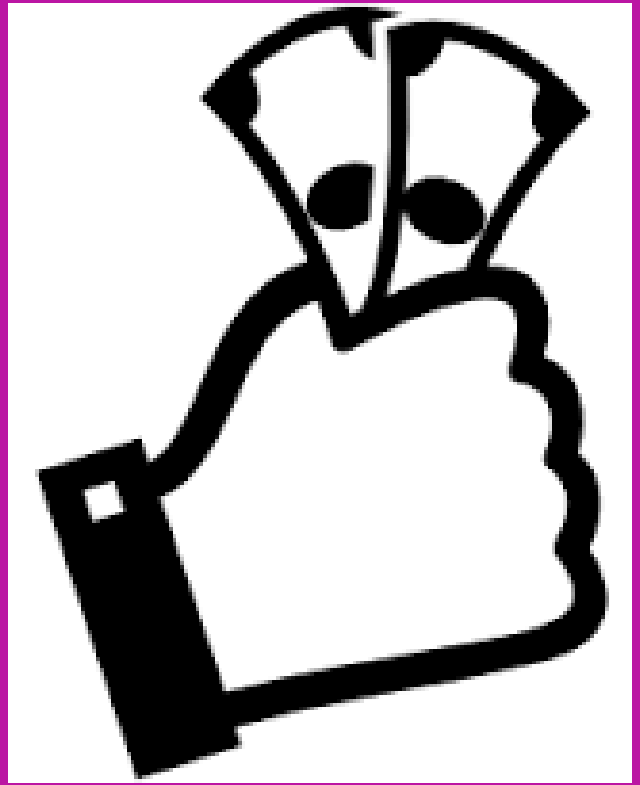
Cost approach



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Time	What	Who
Mon 15/4 16-20	Introduction & Why we need REV & Course assignment handout	Eero Valtonen & Vitalija Danivska
Mon 29/4 16-18	Bases of value	Vitalija Danivska Mikko Kuusela, JLL
Thu 2/5 16-18	Market approach	Eero Valtonen
Mon 6/5 16-18	Income approach	Eero Valtonen
Thu 9/5 16-18	Cost approach	Vitalija Danivska
Mon 13/5 16-20	Selection of the valuation approach & Use of multiple approaches	N.N, Newsec
Thu 16/5 16-18	Legal valuations/compensation valuations	Kirsikka Riekkinen
Mon 20/5 16-20	Valuation ethics (panel discussion with industry specialists)	Eero Valtonen Panel members

Plan for the day

- **Understanding the steps and considerations in valuation with a cost approach**
- **Familiarizing with special cases**
  - Residual valuation method

Cost approach

Economic principle: a buyer will pay **no more** for an asset than the cost to obtain an asset of equal utility, whether by purchase or by construction, unless undue time, inconvenience, risk or other factors are involved.

The approach provides an indication of value by **calculating the current** replacement or reproduction cost of an asset **and making deductions** for physical deterioration and all other relevant forms of obsolescence.

The cost approach should be applied under following circumstances:

a) Participants ***would be able to recreate*** an asset with substantially the same utility as the subject asset, **without regulatory or legal restrictions**, and the asset could be recreated quickly enough that a participant would not be willing to pay a significant premium for the ability to use the subject asset immediately

b) In cases when market and income approaches cannot be applied and the ***asset is not directly income-generating***, and/or

c) The **basis of value** being used is fundamentally based on replacement cost, such as ***replacement value***

The cost approach may be applied under following circumstances:

a) Participants might consider recreating an asset of similar utility **but there are potential legal or regulatory hurdles** or significant time involved in recreating the asset,

b) When the cost approach is being used as a **reasonableness check** to other approaches, and/or

c) When **construction of a new asset is proposed** or when an **asset has been recently constructed**, such that there is a high degree of reliability in the assumptions used in the cost approach

Example

The subject property consists of a 5ha site that is developed with a 2-storey 25,000 sqm owner-occupied office building. The building is 10 yrs old.

The roof is leaking and must be repaired. Once the roof leak is repaired, the building will be in average conditions for a building of its age.

The building contains an area of 1,000 sqm that originally was a computer suite with specially designed cooling, antistatic finishes, security and fire protection that are not needed for general office use. The computer has been removed and the suite is now being used as standard office space.

The air conditioning in the building is less efficient than a new system and the building's insulation is also of a lower standard than new buildings.The interior lighting in the building is also of an outdated specification and less effective than new systems.

Example continues

There are no other office buildings in the city or the surrounding region that are larger than 2,500 sqm, and these are rarely bought or sold. When the property was built, the city was in an area where government grants were available to encourage inward investment but these grants are no longer available.

Steps in applying cost method

1. Estimate the value of the land
2. Estimate the current cost of the building (replacement cost or reproduction cost)
3. Estimate depreciation and deduct it from the cost as determined in Step 2 to adjust the cost to its present condition
4. The value is then equal to:

   land value + current cost of the building - depreciation

Step 1. Estimating Land Value

When applying the cost approach to real property care needs to be taken in reflecting the value attributable to the land element.

The **land value** is determined having regard to the **highest and best use** of the property as a whole, including any interdependent assets.

> As a result, all interdependent assets (land, buildings and improvements, plant and equipment) should be valued using consistent assumptions, whether based on the existing use or an alternative use.

Step 1. Estimating Land Value

Usually done by market approach

Determining:

- Land use, size, shape, location and physical features
- Find close comparables & make necessary adjustments

Step 2. Estimating the current cost of building

Replacement cost vs Reproduction cost

Replacement cost method: indication of value by calculating the ***cost of a similar asset offering equivalent utility***

Reproduction cost method: indication of value by calculating the ***cost to recreating a replica*** of an asset

*__Summation__ method: a method that calculates the value of an asset by the addition of the separate values of its component parts.

The choice of method will depend upon:

1) The nature of the asset
2) The nature of available comparative cost data, and
3) The purpose of the valuation
4) Whether market participants are more likely to consider a modern equivalent asset as an alternative to the asset being valued or whether they would be more likely to require a direct replica.

Step 2. Estimating the current cost. Considerations

Should capture all the costs that would be incurred by a typical participant

Direct & Indirect costs

- If building is a **generic** replacement - acceptable and normal practice to rely on standard published building cost data.
- If the building is **complex** or an actual replacement is to be priced – may need consulting with building cost expert
- If building is **recently constructed** & actual cost evidence is available – it should be used

Step 2. Estimating the current cost.

There are multiple techniques to determining building costs, e.g.

- **Quantity survey**
  - Carefully studying architectural and engineering plans – requires special knowledge
- **Lump Sum**
  - Requires a lot of experience and knowledge on building methods systems and costs. Usually done by contractors.
- **By Unit Area or Volume**
  - Most common method. Cost of building is determined by multiplying area/volume by its unit area per sq.m. or cubic m.

Step 2. Cost considerations

Valuers should be cautions when including **both financing costs and profit margins**

When costs are derived from actual, quoted or estimated prices by third party suppliers or contractors, these costs will already include a third parties' desired level of profit.

Adjustments may need to be made to reflect the following:

a) **Cost fluctuation**s between the date on which this cost was incurred and the valuation date, and

b) **Any atypical or exceptional costs**, or savings, that are reflected in the cost data but that would not arise in creating an equivalent.

Example: replacement cost

Modern equivalent would not include the obsolete computer suite, so the replacement cost would be for a building consist of standard office space.

Research – based building costs include site improvements, access roads, parking areas, services, contractor's profit, etc. but excludes professional fees of 2,000,000€.

This example: typical buyer of a similar building, hence, no need to consider the cost of financing the construction.

If analysing the feasibility of an actual construction project, the cost of financing the stage payments can be carried out based on the actual payment profile.

A calculation can also be made of the benefit that they buyer would accrue from the unpaid balance of the construction cost of the same period.

Step 3. Estimating depreciation. Concept

Depreciation - a method for systematically expensing capital expenditure over time.

Different from financial reporting or tax law meaning.

Step 3. Estimating depreciation. Concept

Depreciation adjustments are considered for the following types of obsolescence:

a) **Physical obsolescence:** resulting from its age and usage

b) **Functional obsolescence**: resulting from inefficiencies in the subject asset compared to its replacement such as its design, specification or technology being outdated

c) **External or economic obsolescence:** loss due to economic or locational factors external to the asset. This can be temporary or permanent

Step 3. Depreciation. Considering building's lifespan

Physical life – how long the asset could be used before it would be worn out or beyond economic repair, assuming routine maintenance but disregarding any potential for refurbishment or reconstruction. It will reflect the degree of physical obsolescence to which the asset is subject

Economic life – how long it is anticipated that the asset could generate financial returns, or provide a non-financial benefits in its current use. It will be influenced by the degree of functional or economic obsolescence to which the asset is subject.

Physical life limits economic life.

Example. Building's lifespan

Typically office buildings have shorter economic lifespan than physical.

Typical physical lifespan of office buildings – 50 years

Typical economic life – 40 years

Step 3. Depreciation considerations. Physical obsolescence

1. **Curable physical obsolescence**, ie, the cost to fix/cure the obsolescence; or
2. **Incurable physical obsolescence** which considers asset's age, expected total and remaining life where adjustment for physical obsolescence is equivalent to the proportion of the expected total life consumed. Total expected life may be expresses in any reasonable way, including expected life in years, mileage, units products, etc.

Depreciation profiles

For some classes of asset a regular pattern, or profile of depreciation can be determined over the whole life of the asset, thus enabling the appropriate rate of depreciation at the valuation date to be determined. Typical profiles include:

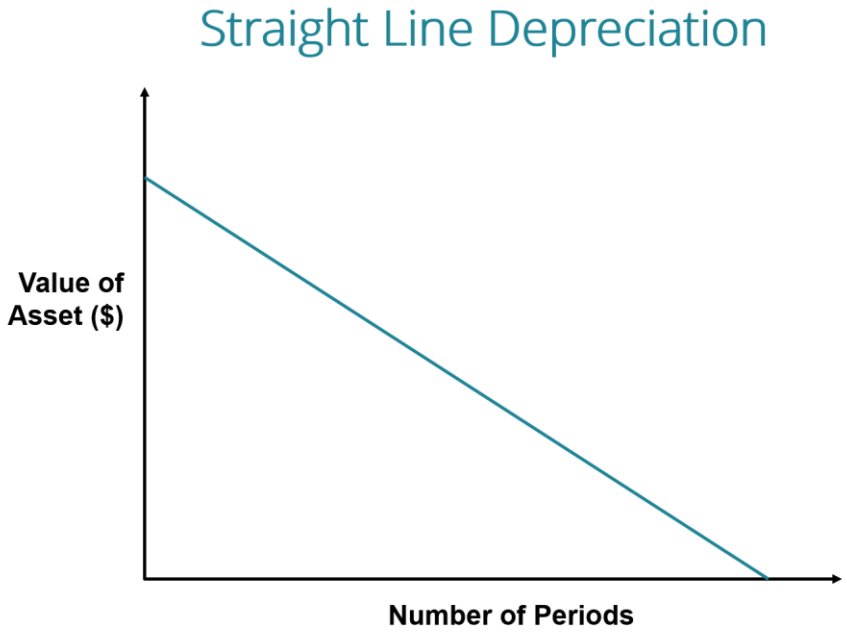
- **Straight-line:** this deducts the same proportion of the original cost for each period of the estimated life of the asset;
- **Diminishing value:** this deducts a constant percentage rate from the cost at the start of the previous period over the estimated life of the asset;
- **S-curve:** this deducts different percentage rates for each period over the estimated life of the asset. An example would be where initial depreciation is higher, reduced in the middle years and then increases again towards the end of the asset's life.

Straight-line depreciation

The simplest

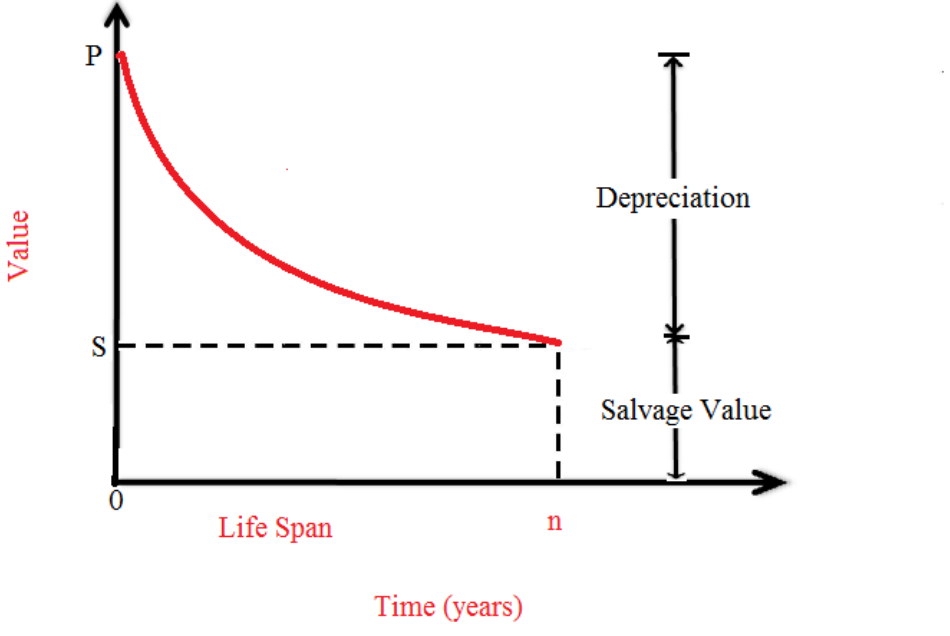
Deducts the same proportion of the original cost for each period of the estimated life of the asset.

Depreciation Cost of Buildings = Gross replacement cost * (Estimated remaining life/Estimated total life)



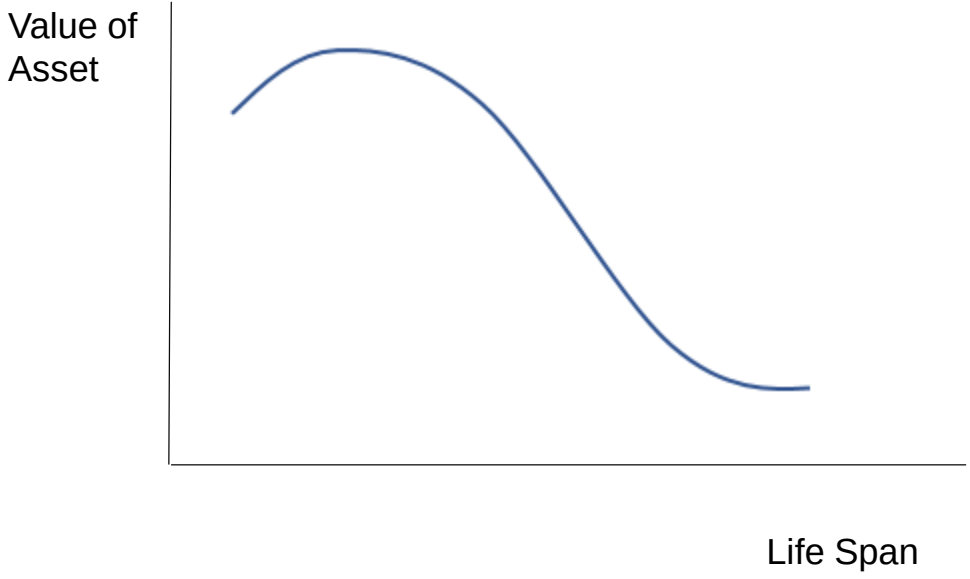
Diminishing value depreciation

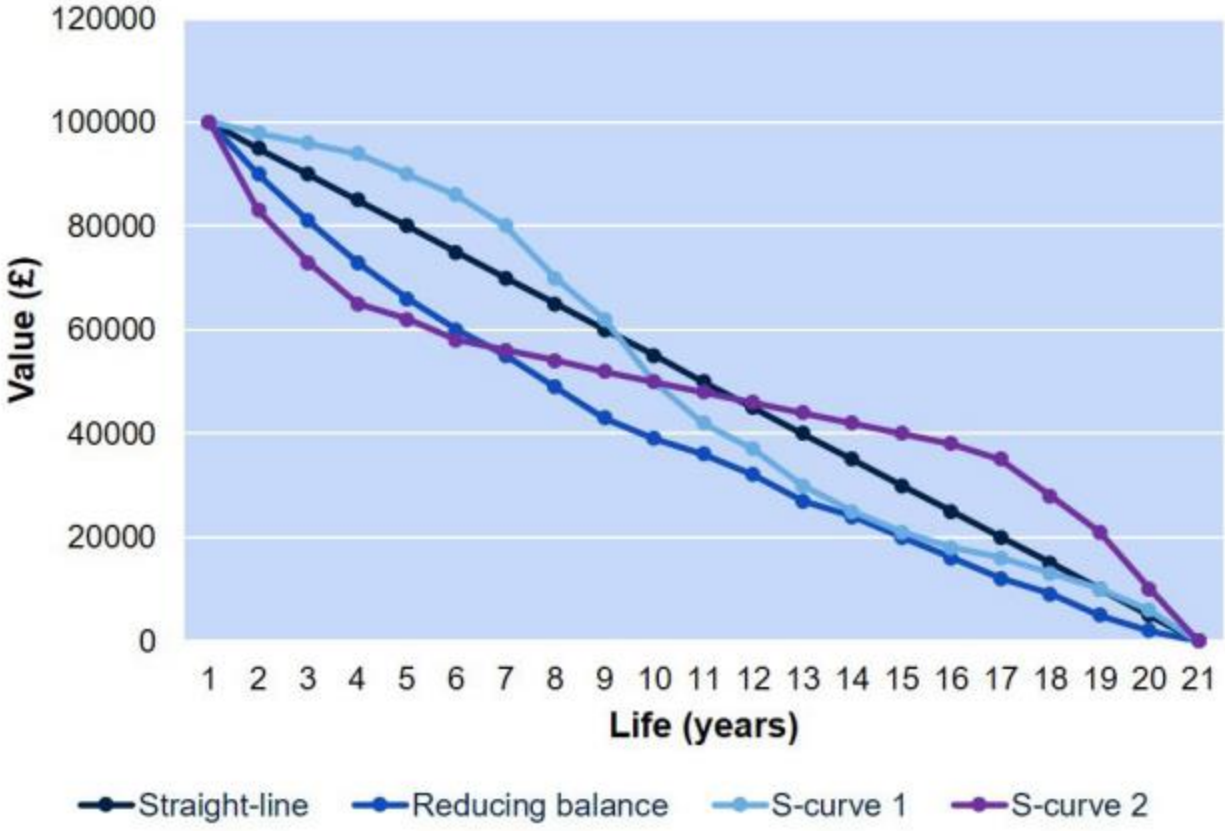
Deducts a constant percentage rate from the cost at the start of the previous period over the estimated life of the asset



S-curve depreciation

Deducts different percentage rates for each period over the estimated life of the asset.





Source: RICS guidance note (2018). Depreciated replacement cost method of valuation for financial reporting

Example. Physical obsolesce.

The leaking roof is deferred maintenance and the measurement is the cost to cure, e.g. 500,000€.

Available market evidence for the relative values of new and older buildings suggests that a “straight-line” depreciation profile is appropriate.

25% deduction for incurable physical obsolescence is to be applied to the replacement cost after deduction of the roof repair.

Step 3. Depreciation considerations. Functional obsolescence

Inadequate items – measured by considering the cost of correcting the inadequacy compared to the value gained.

Super adequate/Over-engineered items – measured by the excess capital cost compared with the modern equivalent asset.

Excess capital cost – addressed by using the replacement cost as a basis of the calculation.

Excess operating costs examples:

- The subject asset may require more operators compared to a modern equivalent asset
- The subject asset may have a lower rate of productivity compared to a modern equivalent
- The subject asset may produce more scrap or waste material compared to a modern equivalent

Example. Functional obsolescence

The obsolete computer area - over-engineered for general office use.

Not included in replacement costs, thus, no functional obsolescence for this item.

Thermal efficiency.

The additional annual cost for operating the heating and cooling systems is 100,000€/annually and will be experienced for the building's remaining economic life of 30 yrs.

Discount rate!

Interior lighting.

Not to a current specification but this does not result in a higher direct operating cost

Might limit configuration of workstations or employee's efficiency.

Need to consult market participants for appropriate deduction

Step 3. Depreciation considerations. Economic obsolescence

Deducted after physical and functional obsolescence.

For real estate, examples are:

1. Adverse changes to demand for the products or services produced by the asset;
2. Oversupply in the market for the asset;
3. A disruption or loss of a supply of labour or raw material, or
4. The asset being used by a business that cannot afford to pay a market rent for the assets and still generate a market rate of return.

Example. Economic obsolescence.

Change in the economic environment

Withdrawal of government grants

No comparable properties

Caused reduced demand generally in the area which has had an observable effect on prices for other office buildings.

Step 4. Calculating the value

Land Value + Building costs (also indirect costs) - depreciation

Special cases

Plant and Equipment

Intangible assets such as operating software, technical data, production records and patents can have an impact on the value of plant and equipment

Might be included in valuation and might need to be considered under Intangible Assets in IVS

Consideration **must** be given to the degree to which the asset is attached to, or integrated with, other assets. E.g.

a) Assets may be permanently attached to the land and could not be removed without substantial demolition of either the asset or any surrounding structure or building

b) And individual machine may be part of an integrated production line where its functionality is dependent upon other assets,

c) And asset may be considered to be classified as a component of the real property, e.g. HVAC.

Real Property Interest

Valuation might be required for: secured lending, sales and purchases, taxation, litigations, compensation, insolvency proceedings and financial reporting.

This approach is applied through the depreciated replacement cost method.

Special considerations are required for:

- Hierarchy of interests (e.g. sub-lease)
- Rent (contract rent – the rent payable under the terms of the actual lease. It may be fixed for the duration of the lease or variable).

Development Property

Where redevelopment is required to achieve the highest and best use or where improvements are being contemplated or are in progress at the valuation date.

Important: It is ***valuer's*** responsibility to understand the purpose of valuation.

Sensitivity: Residual value or land value of development property can be very sensitive to changes in assumptions or projections concerning the income or revenue to be derived from the completed project.

Two main approaches to development property valuation:

- Market approach
- Residual method

Residual method

Based on the completed "**gross development value**" and the deduction of development costs and the developer's return to arrive at the **residual value** of the development property.

- Establishing the development costs is a key component of the residual approach
- Practitioner should provide **sensitivity analyses** for each significant factor that might affect the value

Residual method

Following elements require consideration in any application:

- **Completed property value**
- **Construction costs**
- **Consultants fees**
- **Marketing costs**
- **Timetable**
- **Finance costs**
- **Development profit**
  - Allowance for development profit or the return that would be required by a buyer of the property;
  - will reflect the level of risk.
- **Discount rate. Reflect**
  - if cash flows are based on current values and costs – the risk of these changing between valuation date and completion date.
  - If CFs are based on prospective values and costs, the risk of inaccurate projects