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# Returns

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The idea of returns has a long history in economics. This is not surprising because the concept of a "return" is just the flip side of the concept of cost. Accordingly we may define a return as a change in output (or the cost of producing an additional unit of output) resulting from a change in the quantity of quality of inputs. Adam Smith's famous pin factory discussion of the division of labor in the opening pages of *An Inquiry into the Nature and Causes of the Wealth of Nations* (1776) regards the declining costs associated with productivity-enhancing technical change. David Ricardo, in both the *Essay on Profits* (1815) and *Of the Principles of Political Economy and Taxation* (1817), described the diminishing returns associated with economic growth. Capital accumulation would lead to higher population, increasing the demand for food and thus the need to intensify and extend agricultural production. Intensification of production and the extending of production on to lands of inferior quality or further from the central markets (and thus associated with higher transportation costs) would lead to higher rents and wages, squeezing profits and choking off accumulation.

In economics the distinction must be made between returns to scale and returns to substitution. Returns to scale regards the changes in output resulting from increases in all factors of production (land, labor, and capital). For example, when all inputs are doubled: If output more than doubles, there are increasing returns to scale; if output exactly doubles, there are constant returns to scale; and if output less than doubles, there are decreasing returns to scale. Returns to substitution regards the impact of changing the quantity of one factor of production when one or more other factors are fixed in quantity. For example, when there is an increase in one input, holding the quantity of all other inputs constant: If the cost of producing an additional unit of output falls, there are increasing returns; if the cost of producing an additional unit of output stays constant, there are constant returns; if the cost of producing an additional unit of output rises, there are diminishing returns. There is no such thing as "decreasing returns to scale." If all factors are variable, then they can be combined in the proportions that produce the highest productivity and lowest costs and then replicated. There is no such thing as "increasing returns to substitution," as producers will always use the proportions that give them the lowest cost and highest productivity, even if that means not using the entire quantity of some of a resource.

Piero Sraffa (1925, 1926) showed that the neoclassical versions of nonproportional returns embodied in the U-shaped average cost curve—a necessary component of determining the equilibrium size of the firm in a perfectly competitive market—are indeed problematic. First, the two kinds of nonproportional returns—increasing and diminishing—refer to different parts of economic theory. Increasing returns is part of the theory of general economic progress and so the theory of production, while diminishing returns is part of the theory of rent and so the theory of distribution. Second, in Alfred Marshall's framework, these must be compatible with the ceteris paribus conditions of the partial equilibrium framework while still not violating the assumptions of perfect competition (Marshall 1961). Sraffa shows this to be either terribly unrealistic or logically impossible.

In the case of diminishing returns, unless we find an industry where all firms use a scarce factor, variations in average cost associated with increased production in the industry under consideration will be of the same order of magnitude as variations in costs experienced by other industries using the same scarce factor. This violates the ceteris paribus assumption of partial equilibrium analysis. As for increasing returns, these cannot be present at the same time in both an industry and the firms within it, because otherwise firms will keep on expanding until they reach a size incompatible with perfect competition. Nor can they be found in various industries at the same time, or ceteris paribus conditions will be breached again. Marshall, aware of this, developed a category of economies of production external to the individual firm but internal to the industry. This may be proper in terms of perfect competition and partial equilibrium but wholly unrealistic.

Sraffa's conclusion that we may find some use in the "old classical" conception of constant costs may help in theoretical models, but this does not mean that he did not acknowledge the importance of economies of scale and increasing returns in the real economy. Allyn Young (1928) just a few years later went back to Smith's discussion of the division of labor and drew out its contemporary relevance for economic growth. One of Young's students at the London School of Economics, Nicholas Kaldor, combined the Smith-Young insight into the mutually reinforcing relation between economic growth and technical progress and wed it to a dynamic version of John Maynard Keynes's principle of effective demand in his notion of cumulative causation (Kaldor 1972). This analysis resulted in Kaldor's "polarization thesis" regarding the division of the global economy into rich, industrialized nations and poor, developing national economies, which has links to the Prebisch-Singer hypothesis of declining terms of trade between the two sets of countries (Prebisch 1950; Singer 1950). Even in Smith there is the asymmetric analysis of manufactures and Page 218 agriculture, the former characterized by increasing returns and the latter by diminishing returns. This was abandoned by Marshall, whose model portrays all factors of production symmetrically, experiencing increasing returns as production begins and diminishing returns as production continues (as in the U-shaped average cost curve). Marshall also abandoned the qualitative aspects of returns, limiting the causes to quantitative differences only. Thus the important distinction between the classical and neoclassical notions of returns.

**SEE ALSO** *Average and Marginal Cost ; Competition ; Competition, Perfect ; General Equilibrium ; Marshall, Alfred ; North-South Models ; Partial Equilibrium ; Returns to a Fixed Factor ; Returns to Scale ; Returns to Scale, Asymmetric ; Returns, Diminishing ; Returns, Increasing ; Risk-Return Tradeoff ; Sraffa, Piero*

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