

BA Part 1

Economics (Subsidiary)

Topic : **Return to Scale**

Return to Scale

In economics, returns to scale describe what happens to long run returns as the scale of production increases, when all input levels including physical capital usage are variable (able to be set by the firm). The concept of returns to scale arises in the context of a firm's production function. It explains the long run linkage of the rate of increase in output (production) relative to associated increases in the inputs (factors of production). In the long run, all factors of production are variable and subject to change in response to a given increase in production scale. While economies of scale show the effect of an increased output level on unit costs, returns to scale focus only on the relation between input and output quantities.

There are three possible types of returns to scale: increasing returns to scale, constant returns to scale, and diminishing (or decreasing) returns to scale. If output increases by the same proportional change as all inputs change then there are constant returns to scale (CRS). If output increases by less than the proportional change in all inputs, there are decreasing returns to scale (DRS). If output increases by more than the proportional change in all inputs, there are increasing returns to scale (IRS). A firm's production function could exhibit different types of returns to scale in different ranges of output. Typically, there could be increasing returns at relatively low output levels, decreasing returns at relatively high output levels, and constant returns at some range of output levels between those extremes.[citation needed]

In mainstream microeconomics, the returns to scale faced by a firm are purely technologically imposed and are not influenced by economic decisions or by market conditions (i.e., conclusions about returns to scale are derived from the specific mathematical structure of the production function in isolation).

Example

When the usages of all inputs increase by a factor of 2, new values for output will be:

Twice the previous output if there are constant returns to scale (CRS)

Less than twice the previous output if there are decreasing returns to scale (DRS)

More than twice the previous output if there are increasing returns to scale (IRS)

Assuming that the factor costs are constant (that is, that the firm is a perfect competitor in all input markets) and the production function is homothetic, a firm experiencing constant returns will have constant long-run average costs, a firm experiencing decreasing returns will have increasing long-run average costs, and a firm experiencing increasing returns will have decreasing long-run average costs.[1][2][3] However, this relationship breaks down if the firm does not face perfectly competitive factor markets (i.e., in this context, the price one pays for a good does depend on the amount purchased). For example, if there are increasing returns to scale in some range of output levels, but the firm is so big in one or more input markets that increasing its purchases of an input drives up the input's per-unit cost, then the firm could have diseconomies of scale in that range of output levels. Conversely, if the firm is able to get bulk discounts of an input, then it could have economies of scale in some range of output levels even if it has decreasing returns in production in that output range.

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Date : 12/04/2021