# Learning Journal – Week 3

## Topic: Why the Law of Diminishing Returns Applies Only in the Short-Term

In this week’s learning journal, I reflect on the economic principle known as the law of diminishing returns, a concept that plays a vital role in understanding production behavior, especially within the short-term period.

The law of diminishing returns states that as additional units of a variable input (such as labor) are added to a fixed amount of other inputs (like capital or land), the marginal product of the variable input eventually decreases. This means that after a certain point, each additional unit of labor contributes less to total output than the previous unit (Mankiw, 2021). For instance, in a small bakery, if the number of ovens is fixed, hiring more bakers might initially increase output, but eventually the kitchen becomes crowded, and each additional baker becomes less effective.

This law applies only in the short-term because, by definition, the short-term is a period in which at least one factor of production is fixed. Typically, capital (like machinery or factory space) is considered fixed in the short run due to time and cost constraints. Because some inputs cannot be changed quickly, businesses cannot adjust all resources in proportion, leading to diminishing marginal productivity as variable inputs increase.

In contrast, in the long-term, all factors of production are variable. Firms can increase the scale of production by expanding factory space, purchasing more equipment, or investing in technology. Under such conditions, the constraint that causes diminishing returns is removed. Instead, firms may experience returns to scale—increasing, constant, or decreasing—depending on how efficiently all inputs are scaled up.

Understanding this distinction has helped me appreciate how real-world firms make production decisions depending on their time frame. Short-term constraints influence how businesses respond to changes in demand, pricing, and resource availability. It also explains why long-term planning often includes capital investment to avoid bottlenecks that arise from diminishing returns.

## Reference

Mankiw, N. G. (2021). Principles of economics (9th ed.). Cengage Learning.