

# COST APPROACH TO VALUE

**PREPARED BY:**

**Mr. Vimal K. Shah**

**(9426159641)**

**vimalkshah1@gmail.com**

**Mrs. Kavita N.Choksi**

**(9512333666)**

**kavitachoksi21@gmail.com**

# COST APPROACH TO VALUATION

- Cost approach is very much useful in evaluating non marketable properties in Real Estate.
- It is also useful in estimating values of assets for financial statements of an enterprise.
- This method is invariably adopted in determining cost of construction of a building, viz investments done by the assessee in the real estate, for the purposes of Income Tax Act.
- Cost approach is also adopted by the valuers while estimating cost of construction of the building under construction, and for which the owner has asked for loan from the financial institution.
- Even for valuation of the owner occupied bungalows, offered as security to the banks for mortgage, this method is used.
  
- Cost approach is one of the basic approach of valuation, with the help of which we can work out 'cost' as well as 'value' of certain types of assets.
- There are mainly two methods under this approach.
- i. Book Value Method.
- ii. Land and Building Method. (Depreciated cost method)

- In **Book Value Method**, historic cost of the asset in the year of acquisition is taken as basis and with the help of cost index figures (Multiplying factors for different years, indicating price rise in the market due to inflation and other factors like variation in cost of materials and labour), replacement costs and value of the asset are determined for the relevant year of valuation.
- **Land and Building Method** is also known as Contractors method, Physical method or Depreciated cost method. This method is useful to estimate cost or value of the structures like Temple, Church, Museum, School and College buildings. Bungalows and factories can also be valued by this method.

# DIFFERENT COST TERMINOLOGIES

## Historic Cost

It is the actual cost of construction in terms of money as actually spent by the owner, in erecting a building on the plot. It is the first time cost of acquisition of building as distinguished from cost to the subsequent purchasers.

## Original Cost

To distinguish between cost to first owner and cost to subsequent owners, accountants have coined this word 'Original cost'. In fact both Historic Cost and Original Cost are actual cost to the owner but both are not same. If cost of building in 1990 is Rs.5 lacs to the first owner, and it is sold for Rs. 10 lacs in year 2000 to the new (Second) owner, Rs.5 lacs is Historic Cost of the building and Rs.10 lacs is original cost to the second owner.

## Replacement Cost

It is the most commonly used term while doing valuation by Cost Approach. It is the cost of construction or cost of creating the new asset (Building/Machine), having identical utility and performing similar functions , as is being performed by the existing old asset, which is assumed to be replaced. The replacement cost in reality is "cost as if new" in the year of valuation.

## Reproduction Cost

This is most mistaken term in valuation. Many valuers make a mistake in considering Reproduction Cost to have same meaning as Replacement Cost. Reproduction cost is the cost to produce exactly similar asset i.e. **exact replica** (Mirror image) of the old existing asset to be valued. It has not only same utility and functions but it also have exactly similar specification without taking into consideration improved technology or present day trend. Building Insurance for a “heritage building” or a property having Historical background and with Ornamental construction, may require special mention in the insurance policy, about risk for insurance for “Reproduction Cost” as new for the building, instead of insuring asset for “Replacement Cost” as is usually done.

# Types of Estimating Cost of Construction

There are five different methods of estimating cost of construction.

- i. Book Value Method.
- ii. Flat Rate Method.
- iii. Cost Index Method.
- iv. Detailed Quantity Method.
- v. Reinstatement Method.

## Book value Method

- Out of several methods of cost estimation, book value method is simplest. In book value method, it is very essential to have correct and reliable Historic Cost of the building. Some owners do not maintain proper books of account .Records of historic cost of the buildings are also not very clear because phase wise, year wise and building wise building costs are not indicated separately but are all clubbed together in to one single figure.
- This method ,however ,is very much useful to arrive at present day cost of special type of structures like Aircraft Hangers, Customised factory buildings - designed for special industrial requirements , ornamental structures or public utility buildings whose Historical Cost is known.

## **Flat Rate Method:**

Flat Rate Method involves estimating the building cost on the basis of unit rate of building area or volume and adopting flat rate of similar construction. The unit of the area of the building, could be net carpet area basis or total builtup floor area basis. It could also be based on the volume of construction.

## Cost Index Method

This method is mainly devised and adopted by Central P.W.D. Engineers, for working out quickly, the cost estimates of a building proposed to be constructed by the Central Government, in different parts of the country. These block estimates are not very precise and the same are prepared only for the purpose of obtaining administrative approval of the project and for budgetary sanctions of the project. For tendering and actual execution of the building, detailed quantities of the building are worked out and fairly accurate estimates are prepared.

## Detailed Quantity Method

This is most reliable and accurate method of valuation for cost estimation purpose for a building. This is therefore most favourable method of Courts also.

- (i) In this method, detailed quantities of all civil work items, carried out in the completed building, are worked out.
- (ii) Then prevalent rates of such civil works items, as quoted in market in year of valuation ,are adopted. These details will give correct cost estimate of the building.

## Reinstatement Method

This method of estimating cost is similar to Detailed Quantity Method of cost estimating, with a difference that depreciation is not deducted from reproduction cost. As stated earlier this is normally used while filing claim under Land Acquisition act for the non marketable properties like Temple, Masjid etc.

# DIFFERENT LIFE TERMINOLOGIES

## Economic Life

Economic life is the actual service life of the building. Well maintained building has more or less same years of economic life as planned life for such an asset. It is therefore called planned life or income yielding life of the asset. However bad or neglected maintenance and excessive wear and tear reduces economic life of the asset. In rental method of valuation economic life of the building is considered. Economic life of an R.C.C. framed building is normally considered at 60 years.

## Physical Life

Physical life of the building is the actual survival life of the building before collapse. It may be more or in some cases even less than the planned life of the building. In cost approach, some times total physical life of building is adopted. Bad workmanship, use of inferior materials, careless alterations and over loading of structures reduces physical life.

## Life due to Obsolescence

Obsolescence life is the life of building by which building becomes obsolete due to changes in life style in the society. Chawl with common toilet are best example of obsolescence. In modern time people like self contained tenements and not premises with common toilet. Individual small shops design may become obsolete in Metropolitan towns having shopping malls. Residential buildings in Industrial Zone and factory building in Residential Zone becomes obsolete due to user restrictions though its economic life as well as physical life may be more.

## Life due to Legal Constrains

Life of building may depend on legal constrains also. The building may be erected on leasehold land which has only 30 years lease period. Income from building would cease after 30 years. Valuer in such a case has to adopt total life of building as 30 years only even though its economic and physical life may be 60 years or more.

- **FACTORS AFFECTING LIFE OF BUILDING**

- Materials used in construction
- Workmanship
- Usage of Bldg.
- Soil strata foundation depth
- Weather conditions
- Design and foundation criteria
- Maintenance and repairs
- God acts like earthquake, floods etc.

# Depreciation

- This is the term used to indicate loss in money value of the asset due to age and usage. It may be due to normal wear and tear due to usage, or due to deterioration and decay on account of aging process since its creation. It could be due to obsolescence and inadequacy of the asset.
- Depreciation is an important concept, which enables a person to find out wearing out of the capital value of an asset whether it is a movable asset like machineries, vehicles or an immovable asset like buildings. Land is considered to be an **undepreciable** asset, though some land do depreciate in value because of erosion or damage to land due to natural forces like earthquake and Tsunami.

# TYPES OF DEPRECIATIONS

- i. Physical depreciation.
- ii. Depreciation due to economic obsolescence.
- iii. Depreciation due to functional obsolescence.
- iv. Depreciation due to technological obsolescence.

## Physical depreciation

This is very common. The physical depreciation occurs due to usage of the asset. It is the normal wear and tear of the asset. All similar objects do not observe similar depreciation. Quantum of this depreciation depends on several factors.

- i. Manner of usage
- ii. Environmental aspect
- iii. Natural forces aspects
- iv. Accidental Aspects

## **Economic obsolescence:**

These type of assets are under utilised. Optimum economic benefit of the land and building is not achieved.

A residential building existing on the plot which is placed in commercial zone is glaring example of economic obsolescence. Highest and Best use of land and building is not made. The asset is put to inferior usage of residence instead of commercial user resulting in an economic loss. Higher depreciation in such case will not be unreasonable.

Similarly due to legislative enactment and policies also property may remain under utilised. The policy of government to protect slums and not to permit removal of unauthorized hutments in the plot without providing free alternate accommodation to dwellers is yet another example of economic obsolescence.

Dilapidation of building or heavy structural repair cost for the building is also economic obsolescence. The structure becomes uneconomic to maintain. Due to dilapidation, repair costs becomes prohibitive. Similar situation arises when rental value of the premises in a particular locality falls severely either due to bad neighbourhood or due to migration of the population to the buildings in newly developed town centres having better amenities.

## Functional obsolescence

These types of assets are out dated and their planning and designing are of types which are contrary to the present day requirements of its users. An old palace becomes obsolete for usage as there is no demand for such palaces in the market though they are in good structural condition. Due to this functional obsolescence many palaces are converted for hotel users for which there is high demand and usage in the market. Old chawl buildings with common toilet blocks is yet another example of functional obsolescence.

A brand new machine or a computer may suffer from functional obsolescence hardly within two or three years period if more advanced technologies introduce much superior product at much lesser cost.

## Technological Obsolescence

Old load bearing structures with thick walls are not preferred now in the city areas. Every one now desires to stay in high rise R.C.C. framed structures having thin partition and external walls. This is now possible due to technological advancements. Timber structures are also now replaced by R.C.C. framed or steel framed constructions. Wooden windows are replaced by aluminium windows. Now modern technologies and planning concepts have made it possible to design and erect even an intelligent building.

# IMPORTANT METHODS OF DEPRECIATIONS

- i. Direct Appraisal Method (Lump sum depreciation).
- ii. Written down Value Method, (Accountant's Method).
- iii. Straight Line Method. (More preferred for machineries)
- iv. Constant Percentage Method. (This linear method is preferred by P.W.D. Engineers).
- v. Sinking Fund Method (This interest based method is used for buildings).
- vi. Sum of the digit method.
- vii. Declining Balance Method. (Accounts method).
- viii. Statutory Depreciation Method. (Taxation purpose)
- ix. Other modern methods of depreciation.

## Direct Appraisal Method: (Lump sum method)

In this method of estimating depreciation, the valuer decides and adopts lump sum depreciation for the asset by physical inspection of actual deterioration of the asset. An experienced valuer could arrive at an adhoc % of depreciation based on his own experience. There is no process or reasoning but it is absolutely arbitrary method based on experience. It may be useful in case of machines and for small structures like compound wall, wells, roads where wear and tear are unpredictable and even repairs and restoration costs are beyond calculations.

## Written down Value Method

This is generally adopted by Chartered Accountants for preparation of balance sheet of a company or firms for use of the company or for taxation purposes or for use of financial institutions.

Depreciation is allowed at uniform and fixed percentage. But it is not on original actual capital cost (Historic cost) but on reduced depreciated values of the previous year.

Written down value (  $V_n$  ) is denoted by formula:

$$V_n = C (1 - p)^n$$

$V_n$  = Value in the year.

$C$  = Original Capital Cost (Historical cost).

$p$  = % of rate of depreciation.

$n$  = Number of year in which value is required.

## Straight Line Method

This method of working out depreciation, is used for the machines as well as for the buildings. In this method, equal % of depreciation is allowed on its original capital cost for each year of life. This is more common for assets like plants and machineries. Depreciation amount for each year is exactly same till full cost is written off.

The formula is

$$D = (C - S) / N$$

D = Annual depreciation.

C = Original capital cost.

S = Final value or salvage value at the end of the life.

N = Total number of year of asset i.e. total life.

## Constant Percentage Method

In this method, rate of depreciation is first assumed and instead of working out depreciation separately, the formula straight away gives the net present value i.e. depreciated value. The formula for working of depreciation in this method is:

$$D = P (100 - rd)^n / 100$$

D = Depreciated value (Net present value).

P = Present day Replacement Cost.

rd = Rate of depreciation.

n = Number of years since construction(Age)

'Rd' is 1% for 100 years life and 1/2 % for 50 years life. 'Rd' is determined by dividing 100 by total estimated life  $100/50 = 0.50\%$ ,  $100/60 = 1.66\%$  and so on.

# Sinking Fund Method

This method of depreciation is widely used for estimating N.P.V. of the buildings. It is more preferred by valuers because it gives lower depreciation per year in initial years of life span of the asset and higher depreciation per year in later period of life of the asset or building. This is more in concurrence with the actual physical deterioration pattern of most of the buildings. Again it takes into account interest income available on set aside fund (Sinking Fund). It is therefore considered more appropriate method and more scientific for working out depreciation of the permanent type of buildings which has pretty long life span.

There are 4 stages of finding out % depreciation and net present value by this method.

(i) To first work out Annual Sinking Fund by formula :

$$S = \frac{R}{(1+R)^n - 1}$$

R = Rate of interest

n = Total life span in number of years

(ii) Next step is to find out accrued sum 'A' for Re.1/- in number of years age by use of formula:

$$A = \frac{(1+R)^m - 1}{R}$$

m = Age of building

R = Rate of interest

(iii) Then total depreciation is found out by formula: % Depreciation =  $100 \times S \times A$

(iv) Finally N.P.V. is found out by the use of formula:

Net Present Value = Replacement Cost - % Depreciation for age

## Sum of years' digits method

IT is a form of accelerated depreciation that is based on the assumption that the productivity of the asset decreases with the passage of time. Under this method, a fraction is computed by dividing the remaining useful life of the asset on a particular date by the sum of the year's digits. This fraction is applied to the depreciable cost of the asset to compute the depreciation expense for the period.

Sum of years' digits method attempts to charge a higher depreciation expense in early years of the useful life of the asset because the asset is most productive in early years of its life. Also the asset loses much of its productive efficiency in early years.

### Formula:

The following formula is used to calculate depreciation expense under sum of years' digits method

$$\text{Depreciation} = (\text{remaining useful life} / \text{sum of the years digits}) \times (C - S)$$

## Declining Balance Method

This is modified form of W.D.V. method used by accountants. It is more acceptable under modern methods of accounting system.

Formula for rate of annual depreciation “D”

$$D = 1 - \frac{(VS)^{1/n}}{(B)}$$

D = Rate of Depreciation/year

VS = Salvage Value

B = Original Cost of asset

n = Total life span of asset

# LAND AND BUILDING METHOD OF VALUATION

Cost approach mainly consists of estimating value of land and building separately and adding values to arrive at total cost of the property.

Characteristics of land and land valuation as well as methods of building cost estimation and methods of depreciations are already discussed.





