1. The Fundamentals of Economics

Keywords

- Opportunity cost
- *Economic* profit & *accounting* profit
- Present value analysis
  - Net present value
  - Single future value
  - Stream of future values
- Marginal analysis
- *Positive* and *normative* analysis

Opportunity Cost

Opportunity Cost

The opportunity cost of any item is whatever must be **given up** to obtain it.
Consists of two components:

- Explicit cost: (accounting) cost of a resource
- Implicit cost: cost of giving up the best alternative use of that resource

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Profits

Accounting Profit

Total amount of money taken in from sales (total revenue) minus the explicit costs of producing the goods or services sold.

$$\boxed{\text{Accounting Profit} = \text{Total Revenue} - \text{Explicit Costs}}$$

Economic Profit

Difference between total revenue and the **opportunity cost** of resources used.

$$\begin{aligned}\boxed{\text{Economic Profit}} &= \boxed{\text{Total Revenue} - \text{Opportunity Cost}} \\ &= \text{Total Revenue} - (\text{Explicit Costs} + \text{Implicit Costs}) \\ &= \text{Accounting Profit} - \text{Implicit Costs}\end{aligned}$$

Market

Market

The market is the place for the two sides (buyer and seller) to make transactions.

Bargaining is the process of arriving at a price and quantity for a good or service.
It is limited by three rivalries:

1. Consumer-producer rivalry
2. Consumer-consumer rivalry
3. Producer-producer rivalry

Present Value Analysis

Often a gap exists between the time when costs are borne and benefits are received.

Present Value of a Single Future Value

Given

- **Prevailing interest rate** i
- **Number of periods** n
- **Future value** FV

The amount that would have to be invested today is the **present value** PV.

The present value reflects the difference between the **future value FV** and the **opportunity cost of waiting OCW**.

Present Value as Future Value minus Opportunity Cost of Waiting

$$\boxed{PV = FV - \text{OCW}}$$

Single future value

Present Value of a Single Future Value

$$\boxed{PV = \frac{FV}{(1+i)^n}}$$

Stream of future values

Present Value of a Stream of Future Values

$$\boxed{PV = \sum_{t=1}^{n} \frac{FV_t}{(1+i)^t}}$$

Net Present Value

The present value of the *income stream* generated by a project, minus the current cost of the project.

Net Present Value

$$\boxed{NPV = PV - C_0} = \sum_{t=1}^{n} \frac{FV_t}{(1+i)^t} - C_0$$

Where C_0 is the current cost of the project.

Marginal Analysis

- Q = control variable (e.g., quantity produced)
- $B(Q)$ = total benefit

- $C(Q)$ = total cost
- $NB(Q)$ = net benefit

The manager's objective is to maximize the net benefits.

∑ Net Benefit

$$\boxed{NB(Q) = B(Q) - C(Q)}$$

We use marginal analysis to maximize net benefits.

- $MB(Q)$ = marginal benefit = $\frac{dB(Q)}{dQ}$
- $MC(Q)$ = marginal cost = $\frac{dC(Q)}{dQ}$
- $MNB(Q)$ = marginal net benefit = $\frac{dNB(Q)}{dQ}$

∑ Marginal Net Benefit

$$\boxed{MNB(Q) = MB(Q) - MC(Q)}$$

Marginal Principle

To **maximize net benefits** $NB(Q)$, a manager should increase the control variable Q as long as the marginal net benefit $MNB(Q)$ is positive, and up to the point where

$$\text{Maximum net benefits} \iff MNB(Q) = 0 \iff \boxed{MB(Q) = MC(Q)}$$

Incremental Decisions

Incremental Revenues

Additional revenues that stem from a yes-or-no decision.

Incremental Costs

Additional costs that stem from a yes-or-no decision.

Incremental Decision Rule

- Thumbs up if $MB > MC$
- Thumbs down if $MB < MC$

Positive and Normative Analysis

Positive Analysis

Statements that describe the relationship of cause and effect.
"What will be the **impact of** ...?"

Normative Analysis

Analysis examining questions of what ought to be (= value judgments).
"**Should** the government ...?"