

FINANCIAL ACCOUNTING AND FINANCIAL STATEMENT ANALYSIS

BALANCE SHEET

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1. Assets

As seen in “Principles and Standards”, the balance sheet is the principal financial statement prepared by any organisation. It is normally prepared once a year, with interim reporting as required by the law. The main components in a balance sheet are assets, liabilities and shareholders’ equity.

Assets are the first and the foremost category in the balance sheet. Assets are defined by the IASB as "*resources controlled by an enterprise as a result of past events and from which future economic benefits are expected to flow to the enterprise*".

To make it simple, an item will be considered as an asset if (1) it can provide future benefits to the firm, (2) the firm has the right to receive the benefits and (3) the transaction that gives the right has occurred.

Assets can be classified into two broad categories:

- current assets;
- fixed assets.

Current assets are cash or cash equivalents, or assets that will be converted into cash within one operating cycle. Current assets can be further classified into:

- cash and cash equivalents;
- short-term investments;
- accounts receivable or receivables;
- inventories;
- pre-paid expenses.

Fixed assets can be classified into:

- long-term investments;
- property, plant and equipment;
- intangible assets;
- other fixed assets.

For an item to be recognised as an asset, we first check if it satisfies the criteria. Once it is recognised as an asset, then we go on to classify the item as current or fixed. Once the classification has been made, the asset has to be valued. Then the item has to be entered into the balance sheet in an appropriate place. Under the basic accounting equation, whenever an asset is entered into the balance sheet, there will be a corresponding entry either in the statement of comprehensive income or in the liabilities or under some other asset. We will essentially deal with the valuation issue here.

Cash is recognised as the cash in hand and cash held in accounts with banks. Normally a note is provided if there are differences between restricted cash or cash in restricted accounts, but most balance sheets do not carry this information.

Pre-paid expenses are assets created by payment in advance for future expenses. As time passes, these assets expire. For example, one year’s rent might be paid to a landlord in advance. At the end of six months half the value of the pre-paid rent would have expired. The

value of pre-paid rent as carried in the balance sheet will therefore be the amount yet to expire. One exception to this is deposits with statutory authorities that are returnable only when the service is terminated. For example, port authorities or an electricity company may ask for a deposit. Such items will be carried forever. These are carried as a part of current assets, as these deposits can be called back 'on demand.' The firm may be able to withdraw these deposits at will, though it may not do so for a long time. When it does it is liquidating assets classified under the heading 'current assets'.

1.1 Property, plant and equipment

IAS 16 defines property, plant and equipment as tangible assets that:

- a) are held for use in the production or supply of goods and services, for rental to others, or for administrative purposes, and
- b) are expected to be used during more than one period.

1.1.1 Measurement at cost

Items of property, plant and equipment are initially recognised at cost.

Cost comprises:

- the purchase price, after deducting trade discounts, rebates and refundable taxes such as VAT;
- costs directly attributable to bringing the asset to the location and condition necessary for it to be capable of operating (cost of site preparation, installation and assembly costs...);
- and eventually costs of dismantling and removing the item and restoring the site.

The cost is the cash price equivalent at the recognition date. If payment is deferred beyond normal credit terms, the asset is measured at the present value of future payments.

Example 1:

On 1.01.N, a company acquires an asset. In agreement with the supplier, the price will be paid in 3 instalments:

- CU 20'000 on delivery,
- CU 10'000 one year later,
- CU 10'000 two years later.

The company might obtain a loan from its bank at an interest rate of 6%.

The cost of the asset would not be CU 40'000 but:

$$20'000 + \frac{10'000}{1.06} + \frac{10'000}{(1.06)^2} = 38'334 \text{ CU}$$

1.1.2 Depreciation

Depreciation is the process by which the cost of any fixed asset is allocated to the revenue generated by the use of that asset in the productive process. We use the terms depreciation for fixed assets, amortisation for intangible assets and depletion for natural resources. For an accountant, depreciation is an allocation exercise. It stems from the 'matching principle'. According to this principle the profit for the period is to be calculated after taking into account all the expenses and resources that have been utilised to generate those revenues.

Depreciation is therefore the process by which the cost of acquisition or value (in the case of assets which have been revalued, as seen in the next section) is systematically and rationally allocated to the revenue over the useful life of the asset. Please note that for an accountant, depreciation is not related to the wear and tear of the asset or its economic utility. The depreciated value of an asset need not be an indicator of its utility.

The depreciable amount of the asset is the cost of the asset less its residual value.

$$\text{Depreciable amount} = \text{cost} - \text{residual value}$$

The residual value is the estimated amount that the enterprise would obtain from disposal of the asset if it were already of the age and in the condition expected at the end of its useful life.

The useful life of the asset is the period over which the enterprise expects to use it. If the enterprise plans to keep the asset until it is of no further use, the useful life equals the total life of the asset. But if the company plans to use the asset for a limited number of years and then to sell it on the market, the useful life differs from the total life.

Example 2:

On 1.01.N, a company acquires an asset whose cost is CU 10'000. It plans to use it for 3 years and then to sell it for CU 4'000.

Depreciable amount = 10'000 – 4'000 = 6'000 CU

Useful life = 3 years.

Depreciation for year N (straight-line method) = 6'000 / 3 = 2'000

In many countries, the residual value is not deducted from the cost of the asset. In return, depreciation is not based on the useful life, but on the total life of the asset.

Example 2 (continued):

The corresponding amounts would be:

Depreciable amount = 10'000

Depreciation for year N = 10'000 / 5 = 2'000

As shown in this example, both solutions are equivalent, provided that the residual value and the useful life are correctly estimated.

There are two broad methods of depreciation. They are:

- the straight-line method,
- the accelerated methods.

Under accelerated there are two methods used, namely:

- the diminishing-balance method,
- the 'sum-of-the-years' method.

Analysts should concern themselves with the following two major issues:

- The choice of depreciation method. Although IFRS allow the use of any method, full disclosure of the method used must be given. It is also presumed that the methods used will be reviewed periodically.
- Irrespective of the method used, a re-estimate of the useful life must be made periodically.

Let us now discuss the straight-line method and accelerated methods of depreciation. In all the methods we use certain universal terms. Depreciation refers to the depreciation as charged to the statement of comprehensive income. This is deducted from the value of the asset. Cumulative depreciation charged on the asset from the beginning is called cumulative depreciation. This is deducted from the original cost of the asset and the reduced value of the asset is known as the carrying amount or the book value of the asset.

Straight-line method: In this method, the value of the asset is charged to the revenue uniformly over the useful life of the asset. The major advantage of this method is simplicity.

Example 3:

The cost of acquisition, also known as the original value, of an asset is CU 5'000 with a useful life of 5 years. Calculate the annual depreciation. Assume that the asset has no residual value after its useful life.

$$\text{Depreciation expense} = \frac{\text{cost} - \text{residual value}}{\text{useful life}} = \frac{5'000 - 0}{5} = 1'000 \text{ CU}$$

Year	Depreciation expense	Cumulative depreciation	Ending carrying amount
1	1'000	1'000	4'000
2	1'000	2'000	3'000
3	1'000	3'000	2'000
4	1'000	4'000	1'000
5	1'000	5'000	0
	5'000		

Accelerated methods are used to reflect the fact that during the earlier years of the life of an asset, its productivity is higher and, hence, that more of the value of the asset should be depreciated during these years. Let us consider the most generally used method, i.e. the diminishing balance method. Under this method, a multiple of the straight-line rate times the net book value is used as the depreciation. One of the methods used here is the double-declining-balance depreciation:

Depreciation = 2 · straight – line rate · book value at the beginning of the year, where :

$$\text{Straight – line rate} = 1 / \text{estimated useful life.}$$

Example 3 (continued):

Let the cost of acquisition, also known as the original value, of an asset be CU 5'000 with a useful life of 5 years. Calculate the annual depreciation on the basis of the double declining balance method. Assume no salvage value.

$$\text{Depreciation rate} = 2 \cdot \text{straight – line rate} = 2 \cdot 20\% = 40\%$$

Year	Beginning carrying amount (1)	Depreciation expense (2) = (1) · 40%	Cumulative depreciation (3)	Ending carrying amount (4) = (1) – (2)
1	5'000	2'000	2'000	3'000
2	3'000	1'200	3'200	1'800
3	1'800	720	3'920	1'080
4	1'080	432	4'352	648
5	648	259	4'611	389
		etc.		

Normally, with this method, the carrying amount of the asset never becomes zero. In some countries an adjustment is made, which consists in switching to straight-line depreciation when the depreciation expense is less than the amount obtained by dividing the beginning book value by the residual useful life.

In other terms:

$$\text{Depreciation expenses} = \text{maximum} \left(\text{accelerated depreciation}; \frac{\text{beginning carrying amount}}{\text{residual useful life}} \right)$$

With this adjustment, the previous table would be:

Year	Beginning carrying amount (1)	Depreciation expense (2) = (1) · 40%	Cumulative depreciation (3)	Ending carrying amount (4) = (1) – (2)
1	5'000	2'000	2'000	3'000
2	3'000	1'200	3'200	1'800
3	1'800	720	3'920	1'080
4	1'080	540	4'460	540
5	540	540	5'000	0
		5'000		

Notes:

year 1: Depreciation expense = Max (5'000 · 40%; 5'000 / 5) = 2'000

year 2: Depreciation expense = Max (3'000 · 40%; 3'000 / 4) = 1'200

year 3: Depreciation expense = Max (1'800 · 40%; 1'800 / 3) = 720

year 4: Depreciation expense = Max (1'080 · 40%; 1'080 / 2) = 540

year 5: Depreciation expense = Max (540 · 40%, 540 / 1) = 540

Another accelerated method used in the US is the Sum-Of-The-Years-Digits method. With this method, the depreciation expense is:

$$\text{Depreciation} = (\text{cost} - \text{salvage value}) \cdot \frac{\text{residual useful life}}{\text{sum of residual useful lifes}}$$

Example 3 (continued):

Residual useful life is measured at the beginning of the year:

5	years in year 1,
4	years in year 2,
3	years in year 3,
2	years in year 4,
<u>1</u>	year in year 5.
15	

The depreciation table is thus:

Year	Depreciation rate	Depreciation expense	Cumulative depreciation	Ending carrying amount
1	5/15	1'667	1'667	3'333
2	4/15	1'333	3'000	2'000
3	3/15	1'000	4'000	1'000
4	2/15	667	4'667	333
5	1/15	<u>333</u>	5'000	0
		5'000		

It is obvious from the above examples that, although the actual utilisation of the asset was the same, the depreciation expense varies with the method used. The analyst should therefore be careful when interpreting these results in financial statements.

Below are examples of disclosure relating to the depreciation of tangible fixed assets.

Boeing (USA)

Property, plant and equipment are recorded at cost, including applicable construction-period interest, and depreciated principally over the following estimated useful lives: new buildings and land improvements, from 20 to 45 years; and machinery and equipment, from 3 to 13 years. The principal methods of depreciation are as follows: buildings and land improvements, 150% declining balance; and machinery and equipment, sum-of-the-years' digits. The Company periodically evaluates the appropriateness of remaining depreciable lives assigned to long-lived assets subject to a management plan for disposition.

Nestlé (Switzerland)

Tangible fixed assets are shown in the balance sheet at their historical cost. Depreciation is provided on the straight-line method so as to amortise the initial cost over the estimated useful lives, which are as follows:

Buildings	25-50 years
Machinery and equipment	10-15 years
Tools, furniture, information technology and sundry equipment	3-8 years
Vehicles	5 years

Sony (Japan)

Property, plant and equipment are stated at cost. Depreciation of property, plant and equipment is principally computed on the declining-balance method for Sony Corporation and Japanese subsidiaries and on the straight-line method for foreign subsidiary companies at rates based on estimated useful lives of the assets, principally ranging from 15 to 50 years for buildings and from 2 years up to 10 years for machinery and equipment. Significant renewals and additions are capitalised at cost. Maintenance and repairs, and minor renewals and improvements are charged to income as incurred.

1.1.3 Valuation at fair value

Property, plant and equipment have traditionally been valued at cost. However, IAS 16 provides for upward revision of the value of these assets. The logic for this is that, as a result of the effects of inflation, the balance sheet can become a virtually meaningless agglomeration of dissimilar costs. As the assets are represented at their historical costs, their fair value could have no relation with their valuation in the balance sheet. This renders the analysis of these financial statements meaningless.

Hence, IAS 16 allows valuation of assets at their "fair value", defined as "*the amount for which the asset could be exchanged between knowledgeable, willing parties in an arm's length transaction*". When there is an active market for this asset, the best estimation of fair value is the market value. In the absence of an active market, fair value is determined by discounting future cash flows.

The standard also stipulates that, when revaluation is undertaken, it should be done with sufficient regularity (i.e. not necessarily every year). It also suggests that if any asset is revalued then all the assets in that group should be revalued.

This brings us to the concept of depreciation treatment of revalued assets. When an asset is revalued, the increase in value is taken to the revaluation surplus, which is part of equity. Periodic depreciation as applicable to the revaluation is an expense taken into account to calculate the profit of the year. Nevertheless, IAS 16 allows firms to transfer from the revaluation surplus to retained earnings an amount equal to the difference between depreciation based on the revalued amount and depreciation based on the asset's historical cost.

The revaluation of an asset generates deferred taxes that are deducted from the revaluation surplus.

Example 4:

An item of equipment was acquired on January N-3 for CU 100'000 and was expected to have a life of 5 years. On December 31, N-1, it was revalued to having a fair value of CU 90'000. The tax rate of the company is 30%.

Fair value of the asset on December 31, N-1	:	90'000
Carrying amount of the asset on revaluation date: $100'000 - (3 \cdot 20'000) =$		<u>40'000</u>
Difference		50'000
Deferred taxes: $50'000 \cdot 30\% =$		<u>-15'000</u>
Revaluation surplus		35'000

Balance sheet on December 31, N-1:

		Amount	Variation
Assets	Equipment	90'000	+ 50'000
Liabilities	Deferred taxes	15'000	+ 15'000
Equity	Revaluation surplus	35'000	+ 35'000

Statement of comprehensive income for year N-1:

	Amount
Profit for the year	0
Other comprehensive income Change in revaluation surplus	35'000
Total comprehensive income	35'000

Residual useful life of the asset on December 31, N-1: 2 years

Subsequent depreciation charge: $90'000 / 2 =$	45'000
Depreciation calculated on historical cost: $100'000 / 5 =$	<u>20'000</u>
Difference	25'000

Of which:

Decrease of revaluation surplus (70%):	17'500
Decrease of deferred taxes (30%):	7'500

Balance sheet on December 31, N:

		Amount	Variation
Assets	Equipment	45'000	- 45'000
Liabilities	Deferred taxes [variation = 30% (25'000)]	7'500	- 7'500
Equity	Revaluation surplus [variation = 70% (25'000)]	17'500	- 17'500
	Retained earnings (variation = - 37'500 + 17'500)	- 20'000	- 20'000

Statement of comprehensive income for year N:

		Amount
Revenues	Income taxes (decrease of deferred taxes)	7'500
Expenses	Depreciation	<u>45'000</u>
Profit for the year		- 37'500
Other comprehensive income		<u>0</u>
Total comprehensive income		- 37'500

When there is a decrease in the value of the asset:

- If the asset had not been revalued before, the impairment loss is recognized as an expense.
- If the asset had been revalued upwards before, then first the revaluation surplus is reduced and only the residual impairment is recognized as an expense.

Example 5:

A plot of land was acquired on January N-8 for CU 100'000. On December 31, N-4, it was revalued to CU 150'000. On December 31, N, its realisable value fell to CU 80'000.

The tax rate of the company is 30%.

Balance sheet on December 31, N-4:

		Amount	Variation
Assets	Land	150'000	+ 50'000
Liabilities	Deferred taxes	15'000	+ 15'000
Equity	Revaluation surplus	35'000	+ 35'000

Balance sheet on December 31, N:

		Amount	Variation
Assets	Land	80'000	- 70'000
Liabilities	Deferred taxes	0	- 15'000
Equity	Revaluation surplus	0	- 35'000
	Retained earnings	- 20'000	- 20'000

Statement of comprehensive income for year N:

			Amount
Revenues		Income taxes (decrease in deferred taxes)	15'000
Expenses		Impairment loss [(150'000 – 80'000) – 35'000]	- 35'000
Loss for the year			- 20'000
Other comprehensive income		Change in revaluation surplus	- 35'000
Total comprehensive income			-55'000

The above example shows how to deal with revaluations. The biggest drawback of this method is non-uniformity in fair value. This is where the analyst should be very careful. If fair value is correctly determined, then this method is more informative than the historical cost method. Revaluation of assets is, however, not allowed in all countries (it is forbidden in the US in particular).

1.2 Investment property

In addition to property, plant and equipment (i.e. assets that are held for use in the production or supply of goods and services, for rental to others, or for administrative purposes), companies may have fixed assets held to earn rentals or for capital appreciation. These assets are called "investment property". A typical example of such assets is an office building that an enterprise leases out to other companies.

Because they are investments, these assets are submitted to the specific valuation rules contained in IAS 40.

An investment property is measured initially at its cost. After recognition, though, the owner can choose to value the asset either at cost or at fair value, provided that the same policy is applied to all of its investment property.

The fair value of investment property must reflect the market conditions at the balance sheet date.

IAS 40 states that the best evidence of fair value is given by current prices in an active market for similar property.

In the absence of an active market, fair value may be estimated from a variety of methods including:

- adjusting current prices of properties of a different nature, condition or location,

- adjusting recent prices of similar properties on less active markets,
- discounting estimates of future (pre-tax) cash flows that the investment property should generate.

If the fair value model is chosen, revaluation rules differ significantly from those applicable to property, plant and equipment:

- 1) The fair value must be measured at each balance sheet date (whereas IAS 16 requires only periodic revaluation).
- 2) Changes in fair value are recognised immediately in the profit of the year (according to IAS 16, they are recognised directly in equity).

In addition, because fair value is re-measured at each reporting date, there is no need to depreciate investment property when the fair value model is used.

Example 6:

A company owns an office building leased to other companies. The last operating cash flow generated by this building was CU 100'000 (before tax). On 31.12.N-1, its fair value was CU 1'150'000.

The company plans to let this building for 5 years and then to sell it on the market at CU 1'000'000.

The interest rate applicable to office buildings is 6%.

Expectations are as follows ('000 CU):

	N+1	N+2	N+3	N+4	N+5
Pre-tax operating cash flow	105	130	110	105	100

Present value of future cash flows:

$$\text{On 31.12.N: } \frac{105}{1.06} + \frac{130}{(1.06)^2} + \frac{110}{(1.06)^3} + \frac{105}{(1.06)^4} + \frac{100+1'000}{(1.06)^5} = 1'212 \text{ CU}$$

$$\text{On 31.12.N+1: } \frac{130}{(1.06)} + \frac{110}{(1.06)^2} + \frac{105}{(1.06)^3} + \frac{100+1'000}{(1.06)^4} = 1'180 \text{ CU}$$

$$\text{On 31.12.N+2: } \frac{110}{1.06} + \frac{105}{(1.06)^2} + \frac{100+1'000}{(1.06)^3} = 1'121 \text{ CU}$$

$$\text{On 31.12.N+3: } \frac{105}{1.06} + \frac{100+1'000}{(1.06)^2} = 1'078 \text{ CU}$$

$$\text{On 31.12.N+4: } \frac{100+1'000}{1.06} = 1'038 \text{ CU}$$

$$\text{On 31.12.N+5: } 1'000 \text{ CU}$$

If the company applies the fair value model to investment property, the financial statements will be:

Statement of comprehensive income	N	N+1	N+2	N+3	N+4	N+5
Variation in the fair value of investment property	+62	-32	-59	-43	-40	-38
Profit for the year	62	-32	-59	-43	-40	-38
Other comprehensive income	0	0	0	0	0	0
Total comprehensive income	62	-32	-59	-43	-40	-38

Balance sheet		31.12.N	N+1	N+2	N+3	N+4	N+5
Assets	Investment property	1'212	1'180	1'121	1'078	1'038	1'000
Equity	Retained earnings	62	30	-29	-72	-112	-150

The following extracts provide examples on how companies account for investment property:

Telefonica (Spain)

Investment properties are carried at cost, net of accumulated depreciation and any accumulated impairment losses. Land is not depreciated. Other investment properties are depreciated over their estimated useful life on a straight-line basis.

Baloise (Switzerland)

Investment properties are recognised at fair market value using the discounted cash flow (DCF) method. This is determined internally each year by trained experts by using assumptions approaching market conditions. The fair market values are derived primarily from the future cash flows (net cash flows from rental income, maintenance expenses and administrative costs) and by means of mathematical methods from comparable transactions [...] Changes in market value are recognised in income immediately in the period in which they arise as realised book gains/losses.

1.3 Intangible assets

Intangible assets are non-monetary assets without physical substance. They include a variety of different items (patents, copyrights, licences, computer software, development costs, brand names, customer lists, goodwill, etc.).

1.3.1 Criteria for recognition

As all other assets, an intangible asset is recognised if, and only if:

- it is probable that it will generate future economic benefits (i.e. positive cash flows),
- its cost can be measured reliably.

Nevertheless, it is more difficult to ascertain whether these conditions are met for intangible than for tangible assets.

If the asset has been acquired by an enterprise, its cost can easily be measured since there has been a transaction. Acquired intangible items are thus generally recognised as assets at acquisition cost, provided that future economic benefits are likely.

If the asset has been created by the enterprise itself, measuring its cost reliably is more difficult because the corresponding expenses cannot generally be easily identified. Furthermore, in the absence of any transaction, the market value of the item cannot be estimated reliably and there is less confidence that the asset will generate positive cash flows. This is why IAS 38 focuses on internally generated intangibles.

To assess whether an internally generated intangible asset meets the criteria for recognition, IAS 38 identifies two phases:

- a research phase,
- a development phase.

Research is defined as “*an original and planned investigation undertaken with the prospect of gaining new scientific or technical knowledge and undertaking.*”, in contrast to development, which means, “*the application of research findings or other knowledge to a plan or design for the production of new or substantially improved materials, devices, products, processes, systems or services prior to commencement of commercial production or use*”.

IAS 38 specifies that,

- costs incurred in the research phase should be expensed immediately;
- if costs incurred in the development phase meet the recognition criteria for intangible assets, such costs should be capitalised. However, once costs have been expensed during the development phase, they cannot be capitalised later.

The standard makes a distinction between the research and development phases. The reasoning behind this treatment is that during the research phase, the enterprise cannot clearly demonstrate that the expense will result in a saleable product in the future or that any identifiable future economic benefit will accrue from it.

During the development phase, however, and if it is possible to demonstrate that future economic benefits will accrue, IAS 38 allows for capitalisation of the expenses, provided that the enterprise can demonstrate all of the following:

- the technical feasibility of completing the intangible asset;
- its intention to complete the asset and use or sell it;
- its ability to use or sell it;
- how the intangible asset will generate probable future economic benefits;
- the availability of adequate technical and financial resources to complete the development and to use or sell the asset;
- its ability to measure the expenditure attributable to the intangible asset during its development reliably.

The capitalisation of development costs is a major difference between IFRS and US GAAP as, in the US, all development costs must be expensed when incurred.

IAS 38 also lays down a list of items that cannot be recognised as intangible assets when generated internally. This list includes goodwill, brands, publishing titles and customer lists.

1.3.2 Valuation of intangible assets

Intangible assets are measured initially at cost.

After recognition, they are measured either at cost or at fair value. The revaluation rules are identical to those for tangible assets (*cf.* property, plant and equipment).

IAS 38 stipulates, however, that only intangible assets for which there is an active market can be revalued, as a result of which the revaluation model is restricted to a limited number of assets (taxi licences, production quotas...).

IAS 38 makes a distinction between two classes of intangible assets:

- those with a finite useful life
- those with an indefinite useful life.

Most intangible assets have a finite useful life during which they must be depreciated. Depreciation begins when the asset is available for use. In determining the depreciable amount, the residual value of the asset is assumed to be zero unless there is an active market for it. The straight-line method of depreciation is generally used for such assets.

The depreciation period and method must be reviewed at each balance sheet date and changed if necessary (the change being a change in an accounting estimate as defined by IAS 8).

Intangible assets with an indefinite useful life are rare. The main example of such assets is (acquired) goodwill. Such assets are not depreciated but their useful life must be reviewed each year to determine whether events and circumstances continue to support an indefinite useful life assessment. If they do not, then the asset must be depreciated and the change is considered to be a change in an accounting estimate in accordance with IAS 8.

Below are examples of how companies account for research and development costs.

GlaxoSmithKline (USA)

Research and development expenditure is charged to the profit and loss account in the period in which it is incurred.

ICI (United Kingdom)

Research and development expenditure is charged to profit in the year in which it is incurred.

Microsoft (USA)

Research and development costs are expensed as incurred.

Philips (Netherlands)

Costs of research and development are expensed in the period in which they are incurred.

Roche (Switzerland)

Research costs are charged against income as incurred, with the exception of buildings and major items of equipment, which are capitalised and depreciated. Development costs are also charged against income as incurred since the criteria for their recognition as an asset are not met.

1.4 Inventories

IAS 2 deals with the valuation of inventories. There are three types of inventory. These are:

- Raw material inventory: these are inputs into the manufacturing process and have a market value.
- Work in progress: in most cases such work does not have a ready market or market value.
- Finished goods: these are the final products and constitute the saleable output of the firm.

In the case of trading firms, these categories do not exist, and there is only one category of inventory: goods.

Whenever we calculate the cost of inventory we need, under the standards, to take into account all the costs incurred of bringing it to its current state and location. There are two variations in the determination of these costs, namely,

- FOB or Free On Board, i.e. the cost of insurance & freight will be borne by the buyer;
- CIF or Cost, Insurance and Freight wherein the seller also pays for these items.

Whatever costs the firm incurs on the material have to be taken as the cost of the inventory.

1.4.1 Valuation bases

The main principle used in valuation of inventories is the lower of cost and net realisable value. Net realisable value is defined as the estimated selling price less the estimated costs of completion and the estimated costs necessary to make the sale. The accounting principle of conservatism is the main reason for using this value.

In the case of manufacturing firms, the costs are obtained by adding up all the expenses incurred in bringing the product to a particular stage of completion.

Some of these indirect costs are variable (they vary with the volume of production), while others are fixed (they remain constant regardless of the production level). Depreciation of factory buildings and equipment is an example of fixed production cost.

The existence of fixed costs should make inventory valuation dependent on the volume of production, as shown in the following example:

Example 7:

The variable production cost of a finished item is CU 10 per unit. Annual total fixed costs amount to CU 100'000. The enterprise manufactured 10'000 units in period 1, 8'000 in period 2, and 13'000 in period 3. At the end of each period, the inventory was 1'000 units. Calculate the production cost per unit for each period.

Period	1	2	3
Number of units manufactured	10'000	8'000	13'000
Variable costs	100'000	80'000	130'000
Fixed costs	100'000	100'000	100'000
Total production cost	200'000	180'000	230'000
Production cost per unit	20.00	22.50	17.69

Inventory valuation should thus vary with the volume of production. To avoid such fluctuations accounting standards require the allocation of fixed costs to be based on the "normal" production capacity, defined as the average production expected to be achieved, over a number of periods under normal circumstances.

If, for example, the activity considered as "normal" is 10'000 units per period, production costs should be calculated as follows:

Period	1	2	3
Quantity of units manufactured	10'000	8'000	13'000
Variable costs	100'000	80'000	130'000
Fixed costs allocated:			
$100'000 \cdot (10'000 / 10'000) =$	100'000		
$100'000 \cdot (8'000 / 10'000) =$		80'000	
$100'000 \cdot (13'000 / 10'000) =$			130'000
Total production cost	200'000	160'000	260'000
Production cost per unit	20.00	20.00	20.00

Given that inventories cannot be valued at more than their cost, this method cannot be applied in cases of over-production. The closing inventory would, in the end, be valued as follows:

end of period 1: $1'000 \cdot 20.00 = \text{CU } 20'000$
end of period 2: $1'000 \cdot 20.00 = \text{CU } 20'000$
end of period 3: $1'000 \cdot 17.69 = \text{CU } 17'690$.

1.4.2 Cost - flow assumptions (FIFO, LIFO, weighted average)

In addition to choosing a method for inventory valuation, we need also to make assumptions regarding cost flows. Consider buying bread from a shop. The customer is not sure which packet he is going to pick up. But the bread comes in batches. Within the batch, any piece could be picked up. For the purpose of valuation of inventory, we need to decide how units are extracted from the inventory. Three methods are recognised in this regard (two are called benchmarks and the third is called alternative treatment):

- FIFO or First-In First-Out,
- LIFO or Last-In First-Out (not allowed under IFRS),
- Weighted average.

The FIFO method assumes that the items that entered the inventory first are used or sold first. This entails that the closing inventory consists of the latest items.

LIFO, on the other hand, considers that the latest items available are sold or used first, such that the closing inventory consists of the earliest batches.

Under the weighted average method, inventories are valued at the average cost of all the items making up the inventory. In an inflationary environment, the LIFO method always leads to a cost of goods sold that is higher than under the other methods. Under FIFO, the oldest costs are matched with current revenues, which can lead to potential distortions of income, which might even affect the resources needed to replace the inventory.

Let us recall the basic equation:

$$\text{Beginning Inventory (BI)} + \text{Purchases} = \text{Cost of Goods Sold (CGS)} + \text{Closing Inventory (CI)}$$

Normally, the cost flow assumption affects BI and CI. Purchases are taken as they are. From these, the cost of goods sold is calculated. Let us take a single product to understand how these assumptions work.

Example 8:

Below are data on purchases and sales of a single product during a period. Calculate the cost of goods sold and the closing inventory using all three methods. The sale price is CU 12 per unit.

Inventory at January 1: 180 units at CU 10.00

Purchases:

January 5: 200 units at CU 10.50
January 20: 100 units at CU 10.80

Sales:

January 12: 220 units
January 25: 70 units

First-In-First-Out method (FIFO):

Costs of goods sold on January 12:

$$\begin{array}{r} 180 \cdot 10.00 = 1'800 \text{ CU} \\ \underline{40 \cdot 10.50 = 420 \text{ CU}} \\ 220 \qquad \qquad 2'220 \text{ CU} \end{array}$$

Costs of goods sold on January 25: $70 \cdot 10.50 = 735 \text{ CU}$

Closing inventory:

$$\begin{array}{r} 90 \cdot 10.50 = 945 \text{ CU} \\ \underline{100 \cdot 10.80 = 1'080 \text{ CU}} \\ 190 \qquad \qquad 2'025 \text{ CU} \end{array} \quad \text{i.e. } 2'025 / 190 = 10.658 \text{ per unit}$$

The closing inventory can also be obtained using the equation:

Closing inventory = Beginning inventory + Purchases – Cost of goods sold.

$$\begin{array}{r} \text{BI:} \qquad \qquad 180 \cdot 10.00 = 1'800 \\ + \text{ Purchases:} \quad + 200 \cdot 10.50 = + 2'100 \\ \qquad \qquad \qquad + 100 \cdot 10.80 = + 1'080 \\ - \text{ CGS:} \qquad \qquad - 220 \qquad \qquad - 2'220 \\ \qquad \qquad \qquad \underline{- 70} \qquad \qquad \underline{- 735} \\ = \text{ CI:} \qquad \qquad 190 \qquad \qquad 2'025 \end{array}$$

Last-In-First-Out method (LIFO):

Costs of goods sold on January 12:

$$\begin{array}{r} 200 \cdot 10.50 = 2'100 \text{ CU} \\ \underline{20 \cdot 10.00 = 200 \text{ CU}} \\ 220 \qquad \qquad 2'300 \text{ CU} \end{array}$$

Costs of goods sold on January 25: $70 \cdot 10.80 = 756 \text{ CU}$

Closing inventory:

$$\begin{array}{r} 160 \cdot 10.00 = 1'600 \text{ CU} \\ \underline{30 \cdot 10.80 = 324 \text{ CU}} \\ 190 \qquad \qquad 1'924 \text{ CU} \end{array} \quad \text{i.e. } 1'924 / 190 = 10.126 \text{ per unit}$$

Weighted average cost method:

With this method, the average unit cost is recalculated after each purchase.

Weighted average cost after purchase on January 5:

$$\frac{(180 \cdot 10.00) + (200 \cdot 10.50)}{180 + 200} = 10.263$$

This cost will be used for valuing the cost of goods sold on January 12.

New weighted average cost after purchase of January 20:

$$\frac{(160 \cdot 10.263) + (100 \cdot 10.80)}{160 + 100} = 10.469$$

This cost will be used for valuing the cost of goods sold on January 25 and the closing inventory.

The following table summarises calculations by each method:

	FIFO	LIFO	WAC
Beginning inventory:			
180 · 10.00 =	1'800	1'800	1'800
+ Purchases:			
01/05: 200 · 10.50 =	2'100	2'100	2'100
01/20: 100 · 10.80 =	<u>1'080</u>	<u>1'080</u>	<u>1'080</u>
	3'180	3'180	3'180
- Cost of goods sold:			
01/12	180 · 10.00 = - 1'800	200 · 10.50 = - 2'100	220 · 10.263 = - 2'258
	40 · 10.50 = - 420	20 · 10.00 = - 200	
01/25	70 · 10.50 = <u>- 735</u>	70 · 10.80 = <u>- 756</u>	70 · 10.469 = <u>- 733</u>
	- 2'955	- 3'056	- 2'991
= Ending inventory	90 · 10.50 = 945	160 · 10.00 = 1'600	190 · 10.469 = 1'989
	100 · 10.80 = <u>1'080</u>	30 · 10.80 = <u>324</u>	
	2'025	1'924	

In an inflationary environment, the LIFO method leads to a situation where the closing inventory shows a lower value than its current replacement cost. The difference between the current replacement cost of the closing inventory and its value in the balance sheet is called the LIFO reserve. In this example, the LIFO reserve amounts to $(190 \cdot 10.80) - 1'924 = 128$. In some countries, it has to be disclosed as a footnote. In the case of a drop in the replacement cost, the LIFO reserve will decrease.

Let us look at the implications of FIFO and LIFO using the above Example 3.

	FIFO	LIFO	WAC
Sales: 290 · 12	3'480	3'480	3'480
Cost of goods sold	<u>- 2'955</u>	<u>- 3'056</u>	<u>- 2'991</u>
Gross profit	525	424	489
Gross profit / sales	15.1%	12.2%	14.1%

In the above table, we can see the effect of various cost flow assumptions within different parameters.

Given below are extracts from different firms' annual reports about their inventory valuation policies.

Akzo Nobel (Netherlands)

Inventories are stated at the lower of cost or net realisable value. Cost, defined as the full manufacturing cost related to the stage of processing, is determined by the first-in first-out (FIFO) method. Provisions are made for obsolescence.

Royal Dutch / Shell (United Kingdom – Netherlands)

Inventories are stated at cost to the Group or net realisable value, whichever is lower. Such cost is determined for the most part by the first-in first-out method (FIFO), but the cost of certain North American inventories is determined on the basis of the last-in first-out method (LIFO). Cost comprises direct purchase costs, cost of production, transportation and manufacturing expenses and taxes.

Volkswagen (Germany)

Within inventories, raw materials and supplies as well as merchandise are valued at average acquisition cost or the lower replacement cost.

Work in progress and finished goods are stated at the minimum applicable value allowed by commercial law; that is to say, direct materials and labour minus value adjustments.

Provision is made for all discernible storage and inventory risks by way of adequate value adjustments.

1.5 Accounts receivable

Accounts receivable are customer balances resulting from credit sales. Their importance depends on national as well as individual characteristics:

- In some areas (Continental Europe in particular), most transactions between firms are on credit, while in other countries, cash sales are common practice.
- Even in the former group, companies can accelerate the recovery of customer balances by offering discounts for cash payments.

Accounts receivable are reported on the balance sheet at net realisable value, i.e. their gross amount less an allowance for unrecoverable amounts. Management estimates these on the basis of past experience and clients' financial situations. It must be adjusted every year on the basis of any new information available at the balance sheet date.

The allowance for unrecoverable accounts is crucial in assessing earnings quality. Unfortunately analysts cannot generally evaluate clients' situations. They can only be alert to significant changes in the allowance account, given that its size is largely discretionary.

The following extracts are representative of information generally disclosed on accounts receivable.

Portugal Telecom (Portugal)

Provision for doubtful accounts

The provision for doubtful accounts receivable is stated at the amount considered necessary to cover potential risks in the collection of overdue accounts receivable balances.

Volkswagen (Germany)

Receivables and other assets are stated at the nominal amount. Provision is made for discernible individual risks and general credit risks by way of appropriate value adjustments.

1.6 Cash and cash equivalents

IAS 7 defines "cash equivalents" as "*short-term, highly liquid investments that are readily convertible to known amounts of cash and which are subject to an insignificant risk of changes in value*". Cash equivalents generally have a term of 3 months or less from the date of acquisition.

According to IAS 7, cash and cash equivalents form the basis on which cash flow statements are prepared.

1.7 Impairment of assets

When the carrying amount of an asset exceeds its recoverable amount, i.e. the amount that could be recovered through the use or the sale of the asset the enterprise must, in conformity with the principle of conservatism, recognize an impairment loss.

IAS 36 prescribes the procedures that must be applied in estimating the recoverable amount of an asset.

1.7.1 Measuring the recoverable amount

The recoverable amount of an asset is the higher of:

- its fair value less costs to sell
- and its value in use.

Recoverable amount = Maximum (fair value less costs to sell; value in use)

Fair value less costs to sell is the amount that could be obtained from the sale of the asset, less the costs of disposal.

Value in use is the present value of the future (pre-tax) cash flows expected to be obtained from the use of the asset.

Example 9:

On 1.01.N-2, a hospital acquired a scanner for CU 800'000. Initially, the machine was expected to be used for 8 years and resold for CU 80'000. Depreciation was recognised accordingly, using the straight-line method.

In recent years, the number of similar machines has increased dramatically, such that the profitability of the scanner is now uncertain. The hospital is thus considering the need for recognizing an impairment loss.

The latest expectations are as follows (CU 1'000):

	N+1	N+2	N+3	N+4	N+5
Cash inflows	200	190	180	160	150
Cash outflows					
Employee costs	-50	-51	-52	-53	-54
Maintenance costs	-8	-9	-11	-13	-16
Operating cash flow	142	130	117	94	80

Expected fair value of the machine on 31.12.N+5: CU 40'000.

On 31.12.N, the machine could be sold for CU 550'000. Disposal costs represent about 10% of selling price.

The interest rate applicable to this type of investment is 6%.

Carrying amount of the machine on 31.12.N (CU 1'000): $800 - (800 - 80) \cdot 3/8 = 530$

Value in use of the machine (CU 1'000):

$$\frac{142}{1.06} + \frac{130}{(1.06)^2} + \frac{117}{(1.06)^3} + \frac{94}{(1.06)^4} + \frac{80 + (40 \times 90\%)}{(1.06)^5} = 509$$

Fair value less costs to sell: $550 \cdot 90\% = 495$

The recoverable amount of the asset is thus: $\text{Max}(509, 495) = 509$.

The enterprise must recognize an impairment loss of $530 - 509 = 21$.

Impact on financial statements:

Statement of comprehensive income		N
Expenses	Impairment loss	21
Profit for the year		-21
Other comprehensive income		0
Total comprehensive income		-21
Balance sheet		31.12.N
Assets	Property, plant & equipment	509
Equity	Retained earnings	-21

1.7.2 Identifying assets that may be impaired

The enterprise must assess at each reporting date whether there is any indication that an asset may be impaired. If any such indication exists, it must estimate the recoverable amount of the asset.

Irrespective of whether there is an indication of impairment, the enterprise must annually test for impairment:

- intangible assets whose useful life is indefinite,
- intangible assets not yet available for use (as for example development costs),
- goodwill acquired in a business combination.

Value in use cannot be easily estimated for many assets as their cash flows cannot be easily identified. This is the case for all assets involved in the production process but not generating cash flows by themselves.

IAS 36 stipulates that these assets must be affected by their cash-generating unit (CGU). The cash generating-unit of an asset is the smallest identifiable group of assets that generates cash inflows that are largely independent of those from other assets.

If there is an indication that a component of a cash-generating unit may be impaired, the enterprise must determine the recoverable amount of the cash-generating unit and compare it to the carrying amount of the assets that make up that unit. If the test concludes that the CGU is impaired, the impairment loss is allocated to reducing the carrying amount of the assets that are included in the cash-generating unit. An example of such allocation is given in “Consolidated Financial Statements”.

1.8 Financial assets

Financial assets include:

- cash,
- equity instruments (shares) of other companies,
- and contractual rights to receive cash or another financial assets from another company.

This definition is very broad since it encompasses all monetary assets.

Accounting for financial assets is covered by IAS 39, which applies to financial instruments in general. Financial instruments also include financial liabilities and equity instruments, which will be examined in sections 2 and 3 respectively.

Interests in subsidiaries, associates and joint ventures (i.e. investments that give control or significant influence over another company) are beyond the scope of this section. They will be examined in “Consolidated Financial Statements”.

1.8.1 Classification of financial assets

For valuation purpose, financial assets must be classified into four categories:

- *financial assets at fair-value-through-profit-or-loss,*
- *held-to-maturity investments,*
- *loans and receivables,*
- *available-for-sale financial assets.*

The first category (financial assets at fair-value-through-profit-or-loss) is composed of financial assets that are held for trading, i.e. that exhibit one of the following characteristics:

- they were acquired for the purpose of selling them in the near future,
- they are part of a portfolio managed to make short-term profits,
- they are derivatives (other than hedging instruments).

Held-to-maturity investments are non-derivative financial assets with fixed or determinable payments and fixed maturity, which the enterprise has the intention and ability to hold to maturity. Under this definition investments in shares cannot be included in this category.

Loans and receivables are non-derivative financial assets with fixed or determinable payments that are not quoted on an active market.

Available-for-sale assets are those non-derivative financial assets designated as available for sale or not classified in another category.

The enterprise may also designate any financial asset at fair-value-through-profit-or-loss. This option, which can be used only on initial recognition, is available in specific cases, in particular for groups of financial assets that are managed on a fair value basis. Investments in equity instruments that are not quoted on an active market are excluded from this option.

To avoid frequent classification changes, IAS 39 initially provided that an enterprise could not reclassify a financial asset into or out of the fair-value-through-profit-or-loss category while it was held. Similarly, it could not classify any financial asset as held-to-maturity if it had, during the current period or the two preceding years, sold or reclassified more than an insignificant amount of held-to-maturity investments before maturity.

Following the collapse of financial markets in 2008, many politicians and members of the financial community have protested against these rules which would have caused the recognition of huge losses in the financial statements of banks and insurance companies, and led many of them to no longer meet the ratios imposed by their specific regulations.

An amendment to IAS 39 was thus issued in October 2008, which permits a company to reclassify non-derivative financial assets out of the fair-value-through-profit-or-loss category if they are no longer held for the purpose of selling or repurchasing them in the near term.

1.8.2 Valuation of financial assets

On initial recognition, all financial assets are measured at fair value plus (except for those of the fair-value-through-profit-or-loss category) transaction costs.

After initial recognition, valuation rules are as follows:

- held-to-maturity investments and loans and receivables are measured at amortised cost using the effective interest method;
- investments in equity instruments that are not quoted on an active market are measured at cost;
- all other financial assets (including derivatives that are not hedging instruments) are measured at fair value.

Gains or losses resulting from changes in the fair value of financial assets are recognised as follows:

- If they relate to a financial asset classified as at-fair-value-through-profit-or-loss, they are recognised in profit or loss;
- If they result from a change in the fair value of a financial asset classified as available-for-sale, they are included in other comprehensive income.

Example 10:

At the balance sheet date (31.12.N), the portfolio of securities is as follows:

Securities	Face value	Quantity	Acquisition date	Cost	Market value at 31.12.N-1*	Market value at 31.12.N*
X stocks	100	20	10.03.N	260		250
X stocks	100	10	5.06.N-1	280	290	250
Y stocks	100	50	8.04.N	120		125
Z stocks	200	30	10.11.N-1	350	340	335
A bonds	1'000	10	25.08.N-1	1'000	99%	97%

* Bonds: in % of face value.

Portfolio valuation at 31.12.N:

Securities	Cost	Previous valuation	Valuation at 31.12.N	Variation
X stocks	(20 · 260) + (10 · 280) = 8'000	(20 · 260) + (10 · 290) = 8'100	30 · 250 = 7'500	-600
Y stocks	50 · 120 = 6'000	50 · 120 = 6'000	50 · 125 = 6'250	250
Z stocks	30 · 350 = 10'500	30 · 340 = 10'200	30 · 335 = 10'050	-150
A bonds	10 · 1'000 = 10'000	10 · (1'000 · 99%) = 9'900	10 · (1'000 · 97%) = 9'700	-200
	34'500	34'200	33'500	-700

1. If these assets are classified as at-fair-value-through-profit-or-loss, the financial statements will be:

Statement of comprehensive income	N
Loss on financial assets	-700
Loss for the year	-700
Other comprehensive income	0
Total comprehensive income	-700

Balance sheet	31.12.N
Assets	Financial assets 33'500
Equity	Retained earnings (33'500 – 34'500) -1'000

2. If these assets belong to the available-for-sale category, gains and losses resulting from changes in fair value will be recognised as follows:

Statement of comprehensive income	N
Gain/loss on financial assets	0
Gain/loss for the year	0
Other comprehensive income	-700
Total comprehensive income	-700

Balance sheet	31.12.N
Assets	Financial assets 33'500
Equity	Retained earnings 0
	Cumulative loss on financial assets -1'000

