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Production: Technologies, Costs and Supply

"[An] increase in the stock of capital up to a point where its [marginal product] had fallen to a very low figure would mean the euthanasia of the rentier and the [end] the power of the capitalist to exploit the scarcity-value of capital.

John M. Keynes

The General Theory of Unemployment, Interest and Money, 1935

The hand mill gives you society with the feudal lord; the steam mill, society with the industrial capitalist.

Karl Marx,

The Poverty of Philosophy, 1847

A cluster of small firms in Sialkot, Pakistan produce about forty percent of the worlds soccer balls - 30 million of them per year - including the match balls for the 2014 World Cup. The industry is highly competitive not only among the hundred or so firms in Sialkot, but also on a world scale, with Chinese firms recently challenging the Pakistani dominance in the field. Firm owners are constantly on the lookout for ways to slash costs. As the artificial leather that the balls are made from constitute almost half the cost of a soccer ball, they are particularly on the lookout for waste-saving methods of cutting the pentagons and hexagons that make up the balls.

An Italian architect and her husband, an American economist, discovered a way to cut the pentagons and hexagons from the large sheets of leather that would allow a considerable saving of leather. (Unwittingly they had "discovered" what is called a "packing" principle already known by mathematicians.) They found a tool and die maker in Sialkot to make some test dies (a cutting tool) using the new technique, expecting that they would quickly be taken up by the cost-conscious firms. In May 2012 they gave 35 firms the new technology. They calculated that the new technology would increase profits of the companies adopting it by 10 percent (Atkin et al, 2015).

DOING ECONOMICS

By the end of this chapter you will be able to:

- represent techniques of production and costs of production graphically and in the form of equations
- use the fact that a technology can be characterized by four aspects: economies of scale, factor intensity, productivity and whether inputs are substitutes or complements
- understand that the cost-minimizing technique of production depends on prices of inputs and the range of alternative techniques available
- explain the concepts of economies and diseconomies of scale
- understand the concepts of total revenue, average revenue, marginal revenue, total cost, average cost, marginal cost, and fixed cost
- understand the difference between ordinary accounting definitions of profit and economists' definition of profit
- explain why a profit-maximizing firm chooses an output level that equalizes marginal revenue and marginal cost
- explain the supply curve of a price-taking firm and of an industry composed of price taking firms
- explain what empirical studies show about the cost curves of firms.



Figure 8.1: A soccer ball