total Cost (TC) over the change in Quantity (Q), or \( MC = \Delta TC / \Delta Q \). Technically speaking it is the first derivative of the Total Cost function with respect to Quantity; thus MC is the slope of the TC curve. Marginal cost will play an important role in determining the firm’s profit maximizing quantity of production.