Producer Equilibrium

A2 Economics

Economic Objectives of Producers

- All private businesses/firms want to maximize their total profits.

- Given any business faces fixed demand for its goods/services, the only strategy available to it is to minimize its costs.

Economic Objectives of Producers

- Total Revenue – Total Cost = Profit

- Hence businesses should be efficient regarding hiring different factors of production.

Theoretical Explanation of Firms' Profit Maximization Behavior

- Unless businesses do not maximize their output for each unit of factor input then the business will not be maximizing its profits.

- It basically refers to ratio of output to input.

- Productivity = Output / Input

Theoretical Explanation of Firms' Profit Maximization Behavior

- Each unit of any factor of production hired by any business should be such that it helps the business to maximize its output/production for each unit of currency spent on employing that factor of production.

Substitution between Factors of Production

- Often different factors of production are substitutes for each other. For instance a farmer can produce certain amount of wheat by employing either capital or labor.

- The more amount of capital any firm hires the less of labor will be needed and vice versa.

Substitution between Factors of Production

- Though such substitution of factors of production might not be available in all different industries but it is generally true for a lot of industries/businesses.

Isoquant

- Graph showing all possible combinations of quantities of any two factors of production for which firm's output **stays constant**.
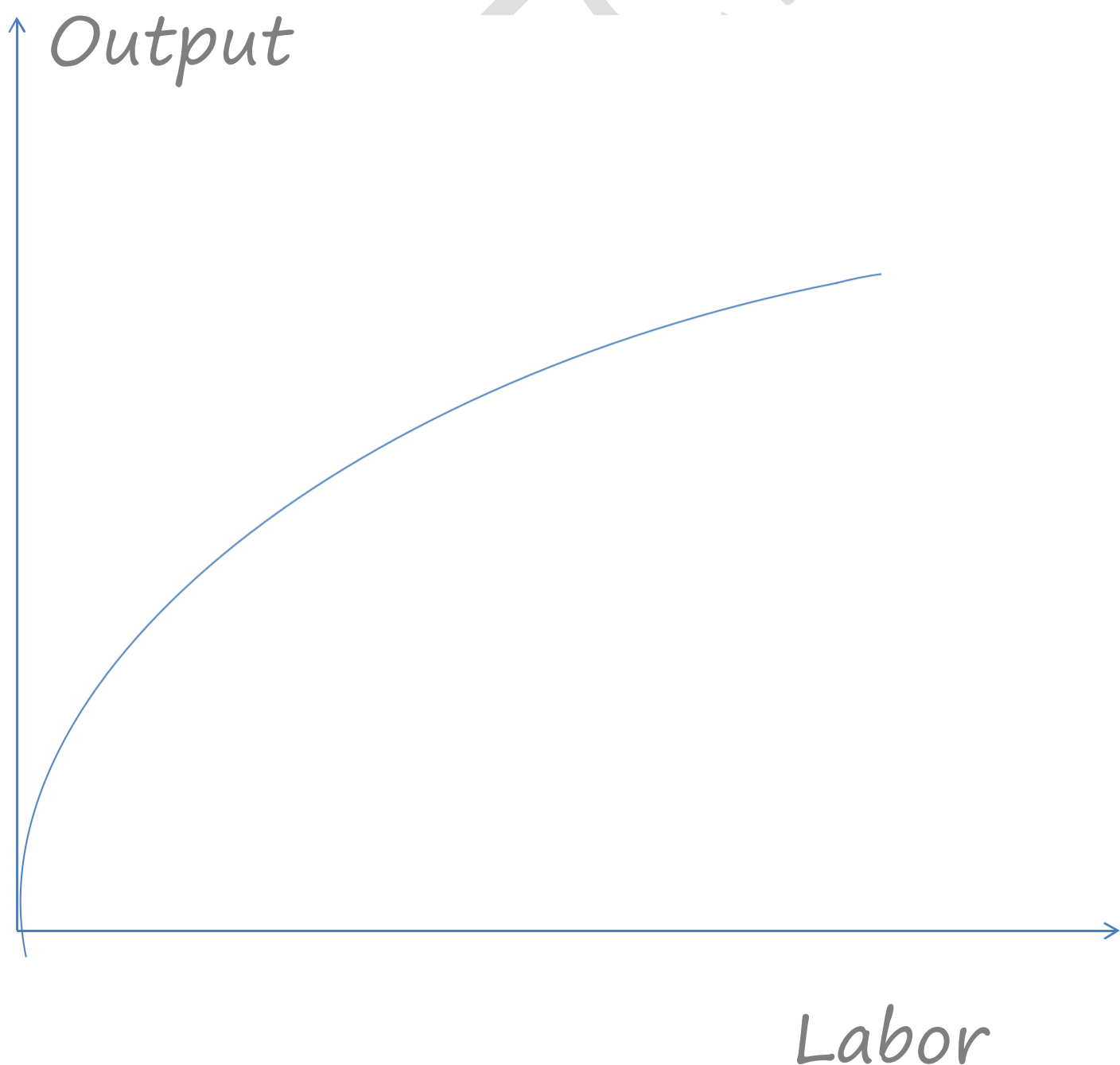
Labor

Capital
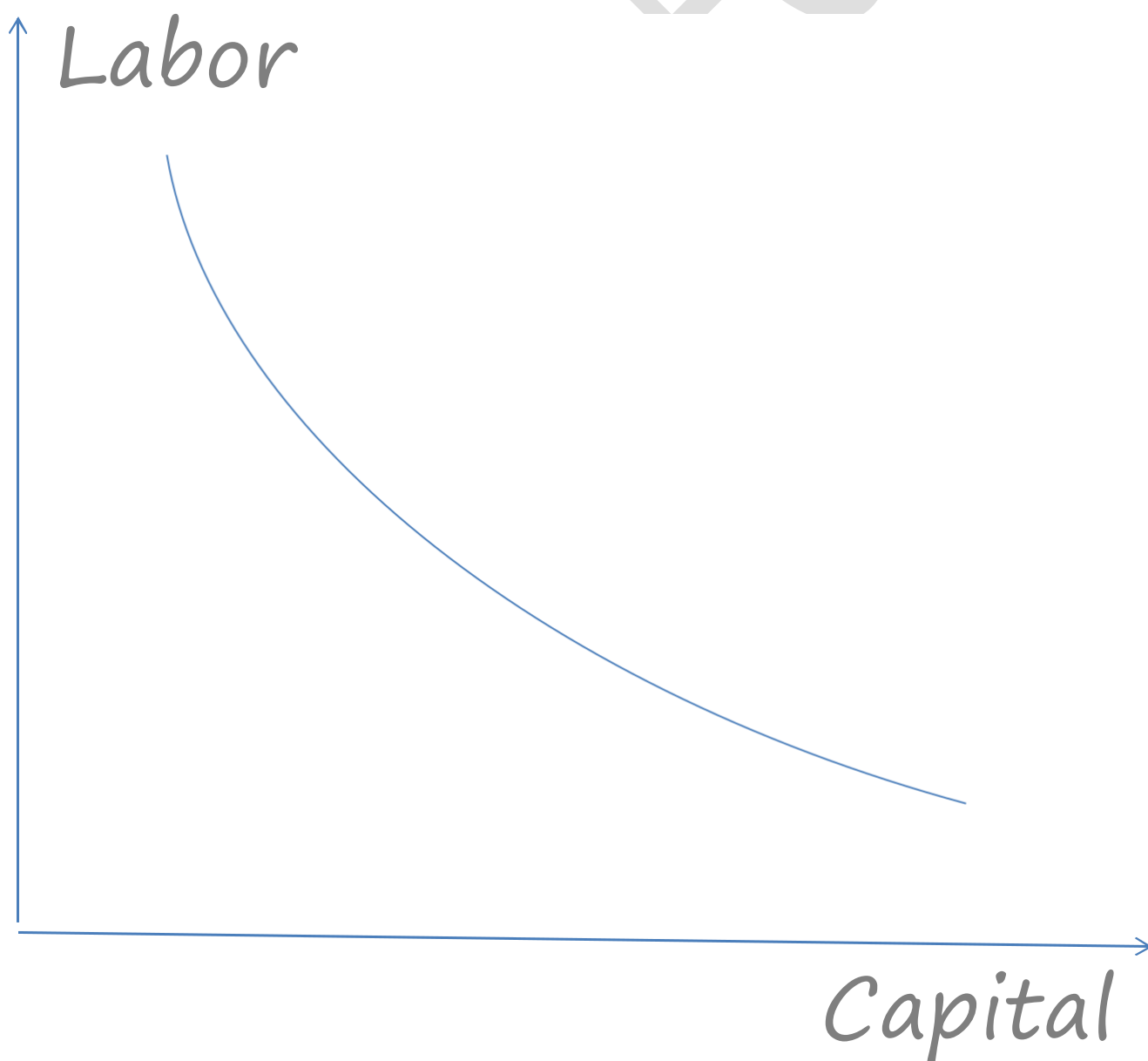
Isocost

- The graph depicting any specific firm's production possibilities.

- Assuming that any business has fixed amount/budget to be spent on different factors of production, there will be a **limit to possible combinations** of two factors of production that a firm can afford (at any given point in time).

Production Function

- Graph showing the relationship between any firm's output and inputs.

- The positive nature of the relationship results in upward sloping graph.

Output

Labor

Gradient of Production Function

- Gradient of Production Function shows **marginal product** of factor input that we have on the x-axis.

- In case of the previous diagram the **gradient** of production function is showing marginal product of labor.

Marginal Product

- The change in firm's output given there is employment of one additional unit of labor.

- Marginal Product = Change (delta) in Output / Change (delta) in labor

Marginal Product

- Marginal Product refers to **quantity of finished good** produced by any specific employee. So for instance if an employee himself independently produces 100 units of footballs then his marginal product is 100.

Optimum Allocation of Firm's Budget

- Firm wants to allocate its budget between different factors of production in such a manner that the ones that yield highest level of output (highest marginal product) for each dollar spent are hired in preference to other factors of production.

Optimum Allocation of Firm's Budget

- For instance if labor yields higher (as compared to capital) marginal product for each dollar spent on it then firm should employ labor in preference to capital.

- Labor Productivity = Marginal Product / Price of each unit of labor

Equilibrium in Factors of Production Markets

- The point where firm's isocost is tangent to any of its isoquant, that is the point where the firm maximizes its profits by minimizing its cost.

- Since we initially assumed that revenue for the business is determined independently hence the objective of profit maximization is achieved by pursuing cost minimization strategy.

Equilibrium in Factors of Production Markets

- The point where the two graphs namely isocost and isoquant are tangent is where the firm is minimizing its costs and hence it is point for profit maximization for the business.

- Hence at the point of equilibrium firm's marginal product of labor for each unit of currency spent on labor is equal to marginal product of capital for each unit of currency spent on capital.

Mathematical Equation for Equilibrium in Factor Market

- MPL / PL = MPC / PC

Hence as stated earlier,

at the point of equilibrium, firm's **marginal product of labor** for each unit of currency spent on labor is equal to marginal product of capital for each unit of currency spent on capital.