

Week 2

Economic Profit vs. Accounting Profit

- Assumption: firms aim to maximise economic profit
- **Accounting** Profits are revenues minus all explicit costs
 - Can end up being larger than economic profit because implicit costs are not included
- **Economic** Profits are Total Revenue minus Total Costs
 - Total Revenue = amount received for sale of goods
 - Total Costs = Explicit + Implicit Costs
 - Cost of inputs of production + forgone opportunities

Short Run & Long Run

What is a firm?

- A firm (using available technology) converts inputs (labour, machinery) & natural resources (land) into output

Short run

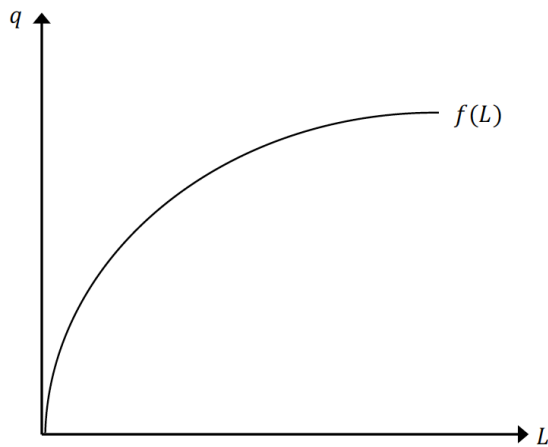
- Period of time during which at least one of the factors of production is fixed (e.g. size of a factory might not be able to be changed)

Long run

- All factors of production are variable

Production

- A firm requires inputs or factors of production (labour, capital, land) in order to produce output
- A production function shows the relationship between quantity of inputs and the (maximum) quantity of output produced
 - $q=f(L)$
 - Q is level of output and L is the amount of labour



Marginal Product

- The *marginal product* is the change in output when one more unit of an input is used
- MP is the slope of the production function because the slope is rise/run which is q/L which describes how much quantity/output increases by for every extra unit of labour
- Marginal Product **decreases** as more units of inputs are used (*Diminishing MP*)
 - Common in **short run** because there is some **fixed input** which creates a **capacity constraint** so each additional worker will contribute to less and less output. If a farm land is fixed, there will be a point where the number of workers maximise output

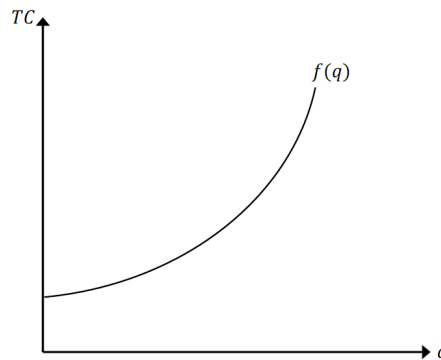
efficiently. However beyond that point, more workers will only crowd the space and lead to inefficient production, decreasing the output per person.

Production in the Long Run

- All *inputs* into the production process are *variable* (e.g. factory size and amount of labour can all be changed)
- Interested in how quantity of output changes when all quantities of inputs are changed
 - $q=f(L,K)$
- Returns to scale refers to how the quantity of output changes when there is a proportional change in the quantity of all inputs
 - Output increasing by the same proportional change as inputs demonstrates constant returns to scale
 - If output increases by more than the proportional increase in all inputs, we have increasing returns to scale
 - If output increases by less than the proportional increase in all inputs, we have decreasing returns to scale

Short-Run Costs

- A cost function is an equation that links the quantity of *output* with its associated production cost. Output on the x axis and TC on the y axis.
- $TC=f(Q)$



- Curve becomes steeper because of diminishing MP so more costs are incurred per marginal product. Because this cost function represents short-run, a greater quantity of inputs is required to increase output by the same amount, and greater quantity of inputs = increasing costs
 - When output is 0, total cost is positive because some factors of production are *fixed*
- *Fixed costs (FC)* are costs that do not vary with output
- *Variable costs (VC)* are costs that vary with output
- *Average fixed cost (AFC)* is fixed cost per unit of output - $AFC = FC/Q$
- *Average variable cost (AVC)* is variable cost per unit of output - $AVC = VC/Q$
- *Average total cost (ATC)* is total cost per unit of output - $ATC = TC/Q$
 - At low levels of output, slope is declining as the average fixed cost dominates. But at higher levels of output, usually upward sloping because the increasing AVC dominates.