List of appendices

Chapter 1 - Accounting: the language of business

Appendix 1.1 The reporting period

Legal period

In general, the reporting period (also called accounting period) is 12 months. International Accounting Standard (IAS) 1 (IASB: 2003a) specifies that "financial statements shall be presented at least annually" (§ 49).

In the United Kingdom, for example, the accounting reference periods subsequent to the first period will be for successive periods of 12 months. However such an obligation is not always explicitly defined in the regulatory documents of many countries. For example, in France, the *Code de commerce* evokes the notion of "annual accounts". However the only obligation arises from article 8 of that *Code* which specifies that any business entity "must control by inventory at least once a year the existence and the value of the assets and liabilities of the entity". There are therefore no legal requirements concerning either the minimum or the maximum duration of the reporting period.

Some enterprises prefer, for practical reasons, to report, for a 52-week period, thus resulting in a reporting period that does not always end at the end of a month. For example, in the USA, many companies running restaurants have adopted this practice (see in Chapter 9 Assignment "McDonald's and others"). In this case, the accounting period lasts 52 weeks and approximately every six or seven years, a 53rd week is added to get back to 365 days a year (366 in leap years). IAS 1 does not preclude this practice, as the resulting financial statements are unlikely to be materially different from those that would be presented for one calendar year.

Choice of closing date

The duration of the accounting (or reporting) period may differ from the regular 12-month period in the following situations:

- First period of activity if the start of business was not on the first day after the period end of year anniversary;
- Last period of activity, if the business ceases its activity before the year-end;

- When the business chooses to modify its closing date (also called “accounting reference date” or “balance sheet date”) at some point during its life.

For example a business created on September 20, X1 may choose to close the books on March 31. In this case the first accounting period will cover 6 months and 20 days. In practice, accounting periods of less than 6 months are as rare as are accounting periods covering more than 18 months.

In the United Kingdom, the accounting reference date of a company incorporated on or after 1 April 1996 is the last day of the month in which the anniversary of the incorporation falls. Its first and subsequent accounting reference periods will, therefore, end on that date. This date can still be altered at a later date (see below). In practice, a company may give notice to the Registrar that it wishes to alter its accounting reference date. The first accounting reference period must not be less that six months and must not exceed 18 months.

The choice of a closing date is open to choice in all countries. However the culture of each country has led to locally traditional dates of reference. For example:

- December 31 in France,
- March 31 in Japan,
- September 30 in many West African (French speaking) countries.

It is even possible to select a closing date whose actual date varies as would be the case, for example, when one chooses to close on the Sunday nearest to the last day of May (Frisch’s Restaurants, USA) or on Sunday after the Saturday closest to January 31. (Dave & Buster’s, USA).

Table 1.1A illustrates the diversity of closing dates selected by some large business organizations around the world. Although not statistically significant this table illustrates the fact that country-based patterns are strong.

Table 1.1A Diversity of closing dates

Company	Country (Headquarters)	Closing date
Adidas-Salomon	Germany	31 December
Aracruz	Brazil	31 December
Barloworld	South Africa	30 September
Bosch Group Worldwide	Germany	31 December
Club Méditerranée	France	31 October
Easyjet	U.K.	30 September
Electrolux	Sweden	31 December
EVN	Austria	30 September
Holchim	Switzerland	31 December
Interbrew	Belgium	31 December
Irish Continental	Ireland	31 October
ISS	Denmark	31 December
McDonald's	USA	31 December
Meritage Hospitality Group	USA	Sunday closest to November 30
Metro	Germany	31 December
Nokia	Finland	31 December
Norsk Hydro	Norway	31 December
Ona Group	Morocco	31 December
Orkla	Norway	31 December
Pernod Ricard	France	30 June
Philips	Netherlands	31 December
Procter & Gamble	USA	30 June
Repsol	Spain	31 December
Roche	Switzerland	31 December
Toyota	Japan	31 March
Trigano	France	31 August
Volvo	Sweden	31 December
Wipro	India	31 March

The choice of the closing date is generally based on common sense. If the business of a firm is highly seasonal, closing should not take place during the peak of activity. As mentioned earlier it might be quite illogical, at least in the Northern Hemisphere for a toy retailer, a winter-sports organization or a gift manufacturer to close its books on 31 December. The financial statements must give a true and fair view of the wealth of the organization, of its financial situation and of its income. If the closing date ends up truncating the business cycle (especially in the case of strong growth), the true and fair view objective could not be achieved.

It is also important to take into account the fact that since closing the books will create an increase in the workload of the accountants and also a surge in their requesting information from other managers, it is best not to mobilize the energies of the managers when they are best used dealing with other activities required by the product life cycles.

It is also convenient to harmonize the accounting closing period with the tax and other fringe benefits reporting period so as to avoid duplication of work.

Changing the closing date

In most countries a company may modify its closing date and shorten or lengthen its accounting period if it satisfies certain conditions. In the UK for example, the period may be shortened or extended, but cannot be extended more than once in five years unless one of the following applies:

- The company is a subsidiary or parent of another EU undertaking;
- An administrative order is in force under the Insolvency Act;
- The Secretary of State directs that a company can extend its accounting reference period more often.

Chapter 2 - Introduction to financial statements

Appendix 2.1 Balance sheet and value creation

Principle

The balance sheet describes the state of the financial position of the business at any given point of time. It shows the value of the net worth by listing both assets (resources) and liabilities (obligations, excluding those to shareholders).

Shareholders are particularly interested in knowing modifications of the net worth of their business. If the balance sheet at the beginning of the year showed a net worth which is lower than the net worth calculated at the end of the period, there has been an increase in wealth of the firm (and therefore of the shareholders). The income statement explains how such increases in wealth have been gained.

Application to the Verdi Company case

The record of fixed assets, accounts receivable, and cash prepared as of 31 December X1 shows that total resources amount to 200, while the total of obligations is recorded as 50 (see Figure 2.1A).

Balance sheet on 1 January X1

Assets		Equity and liabilities	
		Shareholders' equity	90
Cash at bank	90	Incl. capital	90
Total assets	90	Total equity/liabilities	90

Balance sheet on 31 December X1

Assets		Equity and liabilities	
Equipment	125	Shareholders' equity	150
Accounts receivable	70		
Cash	5	Liabilities	50
Total assets	200	Total equity/liabilities	200

Figure 2.1A Changes in balance sheets

On 1 January X1, the accounting book value of the net worth of Verdi was as follows:

assets - liabilities = 90 - 0 = 90 = shareholders' equity

On 31 December X1, the accounting book value of the net worth of Verdi is as follows:

assets - liabilities = 200 - 50 = 150 = shareholders' equity

Shareholders' equity has thus grown from 90 to 150. This change of "+ 60" is recognized through the income statement as a profit of 60. In summary, we have the following relation:

Income of the period (profit or loss)	=	Change in shareholders' equity during the period (all things being equal otherwise)

This equation does not hold if shareholders have modified their contribution to the capital of the business (new capital issued or reduction of retained earnings through dividends).

Appendix 2.2 Reporting for retained earnings and reserves

The shareholders' decision to pay a dividend will be recorded immediately by recognizing the immediate liability to the shareholders under the name of "dividends payable". The impact on cash however will not take place until the actual pay-out takes place (here we can assume it will not take place before period X2).

The transaction of "declaring dividends" results in a decrease in retained earnings and creation of a liability for the same amount. On the date of payment, this liability account is cancelled and cash is decreased. We show below the impact on the basic financial statements (only the necessary accounts are presented) (see Figure 2.2A).

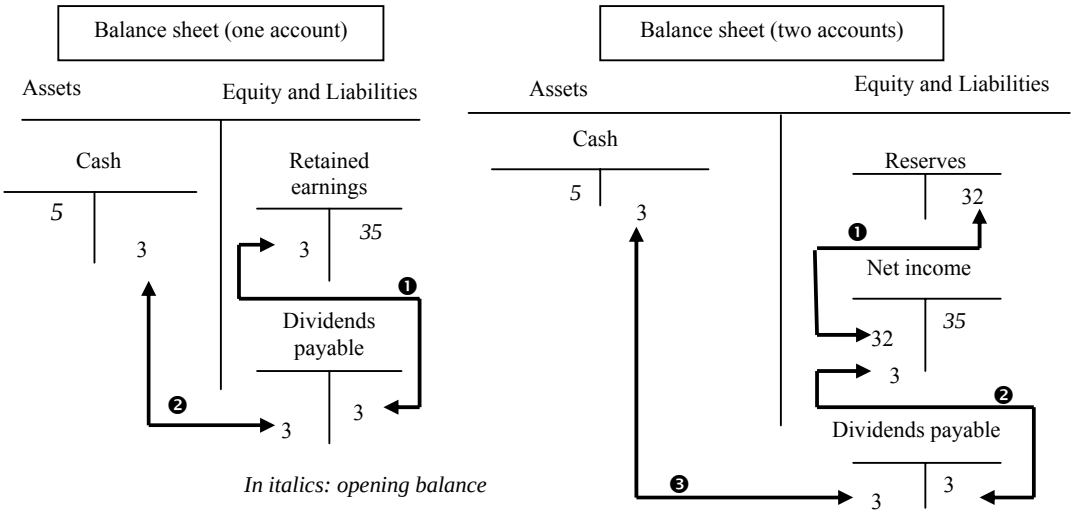


Figure 2.2A Recording of profit appropriation

Depending on the country or the company, retained earnings and reserves can be reported in two different ways (see Figure 2.3A).

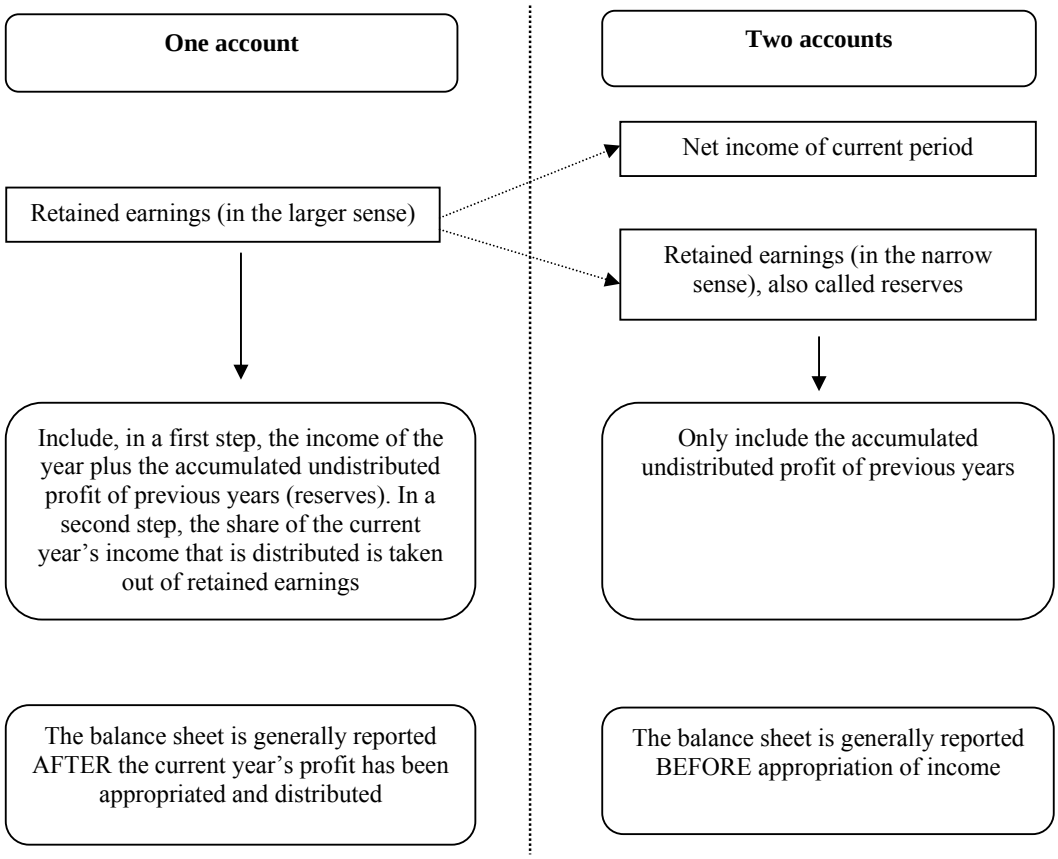


Figure 2.3A Reporting for retained earnings

In the broad-based approach most commonly found in North America, the income of the period does not appear as such on the balance sheet. It is included in the "retained earnings". Thus retained earnings at the end of year *t* is equal to:

$$RE_t = \text{Retained earnings}_{(t-1)} + \text{Revenues}_t - \text{Expenses}_t - \text{Dividends}_t$$

The balance sheet is, therefore, presented "after profit appropriation"'.

In the second approach, the income of the year appears explicitly on the balance sheet. The "retained earnings" account corresponds exclusively to the accumulated undistributed income of previous years. The balance sheet is thus before appropriation but it can be converted to the

same format as the "after appropriation balance sheet" by simply splitting the income of the year between "reserves" and "dividends payable".

Appendix 2.3 Recording of inventory – Impact on the basic business equation

Method 1: Purchases recorded as inventory in the balance sheet

In X1 in which there was no beginning inventory, the impact of inventories, carried under this first method, on the basic business equation is as shown in table 2.3A.

Table 2.1A Impact on the basic equation (year X1)

	Assets				Shareholders' Equity (SE)	
	Cash	+	Inventory	=	Retained earnings	Detail of SE transaction
Purchases	- 100		+ 100			
Withdrawals for Consumption			- 80		- 80	Cost of goods sold
Ending balance	- 100	+	20	=	- 80	

Suppose that during X2, Puccini purchases supplies for an amount of 200 CU. The value of the "supplies available" for consumption in the normal operations of the firm is 200 *plus* the existing beginning inventory of 20, which means a total available for use worth 220 CU. Consumption (i.e., sum of the withdrawals) during the year equals 211 CU. As a consequence, the ending inventory is computed by difference: 9 or (20 + 200 – 211). The impact on the accounting business equation is shown in Table 2.4A.

Table 2.2A Impact on the basic business equation (year X2)

	Assets				Shareholders' Equity (SE)		
	Cash	+	Inventory	=	Capital	Retained earnings	Detail of SE transaction
Beg. balance	-100		20			-80	
Purchases	- 200		+ 200				
Consumption			- 211			- 211	Cost of goods sold
End. balance	- 300	+	9	=		- 291	

Method 2: Purchases recorded as expense in the income statement

At the end of the period the physical stocktaking carried out shows the final inventory to be worth 20 CU. The amount recorded as an expense must therefore be adjusted so as to reflect the correct value for the consumption of materials and parts. We create an "ending inventory account" which takes on the value of 20 CU. If we want to use a crude physical illustration of

what happens, the inventory is taken out of the "plant" (the income statement), where is was "temporarily" stored (under the name of expense) and stored in a "warehouse" (the inventory account in the balance sheet).

Table 2.5A illustrates how accounting records the transaction under this approach. The impact of inventories on the accounting business equation is as follows (no impact on liabilities, which can therefore be ignored).

Table 2.3A Impact on the basic equation

	Assets				Shareholders' Equity (SE)	
	Cash	+	Inventory	=	Retained earnings	Detail of SE transaction
Purchases	- 100				- 100	Purchase of supplies (during the year)
Ending inventory			+ 20		+ 20	Ending inventory
End. balance	- 100	+	20	=	- 80	

In this method, since purchases were assumed to have been immediately consumed (i.e., turned into costs to be deducted from revenue), the ending inventory must be deducted from the expenses recognized so far in order to create a cost of consumption of parts and materials equal to what was actually consumed.

To further understand the entries recorded in the income statement, let us see what happens the following year. During the following year, purchases are 200 CU and the final inventory measured by stocktaking at the end of the year is estimated to be worth 9 CU.

The beginning inventory (ending inventory of the previous period) was worth 20 CU. The ending inventory is valued at 9 CU. The accounting change in inventory is therefore +11 (i.e., BI – EI, or 20 – 9), and the cost of materials consumed to satisfy customers is the full 200 purchased plus the reduction of inventory or 200 + 11 = 211 CU.

	Purchases	200
Plus	Beginning inventory	20
Minus	Ending inventory	- 9
Equals	Total consumed supplies	211

The impact of inventory on the accounting equation for period X2 appears in Table 2.6A.

Table 2.4A Impact of inventory on the basic equation

	Assets				Shareholders' Equity (SE)			
	Cash	+	Inventory	=	Capital	+ Retained earnings	Detail of SE transaction
Beg. balance	- 100		+ 20			- 80	
Beginning inventory			- 20			- 20	Consumption of beginning inventory
Purchases	- 200					- 200	Purchase of supplies (during the year)
Ending inventory			+ 9			+ 9	Ending inventory
End. balance	- 300	+	9	=		- 291	

The reader will note that the example is simplified in that purchases are assumed to have been paid cash (they could have been purchased on account).

Chapter 3 - Financial statements presentation

Appendix 3.1 Cost of goods sold

The cost of goods sold (also called, inappropriately, cost of sales[1]) is the most critical category in any business. The whole branch of managerial accounting called "cost accounting" or "industrial accounting" is almost entirely devoted to its elaboration (see Drury 2004). As all things in managerial accounting, there is no standard definition of the cost of goods sold. The choice of a definition to be used in external reporting is left to each firm as it reflects their strategic vision. Although there are differences in the choices made between and within countries, it would be an extremely unhealthy practice to have differences between units of a same economic entity.

The cost of goods sold always includes the base cost, i.e. the cost of the physical components of the product or service (raw materials, parts, manufactured-in-house or subcontracted components, etc.) and the cost of the production labor force. The options in calculation arise from the way the business chooses to handle overhead such as production and sourcing supervisory labor costs or cost of infrastructure (which includes energy and fluids and depreciation of production facilities and equipment). The cost of goods sold is different from the cost of goods manufactured as shown in figure 2.16 (Chapter 2) in that it comprises only the costs that are being matched against the revenue of the period for which the income is being calculated. Some businesses opt for an approach called direct costing that excludes overhead from the cost of goods sold. This implies that the production overhead are recognized as a separate category listed before the commercial selling and administrative expenses in the income statement. Other businesses (often following tax rules) report the cost of goods sold by following an approach called full costing in which all production overhead (including depreciation of productive equipment and facilities) is incorporated in the cost of goods manufactured and thus end up (modulated in terms of time of recognition by the variation in inventory) in the cost of goods sold.

[1] The cost of a sale includes not only the cost of goods sold, i.e. the cost of the product or service sold, whether purchased for resale or manufactured by the firm, but also the cost of acquiring the customer and servicing its request for product or services (i.e. commercial and distribution costs) and the financial cost linked to the credit terms granted. Thus the term cost of goods sold is unambiguous and shall be preferred in this text.

Chapter 4 - The accounting process

Appendix 4.1 Concepts of use and source

Principles

In the late 1960s, teachers of accounting invented a new vocabulary thought to be both more relevant for students, and more closely related to financial preoccupations. The liabilities consist of sources, and these sources finance the uses that make up the assets. The balance sheet thus expresses the equation total uses = total sources. The accounts show the uses on the left-hand side, and the sources on the right-hand side.

Returning to the example of Verdi's cash account, the results are as follows (see Table 4.1A).

Table 4.1A Verdi Cash account

Use	Cash		Source
Beginning balance =	90	Cash outflows Σ_C =	325
Cash inflows Σ_D =	240		
	330		325
Ending balance =	5		

Using the new vocabulary, we can say that a cash inflow of 240 is a use of 240, and an outflow of 325 is a source of 325. The final cash position is a net use of 5.

And so we arrive at the following rules:

- asset accounts increase on the use side and decrease on the source side.
- shareholders' equity and liabilities accounts increase on the source side and decrease on the use side.
- expense accounts behave in the same way as asset accounts.
- revenue accounts behave in the same way as liabilities accounts.

Schematically, these rules can be presented as follows, using the basic business equation introduced in Chapter 2 (see Figure 4.1A):

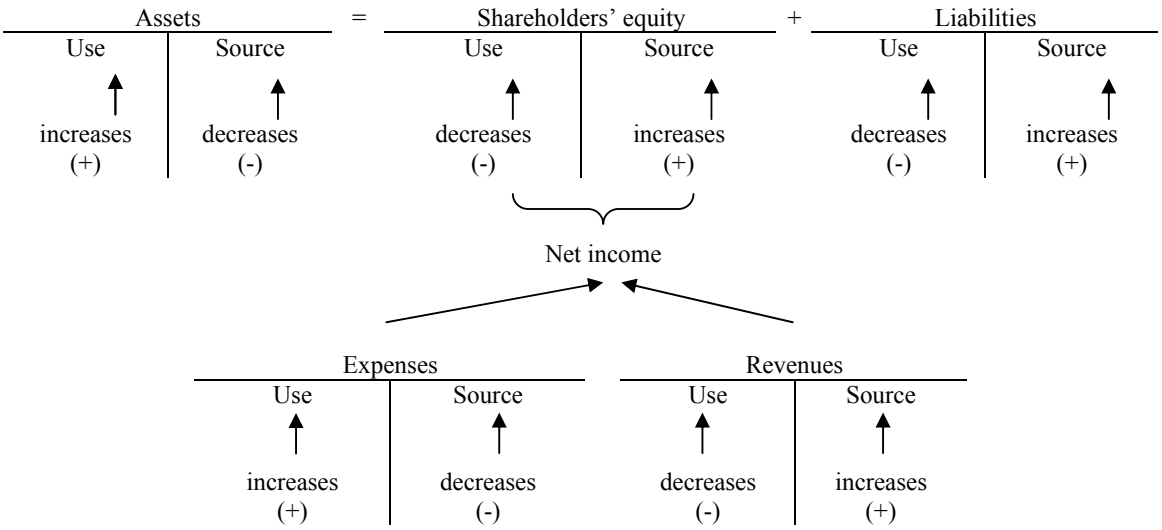


Figure 4.1A Accounting equation and the concepts of use and source

Impact on teaching methods

In teaching accounting, it is actually possible to avoid using the terms debit and credit at all, at least to begin with, by replacing them with the concepts of use and source. This avoids the problem of "automatic" use of the concepts of debit and credit, and the confusion with banking vocabulary.

However, in practice, the only concepts actually used in accounting are those of debit and credit. In order to leave our readers and their teachers complete freedom of choice, we would like to remind that:

Debit is equivalent to Use	and	Credit is equivalent to Source

In other words, when making entries in the accounts, the following simple rules must be remembered:

- Accounts for assets and expenses have one basic common characteristic: they describe the use (the application) of sources available to the Company. An increase in the total value of any one of these accounts is shown on the left-hand side (a debit). Conversely, a decrease in the total value of an asset or expense account is shown on the right-hand side (a credit).
- Accounts for liabilities and revenues also share one basic characteristic: they describe the source of funds made available to the Company. An increase in the total value of any one

of these accounts is shown on the right-hand side (a credit). Conversely, a decrease in the total value of an account is shown on the left-hand side (a debit).

Appendix 4.2 Trial balance errors

The trial balance's original purpose was arithmetic verification. A wide range of errors was liable to arise when accounts were kept manually. The risk still exists despite the use of user friendly accounting software. Errors occur either in recording in the journal or in posting to the general ledger:

- Entry in the wrong account: for example, "sales of merchandise" instead of "sales of finished products", "Accounts payable Jones" instead of "Accounts payable Johnson"', etc. As these examples show, errors often relate to similar accounts, sometimes two accounts that are next to each other in the chart of accounts.
- Entry in the right account but on the wrong side: debit instead of a credit or vice versa.
- Entry in the right account, on the correct side, but with a mistake in the figure, often due to inversion of two digits e.g. 7,986 instead of 7,896.

Of course, one error may involve more than one of these factors. To a certain degree, there is often an underlying "logic" in the human error at the source of the mistake: the accounts are close to each other, the wrong side of the right account is used, the figure is partially incorrect. Totally illogical errors also occur, but fortunately these are rarer. There may also be errors in the totals of the trial balance columns, or in subtraction when calculating balances.

There are two "tricks of the trade" for identifying "logical" errors (provided they do not combine two or more error types):

- When an entry is made on the wrong side of an account, it results in a discrepancy equal to twice the difference between the total debit balances and the total credit balances. Therefore, if this difference is a multiple of two, the postings should be searched for an amount equal to half the discrepancy, and if one is found, one check whether it had been entered on the wrong side.
- When an incorrect figure has been entered as a result of two digits being inverted, it causes an error that is always a multiple of nine. Therefore, if the discrepancy between the total debit balance and credit balance is a multiple of nine, it is advisable to search for this type of error.

But even once the trial balance balances, it is by no means a guarantee of the quality of accounting entries. It is possible to make completely false entries that perfectly respect the double entry principle. For example, the trial balance will not show that an entry has been recorded under “cash in hand” instead of “cash at bank”, or as “purchases of raw materials” instead of “purchases of merchandise”. Nor will it detect the omission of a complete transaction. Therefore, as stated above, the trial balance is necessary, but not sufficient in itself to guarantee the quality of the accounts.

Appendix 4.3 Organization of the accounting system

Timing

The company’s transactions with customers and suppliers should be recorded **every day**. Invoices issued and payments received (customer transactions), invoices received and payments issued (supplier transactions) generally make up more than 80% of the volume of accounting transactions. Any delay in their recording might prove hard to overcome, due to the sheer volume of data to handle.

Every month (or **week** in certain countries), salaries must be calculated, recorded and paid. In countries where a value added tax (VAT) or sales tax system exists, businesses must calculate their VAT payable and sales tax payable on a monthly basis (and generally pay the tax owed with the same frequency).

However, accounting does not merely involve the recording of entries. Regular, generally monthly, checks are also necessary to ensure that the accounts are accurate. This usually takes the form of control of the bank account or customer accounts. For example, for the bank account, a “reconciliation” is carried out consisting of verifying that the statement issued by the bank corresponds symmetrically to the bank’s account in the company’s accounting records (see Chapter 10).

At least once **every year,** the company must establish its financial statements. This phase of the accounting organization is covered in more detail in the following chapter.

Specialized journals and computer software

The structure presented in Figure 4.5 (in the book), which is based on a single journal, probably exists in a few mini or micro-businesses, but does not bear much relation to the situations more often encountered in real life. The creation of specialized journals and the arrival of dedicated computer software have modified the basic architecture of the accounting process. Since most accounting transactions, in terms of volume, concern only a small range of types of entry, specialized journals can be created for certain operations. For instance, a company might keep:

- a **sales** journal, to record invoices issued, where all entries are of the same nature;
- a **purchases** journal, following the same principle;
- a **bank** journal (or one journal for each bank account);
- a **cash** journal;
- a **miscellaneous** journal for other transactions.

The establishment of special journals makes it easier to trace transactions (as they are in a manner of speaking pre-sorted), while at the same time rationalizing bookkeeping.

The use of computerized systems has also simplified accounting. Computers are now used by almost all businesses for keeping their accounts, running either relatively inexpensive standard software packages which allow for user-specific parameters (e.g. accounts can be created to suit the needs of the individual company), or specific systems, generally more suited to medium and large businesses. Basically, the computer's major contribution to accounting is that it simplifies data entry (often by suggesting the most likely entry accounts on the basis of relatively little information) and improves the security of processes. In computerized accounting systems, entries are made through "entry screens" specific to each type of entry (following the same pattern as for specialization of journals).

Once the entries have been registered, the accounting software saves them all and performs the appropriate calculations. The resulting documents can be visualized on the screen or printed. All the routine, material aspects of bookkeeping (and the fear of discovering errors when the trial balance is established) is passed-on to the computer system, and thus become practically non-existent.

The accounting function within the company

We prefer to refer to the accounting function, rather than the accounts department, because accounts departments tend to be found only in medium-sized and large businesses, whereas the accounting function exists in all businesses, even small ones, even when the accounts are not kept by a department working only on that activity, and even if account-keeping is contracted out.

Role of the accounting function

The accounting function enters and classifies all the data necessary to achieve its objective, so long as it can be quantified, i.e. expressed as a number of appropriate units. It is a source of economic, legal and financial information. The accounting function can broadly be considered to encompass the following seven subfunctions:

1. General financial accounting
2. Accounts receivable and payable (customer and supplier accounts)
3. Cash management
4. Cost accounting
5. Management accounting
6. Customer invoicing and management of customer risks
7. Other (consolidation, auditing, etc.).

Our discussions will cover only the subfunctions that are directly related to financial accounting, namely subfunctions 1, 2 and 6.

The company undertakes many trade operations that we can call “economic flows”: flows of goods or services, monetary or financial flows. The role of the accounting function is to keep permanent records of these flows, in order to:

- provide regular representations of the financial position;
- determine the profit or loss on the activity;
- comply with accounting, tax and social security obligations, i.e. establish annual financial statements, documents required for settlement of taxes and other contributions;
- supply management and third parties with information;
- supply information of use for management purposes;
- analyze accounting data.

The role of the accounting function goes well beyond simply meeting the obligations set by law or regulations. The accounting function is in close contact with most of the company's other functions, and supplies them with detailed information. Accounting thus "produces" information that is useful for decision-making, and as such is a management tool.

This general presentation of the role of the accounting function has made no reference to the size or purpose of the business. In fact, company size has an undeniable impact on the activity of the accounting function. Apart from the general activities described above, the accounting function may also cover areas not specific to accounting, particularly in small and medium-sized businesses, where the volume of administrative tasks is not sufficient to justify creation of specialized departments or full-time allocation of personnel to accounting tasks.

Organization

As stated above, the organization of the accounting function depends on the size and purpose of the company. The types of organization are presented below according to the size of the business. At the risk of oversimplification, this approach is clear and operational.

Small businesses

Small businesses have very low headcount. The major categories of small businesses are small shopkeepers, self-employed professionals, and there are several ways of organizing the accounting function.

- The manager of the business, in addition to his or her technical and/or commercial tasks, takes on the accounting function unassisted. In practice, this situation is rare, because it requires three conditions that are rarely fulfilled simultaneously: competence in accounting, time to undertake the necessary tasks and the desire to keep the accounts.
- The company, for the above reasons (possibly resulting from insufficient resources), cannot keep its accounts independently, and so uses an external contractor. The accounting function is thus partly or completely carried out by another person or company, the independent accountant.

Medium-sized businesses

Medium-sized businesses generally have their own "accounts department", with a "chief accountant" or "head of accounts". While the department may be able to carry out some of the accounting function (such as recording entries until the trial balance is established), it may lack the expertise and/or time necessary for establishing the financial statements and tax declarations, and in such circumstances an independent (external) accountant or accounting firm will be used.

In practice, the accounting function is shared by the accounting department and the independent accounting firm, with tasks divided along the following lines, for example:

- recording of everyday operations from basic documents – done by the company;
- summary of the company's position, leading to presentation of the financial statements – done by the independent accountant.

However, such a division of responsibilities varies from one company to the next.

Large businesses

Most large businesses have an accounting department, either autonomous or attached to the Finance Division, with a large staff. When the company has several establishments or subsidiaries, the accounting department often plays a role in introducing procedures for accounting and centralization (e.g. in the case of consolidation) of entries recorded in the individual establishments or subsidiaries.

When companies have a large number of their own competent staff, there is no need to use an accounting firm for "standard" jobs. Nevertheless, large businesses do sometimes call on the services of external accountants, for consultancy or auditing engagements.

Accounting staff

There are four major categories of accounting personnel:

1. Accounts clerk

- Processes accounting documents
- Enters data into computer system
- Issues reconciliation tables
- Analyses and examines account balances

2. Accountant

- Translates and records all transactions
- Centralizes the establishment of trial balances
- Contributes to the establishment of financial statements

3. Chief accountant

- In charge of the accounting department

- Verifies documents established by department staff
- Establishes management reports, maybe in liaison with the independent accountant

4. Head of accounting
- Liaises with the general management
- Responsible for the accounting department (office clerks, skilled employees and executives).

These categories may seem artificial. It is true that the accounts clerk's job is disappearing and becoming more and more similar to the accountant's job, largely due to the spread of computerization. The positions of chief accountant and head of accounts can also be very similar in content.

Table 4.2A lists extracts from accounting job offers from the press.

Table 4.2A Job vacancies

Accounts clerk
Our client wishes to recruit a general ledger accounts assistant. The successful candidate will be responsible for bank reconciliation, cash flow forecasting, coordinating with business analysts and factory personnel.

Accounts payable assistant
Our client seeks a fluent German speaker with a minimum of three years accounting experience and familiarity with a general ledger system. He/she will assist in ensuring accurate maintenance of the general ledger, assist the market accounts specialist in managing the period end-closing process and in the production of accurate management reports. The successful candidate will be responsible for accounts reconciliation, calculation of accruals and prepayments, reconciling and investigating general ledger items and performing bank and sub-ledger reconciliations. If you are a computer literate team player with knowledge of IT-based accounting systems and you have a positive attitude to customer service, we would very much like to hear from you.

Accountant
The successful candidate will be responsible for accurately processing vouchers, maintenance of the control framework, preparing monthly control reports, ledger reconciliation, and dealing with suppliers while always maintaining an air of complete calm! If you have the ability to work to deadlines, are a team player with good organizational skills, please ring or email us today.

Inventory accountant
An ideal opportunity to join this dynamic retail group. Reporting to the Financial Controller and controlling a staff of three, you will investigate margin changes of inventory in hand, generate cost of sales, maintain inventory accounts and produce pricing analysis.

Financial accountant
Our client is looking to recruit a financial accountant. This role will be responsible for the integrity and accuracy of financial databases while operating under monthly deadlines. The position is open to qualified or part qualified accountants with a knowledge of foreign currency dealings.

Financial accountant
UK arm of a major US credit card provider is expanding its operations and requires an experienced Financial Accountant for a broad role ranging from developing processes and procedures through to management of the UK corporate Tax and VAT returns. You will need to have an excellent knowledge of UK statutory accounts and tax coupled with a solid reporting background. Experience of US GAAP would be helpful.

Chief accountant
Leading European electronic subsidiary seeks to recruit a qualified accountant. Reporting to the Financial Director and controlling staff of eight, you will be responsible for the production of half/full year accounts and supervise the ledger team. You will also undertake acquisition work and ad hoc investigation.

Senior accountant
The role: your duties will include: (1) establishing internal controls and developing, implementing and maintaining best practice systems; (2) coordinating and supervising regional accounting work; (3) assisting in implementing process improvements; and (4) acting as lead person for the implementation of SAP.
The person: (1) degree educated with a recognized international accountancy qualification or equivalent; (2) 4-6 years' accounting and/or audit experience, including preparation, consolidation and analysis of financial results; (3) strong systems orientation.

Group accountant
A Group accountant will play a major role at the heart of the business, liaising with chief accountants across the group and managing the consolidated financial position of the company. Responsibilities of this new role include co-ordination and streamlining of key financial processes (management reporting, budgeting and forecasting), consolidated financial accounts and associated commentary for the board).

Chapter 5 - Accounting principles and end-of-period adjustments

Appendix 5.1 Revenues earned but not recorded

Table 5.1A analyzes the two solutions presented in section 2.1.1 of Part 2 Advanced issues.

Table 5.1A Comments on revenues earned but not recorded

	Solution 1 – The adjusting entry is reversed on opening date of the following accounting period	**Solution 2 – The adjusting entry is not reversed on opening date of the following accounting period**
Opening date	The adjusting entry recorded on closing date of Year 1 is reversed.	The adjusting entry recorded on closing date of Year 1 is not reversed. No entry is recorded.
Date of reception of the document	The "normal" entry is recorded, according to the document received.	The "accrual" account is cancelled and the accounts receivable is recorded.
Amount adjusted	If the final amount known in Year 2 is different from the amount anticipated on Year 1, the adjustment of amounts is automatic, because of the process.	If the final amount y known in Year 2 is different from the amount x anticipated on Year 1, an adjustment of amounts is necessary and equal to (y – x).
Advantages/ Disadvantages	- A reversal entry is necessary at opening date. Nowadays, some software automatically record the reversal of adjusting entries. - Upon reception of the document, it is not necessary to make a link between this document and the adjusting entry of the first year. The document can be recorded as an "ordinary" transaction.	- No reversal entry is necessary at opening date. - Upon reception of the document, it is necessary to make a link between this document and the adjusting entry of the previous year.
Impact on income before income tax	December 31 + 20 Impact on Year 1 + 20 January 1 - 20 Reception date of the document + 25 Impact on Year 2 + 5 Total impact on Years 1 & 2 + 25	December 31 + 20 Impact on Year 1 + 20 January 1 0 Reception date of the document + 5 Impact on Year 2 + 5 Total impact on Years 1 & 2 + 25
Conclusion	Both solutions have the same impact on income before income tax. The impact of the cumulated two periods is equal to the amount of the revenue (25) which is mainly recorded in year 1 (with an adjustment if the amount is different).	

Appendix 5.2 Revenues recorded but unearned

Comments on the two solutions presented in section 2.1.2 of Part 2 Advanced issues are listed in Table 5.2A.

Table 5.2A Comments on revenues recorded but unearned

	Solution 1 – Revenue is recorded in advance and adjusted	Solution 2 - Revenue is not recorded in advance
December 15	The full 200 CU revenue is recorded in the income statement.	No revenue is recorded but a liability for 200 CU is recorded in the balance sheet.
December 31	The revenue account must be adjusted. Otherwise, the net income of year 1 would be overstated. On a period of 60 days (two months), 15 days have been earned. There must be an adjustment for the remaining 45 days: 200 x 45/60 = 150.	The part of liability earned during Year 1 (15 days) is recorded as a revenue: 200 x 15/60 = 50. This is not an adjusting entry strictly speaking. Each time a revenue received in advance is earned, this kind of entry is recorded.
January 1	In this system, the adjusting entry is systematically reversed on the first day of the following accounting period (see below impact on income before income tax).	In this system, no systematic entry is necessary on opening date of the following year.
February 15	No entry is necessary.	The part of the liability earned during Year 2 (45 days) is recorded as a revenue: 200 x 45/60 = 150.
Impact on income before income tax	December 15 + 200 December 31 - 150 Impact on Year 1 + 50 January 1 + 150 February 15 0 Impact on Year 2 + 150 Total impact on Years 1 & 2 + 200	December 15 0 December 31 + 50 Impact on Year 1 + 50 January 1 0 February 15 + 150 Impact on Year 2 + 150 Total impact on Years 1 & 2 + 200
Conclusion	Both solutions have the same impact on income before income tax. The total impact is equal to the amount of the revenue which has been split between two accounting periods.	

We use the term “period” instead of “year” because all our explanations are valid if an economic entity decides to prepare financial statements for a period shorter that the accounting year.

Appendix 5.3 Expenses consumed but not recorded

The following table 5.3A presents some comments on the two solutions described in section 2.1.3 of Part 2 Advanced issues.

Table 5.3A Comments on expenses consumed but not recorded

	Solution 1 – The adjusting entry is reversed on opening date of the following accounting period	**Solution 2 – The adjusting entry is not reversed on opening date of the following accounting period**
Opening date	The adjusting entry recorded on closing date of Year 1 is reversed.	The adjusting entry recorded on the closing date of Year 1 is not reversed. No entry is recorded.
Date of reception of the document	The "normal" entry is recorded, according to the document received.	The "accrual"' account is cancelled and the payment or the payable account is recorded.
Amount adjustment	If the final amount known in Year 2 is different from the amount anticipated on Year 1, the adjustment in amounts is automatic, because of the process.	If the final amount y known in Year 2 is different from the amount x anticipated at the end of Year 1, an adjusting entry is required for the amount (y – x).
Advantages/ Disadvantages	- A reversal entry is necessary on opening date. Nowadays, some software automatically record the reversal of adjusting entries. - Upon receiving the source document, it is not necessary to make a link between this document and the adjusting entry of year 1. The document can be recorded as an "ordinary" transaction.	- No reversal entry is necessary on opening date. - Upon receiving the source document, it is necessary to make a link between this document and the adjusting entry of year 1.
Impact on income before income tax	December 31 - 175 Impact on Year 1 - 175 January 1 + 175 Reception date of the document - 180 Impact on Year 2 -5 Total impact on Years 1 & 2 - 180	December 31 - 175 Impact on Year 1 - 175 January 1 0 Reception date of the document - 5 Impact on Year 2 - 5 Total impact on Years 1 & 2 - 180
Conclusion	Both solutions have the same impact on income before income tax. The total impact is equal to the amount of the expense (180) which is mainly recorded in year 1 (with an adjustment if the amount is different).	

Appendix 5.4 Expenses recorded in advance

Table 5.4A compares both methods described in section 2.1.4 of Part 2 Advanced issues.

Table 5.4A Comments on expenses recorded in advance

	Solution 1 – Expense is recorded in advance and adjusted		Solution 2 – Expense is not recorded in advance	
September 1	The expense is recorded in the income statement for the total amount: 120.		The expense is not recorded in the income statement but in the balance sheet, as an asset: 120.	
December 31	The expense account must be adjusted, otherwise, the net income would be understated. Out of a period of one year (twelve months), 4 months have been consumed therefore 8 months must be adjusted: 120 x 8/12 = 80.		The part of asset consumed during Year 1 (4 months) is recorded as a revenue: 120 x 4/12 = 40. This is not strictly speaking an adjusting entry. Each time an expense paid in advance is consumed, this kind of entry is recorded.	
January 1	Under this method, the adjusting entry is systematically reversed on the first day of the following accounting period (see below impact on income before income tax).		In this system, no systematic entry is necessary on the opening date of the following year.	
August 31	No entry is necessary.		The part of the asset consumed during Year 2 (8 months) is recorded as an expense: 120 x 8/12 = 80.	
Impact on income before income tax	September 1 December 31 Impact on Year 1 January 1 August 31 Impact on Year 2 Total impact on Years 1 & 2	- 120 + 80 - 40 - 80 0 - 80 - 120	September 1 December 31 Impact on Year 1 January 1 August 31 Impact on Year 2 Total impact on Years 1 & 2	0 - 40 - 40 0 - 80 - 80 - 120
Conclusion	Both solutions have the same impact on income before income tax. The total impact is equal to the amount of the expense which has been split between two accounting periods.			

We use the term “period” instead of “year” because all our explanations are valid if a company decides to prepare financial statements for a period shorter that the accounting year.

Appendix 5.5 Limitations on the applicability of accounting principles

As indicated earlier in this chapter, some accounting principles have limits. For example, we recognized in the basis of valuation principle that the hypothesis of a stable value of the monetary unit (in terms of purchasing power) only applied when there was no inflation. We all know that, on many occasions, such a hypothesis is proven to be unrealistic. In a situation of high inflation a literal application of the principle of historical costing at the nominal cost of acquisition would inflate the profit figure in such a way that it would be meaningless. It would lead to higher taxes and open the possibility of distribution to shareholders of what might very well be fictitious profits.

Let us illustrate the problem with the example of Massenet Company which owns two essentially identical pieces of land A and B (similar location, similar potential for use, etc.). Lot A was purchased in year X1 while lot B was purchased in period X6. Between X1 and X6, the real estate market price level index has risen at a steady rate of 10% a year. This means that a piece of land that cost 1 in year X1 costs 1.61 in year X6 [$(1+0.1)^5 = 1.61$]. The value of the two lots in the books of the firm at the end of year X6 are the following:

Lot A (carried at its purchase price expressed in currency units of year X1)	100,000
Lot B (carried at its purchase price expressed in currency units of year X6)	161,000
Total	261,000

The total is rather difficult to interpret because it is essentially adding goods measured in different units. It is like adding distances measured in kilometers and in miles. The market value of the two lots is 161,000 currency units each and that is what the shareholders want to know. Their investment seems to have created an unrealized profit of 61,000 currency units on lot A, but in fact there is no profit at all. The increase in value has been entirely created by inflation.

In order to correct the limitations in a literal application of accounting principles, many accounting regulatory bodies have allowed, in generally well specified circumstances, deviations from the GAAP of the country. Some deviations can be to allow, for example, the contingent use of current costing or to require a revelation in the notes to the financial statements of additional data allowing the users to recast the statements in a light that serves better their decision-making interests.

Chapter 6 - Revenue recognition issues

Appendix 6.1 Illustration of the two methods for reporting of long-term contracts

Heise Company will provide an illustration of the recording of profit under both approaches. Heise is a designer and manufacturer of dedicated microprocessors. It has signed with Karajan GmbH a fixed-price contract for the design of a prototype of a music recognition chip to be used in portable MP3 layers. The fixed price contract is for an amount of 800 (all data are in thousands of currency units, except for time spent, which is expressed in days). The price agreed upon was the result of an estimation by Heise's Development VP that the work would not take more than 100 engineer days. An engineer day costs, on the average, 6 currency units including the support costs. The expected profit on the contract is therefore around 200 (in thousands of currency units). The project, code word La-Ré-Mi, is started on September 1 of period X1 and is expected to be completed no later than April 30 of period X2.

By the end of period X1, Heise's time sheet show that 44 engineer days have been dedicated to the La-Ré-Mi project. A re-estimation of the resources required to complete the project, based on the new knowledge acquired in this first phase, is that it will probably require 110 engineer days to finish the project. The total cost is re-estimated at around 660 (the cost per engineer day has not been modified). Karajan GmbH has agreed to pay the 800 price in three installments: 200 in period X1, 400 in February X2 and the remaining 200 upon delivery.

Percentage of completion method

Table 6.1A illustrates how the facts of the Heise are recorded under the percentage of completion method.

Table 6.1A Percentage of completion

		Original data	End of Year 1	Year 2
Amount of revenue agreed in the contract	(1)	800	800	800
Number of days initially planned and revised	(2)	100	110	110
Number of days to date	(3)	0	44	110
Number of day re-estimated	(4)	N/A	110	N/A
Average cost per engineer day	(5)	6	6	6
Contract costs incurred to date	(6)=(3)x(5)	N/A	264	660
Number of days to complete	(7)=(2)-(3)	100	66	0
Contract costs to complete	(8)=(7)x(5)	600	396	0
Total estimated contract costs	(9)=(6)+(8)	600	660	660
Estimated profit	(10)=(1)-(9)	200	140	140
Stage of completion	(11)=(6)/(9)	N/A	40%	100%

The percentage of completion formula is illustrated in Figure 6.1A:

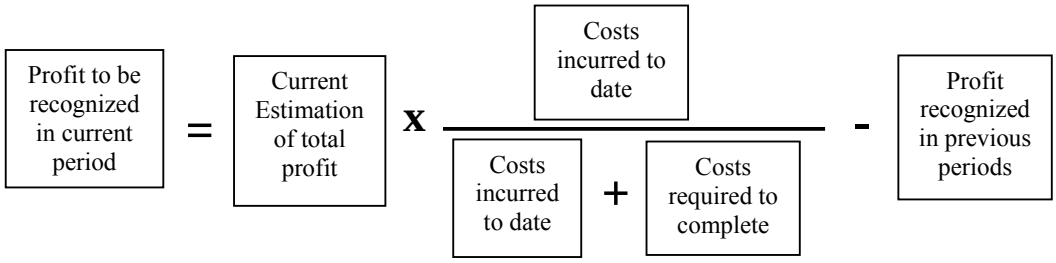


Figure 6.1A General definition of percentage of completion

Table 6.2A illustrates the calculation of the contract profit for each period

Table 6.2A Computation of contract profit

		Period X1	Period X2	Total
Contract costs incurred to date	(6)	264	660	
Total estimated/re-estimated contract costs	(9)	660	660	
Percentage of completion	(11)	40%	100%	
Increase in completion accrued during the period	(12)	40%	60%	
Contract revenue	(13)=(1)x(12)	320	480	800
Contract expense	(14)=(9)x(12)	264	396	660
Contract profit	(15)=(13)-(14)	56	84	140

Completed contract method

If the completed contract method had been used, the figures would have been different of course for each period but the same over the full life of the La-Ré-Mi project (see Table 6.2A).

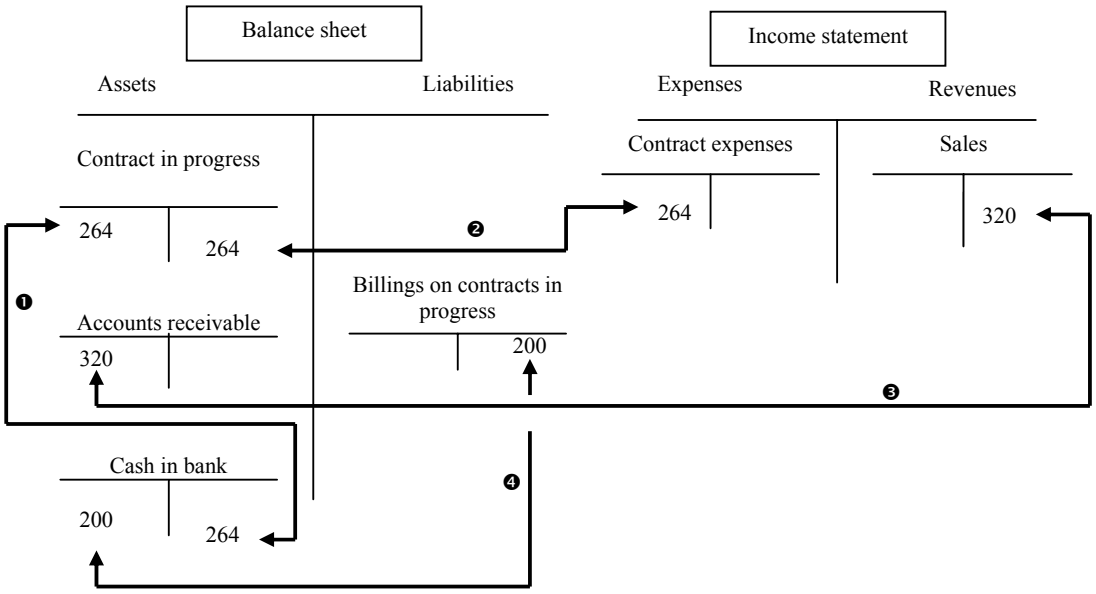
Table 6.3A Computation of contract profit

		Year 1	Year 2	Total
Recognized Contract revenue	(1)	0	800	800
Recognized Contract expense	(6)	0	660	660
Contract profit	(1)-(6)	0	140	140

Accounting entries to record these approaches

Accounting entries for long-term contract are not normalized. Each country and sometimes even each enterprise within a country define their own practice and set of accounts that have to be used. The illustration below is only one example of what can be done. Regardless of the accounts used, what matters is to understand the impact of each method on the income statement and on the balance sheet.

Percentage of completion method

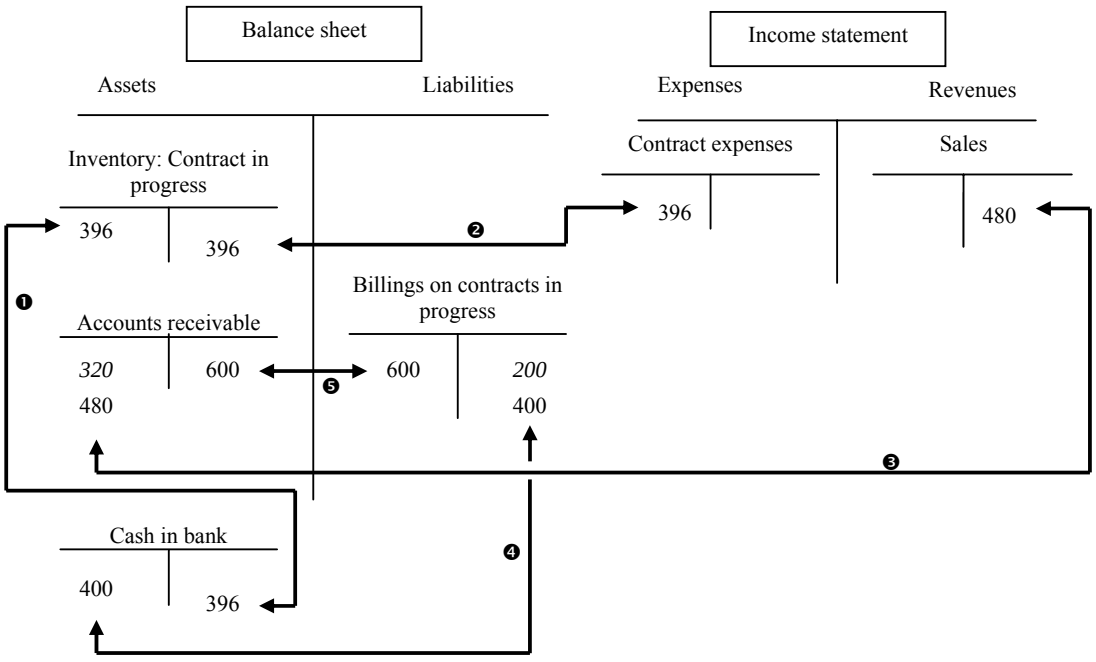


❶ The costs incurred on the contract (materials, personnel, overhead) are recorded in a "Contracts in progress" account. In our example all expenses are assumed to be paid cash. In reality some would have to be recognized as accounts payable first but it does not really affect the validity of the illustration.
❷ At the end of the year the "contract in progress" balance is transferred to the expenses side of the income statement. Some countries' GAAP (or some enterprises) skip step ❶ (for the sake of minimizing accounting costs) by not opening a contract in progress account but that practice loses some key information as it becomes difficult to trace costs back to a specific contract which is a requirement for the ability to carry out a post mortem on the contract.
❸ A revenue is recognized in year one. We showed the revenue as increasing the debit of the "accounts receivable".
❹ Billing does not affect the recognition of profit, of course. The cash received from the client is recognized as a down-payment or cash advance. It can be recorded as a liability as we did above or as a negative asset (contra-asset). IASB's IAS 11 (§ 44-45) recommends, in order to ease the legibility of financial statements, that

advances received from and amounts owed by the same customer be offset against one another, and that the balance be recorded appropriately as an asset or a liability.

Figure 6.2A Percentage of completion - Year 1

The impact of Project La-Ré-Mi's first period on Heise' income in year X1 is therefore 56 (i.e. 320 – 264).

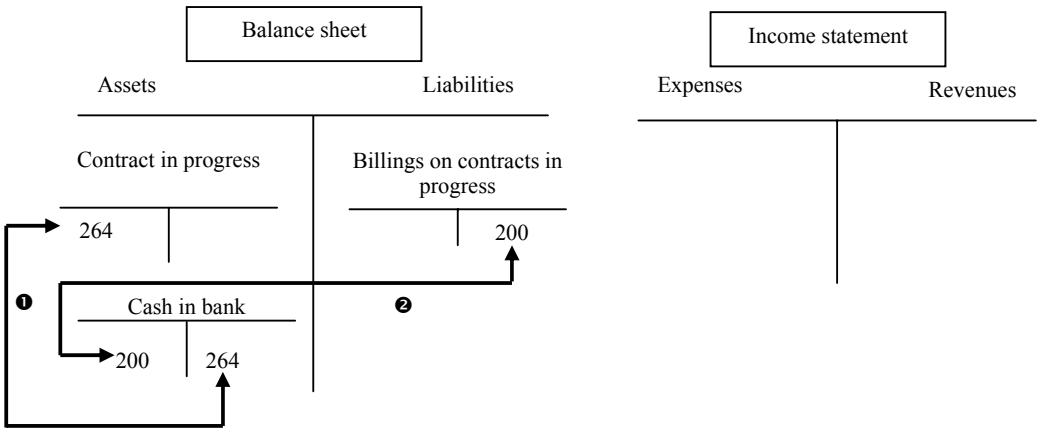


❶ ❷ ❸ ❹ See year 1.
❺ The total of the down-payments received is balanced against the accounts receivable to show the amount remaining due from the customer, i.e. 320 + 480 – 600 = 200.

Figure 6.3A Percentage of completion - Year 2

The impact on year 2 income is 84 (480 – 396). If we are to cumulate the two periods, the total is of course 140 (i.e. 140 = 800 – 660 = 56 + 84).

Completed-contract method



❶ See percentage of completion method.
❷ See percentage of completion method, step ❹.

Figure 6.4A Completed-contract method - Year 1

Neither expense nor revenue has been recorded in year 1.

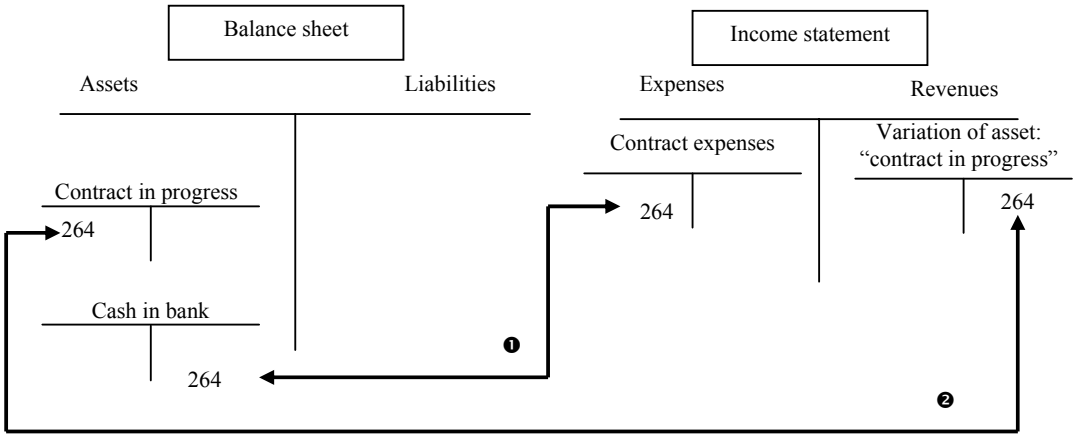
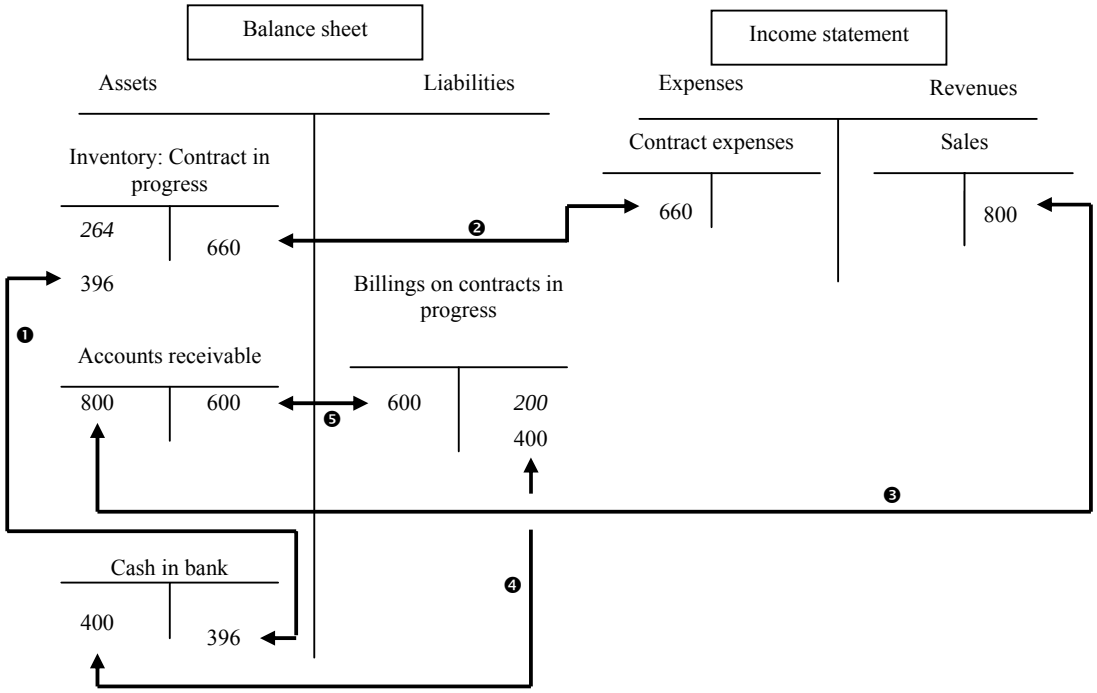


Figure 6.5A Completed-contract method – Year 1 – Other solution

This diagram must be enriched to recognize the recording of the intermediate billing or of the down-payments which take place in step ❷.



❶ See percentage of completion method.
❷ An expense is recognized.
❸ The total revenue is recognized (i.e. 800).
❺ As in the previous method, the total of the payments received from the customer is transferred to the accounts payable to show only the balance due by the customer i.e. 200 which is 800 – 600.

Figure 6.6A Year 2

As expected the impact on income is 140.

Appendix 6.2 Installment sales

Installment sales are quite common in some retail businesses such as mail order collector books, furniture, or automobiles. Under this practice the customer pays in several installments for a product or service over which s/he has acquired control before the full payment is completed. The issue of uncertainty about the full payment creates an interesting revenue recognition problem. Such a payment approach is generally referred to as an installment credit. The topic is quite complex and students who wish to explore it are invited to consult a more advanced text[2] than this one. In short the question is two-pronged: what date of recognition of revenue, and how much to recognize at what time. If revenue is fully recognized at the time of the signature of the sales contract, there is a major risk of payment

[2] The reader can refer to the following textbook: Skousen *et al.* (2003).

default by some customers but that solution is coherent with the matching principle and a provision might be the right vector to recognize the risk. An issue here is to know whether the manager really wants the shareholders to be so well informed of the risks the business is taking[3]. Many installment sales are treated like long-term contracts and the gross profit margin (sales minus cost of acquisition or manufacturing by the seller of the goods sold) is recognized in proportion to the acquisition of the installment payments.

Appendix 6.3 Recognition of a net deferred tax asset

The recognition of a net deferred tax asset (excess of deferred tax assets over deferred tax liabilities) raises an issue of both value and reality. Remind that deferred tax assets are "the amounts of income taxes recoverable in future periods in respect of: (a) deductible temporary differences; (b) the carryforward of unused tax losses; and (c) the carryforward of unused tax credits" (IAS 12, IASB 2000: § 5). The fundamental question is to know whether or not this deferred tax asset will be useable, at some point in the future, to offset an actual tax liability. In other words, is a deferred tax asset a real asset? Several approaches are possible once again.

1. A net deferred tax asset is recognized if:
   - The company has a positive taxable income today;
   - If not today, a positive taxable income will be obtained in a near future.
2. Deferred tax assets are recognized for all deductible temporary differences. This amount is reduced, if necessary, by a provision (also called valuation allowance account).
3. Other solutions have been adopted in other countries.

IASB (IAS 11: § 27) favors solution 1: "the reversal of deductible temporary differences results in deductions in determining taxable profits of future periods. However, economic benefits in the form of reductions in tax payments will flow to the entity only if it earns sufficient taxable profits against which the deductions can be offset. Therefore, an entity recognizes deferred tax assets only when it is probable that taxable profits will be available against which the deductible temporary differences can be utilized".

[3] The practice of leasing cars is a good example of difficulties in evaluating risks. The vehicle lease value is based on some hypothesis of the resale value of the vehicle at the end of the contract. If the future used car market for a new vehicle is hard to anticipate, it is easy to under- or over-evaluate that resale value of the vehicle to be returned. Many north American automotive companies have experienced serious difficulties on this topic in the last years of the twentieth century.

In the second solution, the concept of "*if necessary*" (see above) is based on all available evidence. More precisely, the deferred tax asset is reduced (adjusted over time) when it becomes clear that it is "more likely than not" that some portion or all the net deferred tax asset will not be realized. "More likely than not" means a level of likelihood that is at least slightly more than 50%. Once a deferred tax asset has been recorded and if it becomes clear that this asset will probably never offset future income tax payable, the following entry is necessary:

IS (E+)	Income tax expense		x	
	BS (A-)	Allowance to reduce deferred tax asset to expected realizable value		x

This entry is similar to that of recording of a provision expense.

Appendix 6.4 Illustration of the principle of carry-back and carry-forward

Figure 6.8A illustrates the mechanism of carry-back (3 years) and carry-forward (4 years) assuming that we are in X4.

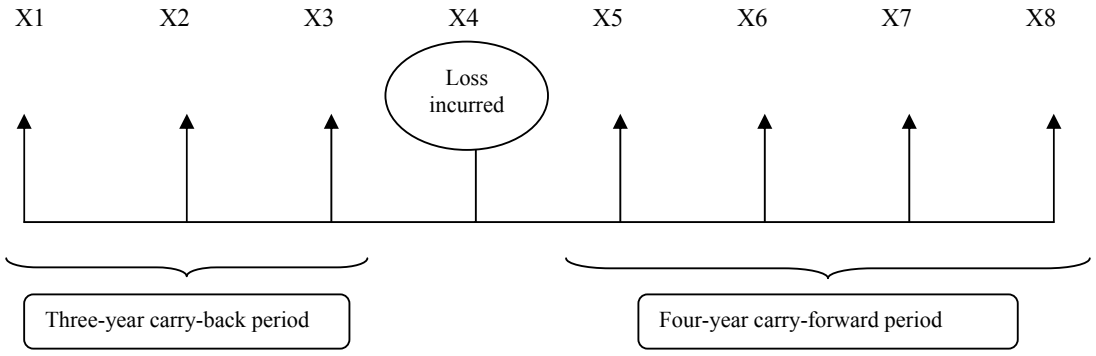


Figure 6.7A Principle of carry-back and carry-forward

Recording of a loss carry-back:

BS (A+)	Income tax refund receivable		x	
	IS (R+) or IS (E-)	Benefit due to loss carry-back or Income tax expense		x

Recording of a loss carry-forward:

BS (A+)	Deferred tax asset		x
IS (R+) or IS (E-)		Benefit Due to Loss Carry-forward or Income Tax Expense	x

Appendix 6.5 Deferred taxation and changes in tax rates

When tax rates are modified by the tax authority, the question arises of deciding whether or not to adjust the deferred tax assets or liabilities in the balance sheet. Two approaches exist:

- Deferred method, and
- Liability method.

Deferred method

Under this method the tax rate modification is ignored. This is equivalent to saying these deferred tax assets or liabilities are not "real" tax claims or liabilities and that therefore their amount should not be modified before they become due.

Liability method

This method is the exact opposite of the deferred method. The amounts stated in the balance sheet as deferred tax asset or liability must be updated to recognize the fact the future cash flows will be affected. This implies that the accountant who chooses such an approach reinforces the tax nature of these debts or assets.

Preferred method

IAS 12 (IASB 2000) and most countries' GAAP have opted for the liability method. IAS 12 states that "current tax liabilities (assets) for the current and prior periods shall be measured at the amount expected to be paid to (recovered from) the taxation authorities, using the tax rates (and tax laws) that have been enacted or substantively enacted by the balance sheet date" (§ 46). "Deferred tax assets and liabilities shall be measured at the tax rates that are expected to apply to the period when the asset is realized or the liability is settled, based on tax rates (and tax laws) that have been enacted or substantively enacted by the balance sheet date" (§ 47).

Appendix 6.6 Extraordinary and exceptional items

Extraordinary items

The US GAAP (APB Opinion No. 30, AICPA 1973: § 20) defines extraordinary items as transactions and other events that are (a) material in nature, (b) of a character significantly different from the typical or customary business activities, (c) not expected to recur

frequently, and (d) not normally considered in evaluating the ordinary operating results of an enterprise. Events that meet only one criterion and not all do not qualify as extraordinary items. They are included in the ordinary activities with a special disclosure if they are material. APB Opinion 30 (§ 23) provides examples of such unusual (but still ordinary) items:

- Losses resulting from prohibition under a newly enacted law or regulation;
- Gains or losses that are the direct result of a major casualty;
- Most expropriations of property.

The EU 4th Directive takes a position that is close to that promoted by IASB before the revision if IAS 1 in 2003. It distinguishes ordinary activities from extraordinary charges. Article 29 states that income and charges that arise otherwise than in the course of the company's ordinary activities must be shown under "Extraordinary income and extraordinary charges". However the Directive does not define "ordinary activities", thus leaving room for several countries to add the concept of "exceptional items".

Exceptional items

Most countries using the concept of exceptional items do not define it positively but only by stating what it is not. An exceptional item in the income statement is one for which the cause is not linked to the normal or ordinary course of business of that firm. However what is normal or ordinary is not defined either, which leaves a lot of room for interpretations thus reducing the usefulness of statements unless (a) one understands the line of business in which the reporting firm is engaged and (b) one delves into the footnotes which generally clarify the choices made by the firm in its reporting. An exceptional income or loss is distinguished from the operating income or loss after deduction of interests and financial costs.

When analyzing annual reports it becomes clear that practitioners tend to place a much broader variety of items in the "exceptional" category than they do in the "extraordinary" category.

Some events are considered exceptional in some countries but ordinary in others. A partial list contains the following:

(a) a restructuring of the activities of an enterprise and the reversal of any provision for the costs of restructuring;
(b) disposals of long-term investments;

(c) discontinued operations;
(d) litigation settlements.

The definition of extraordinary items is, on the contrary, quite narrow and prudent so as to limit the ability of management and accountants to subjectively “modulate”, to their liking, the operating income after financial elements.

Because of the ambiguity of the definition of exceptional items, managers sometimes choose, without penalty, when confronted with an ambiguous event to define its related expenses as exceptional and its related income as ordinary.

Chapter 7 - Tangible fixed assets

Appendix 7.1 Examples of components of the acquisition cost

Table 7.1A lists some examples of components of the acquisition costs of tangible assets as reported in notes to financial statements.

Table 7.1A Examples of acquisition costs

Land	- Purchase price - Cost of closing the transaction and obtaining title (real estate commissions, attorneys' fees, title fees) - Accrued property taxes (to date of acquisition) assumed by purchaser - Cost of surveying the property - Cost of an option to buy the acquired land - Cost of preparing the land for its intended use (including cost to drain and the net cost of removing buildings or other structures) - Cost of permanent improvements (e.g., landscaping)
Buildings	- Purchase price - Cost of closing the transaction and obtaining title (real estate commissions, attorneys' fees, title fees, architectural costs and costs of building permits related to renovation) - Accrued property taxes (to date of acquisition) assumed by purchaser - Repair and remodeling expenses necessary to prepare the building for its intended use - Capitalized interest costs (for buildings constructed by the enterprise for its own use, see part 2 of this chapter for conditions that apply)
Equipment, machinery, furniture, fixtures, etc.	- Purchase price - Transportation expenses including in-transit insurance expense paid by purchaser - Cost of installation, including assembly and installation expenses - Costs of trial runs and other tests once installed

Appendix 7.2 Overhead

While there are generally few problems arising from the tracing of direct materials and components or direct labor cost to the object, allocation of overhead is a difficult issue. How much should be incorporated and for what amount? If overhead is not incorporated in the cost of the object, it will be recognized in the period when incurred and will therefore not be subject to depreciation. The managerial decision of the valuation of such assets has therefore a very large impact on the reported income of the firm during construction and in the years during which economic benefits will be derived from the asset. No clear rules have been specified. Table 7.2A summarizes some of the positions that are found in practice.

Table 7.2A Indirect costs

Method	Principles	Arguments (+ = in favor , - = against)
(a) No overhead approach	To attach no overhead to the cost of the fixed asset constructed by and for the firm itself.	+ Overhead cost are generally fixed in nature. + No increase of overhead as a result of the construction of the asset. - The two above-mentioned conditions are not always met. - Risk of understatement of the depreciable cost and lower future depreciation.
(b) Incremental overhead	To attach to the cost of the asset only the increase in overhead costs that can be specifically traced to the construction of the fixed asset.	+ Method applied when the conditions of the first method are not met. - Given the nature of overhead costs, it is often very difficult to identify incremental costs.
(c) Portion of overhead (Full cost approach)	To attach overhead to the asset on the same basis as is used in costing production for sale (treat the asset in an at arm's length transaction but exclude any profit margin).	+ No understatement of the initial cost. + Same method as for regular products. + Cost closer to the cost of a purchased asset. - Difficulty of measurement.
(d) Lost production	To attach to the object only the amount of overhead that would have been attached to a production for sale that would have been realized with the same resources that were dedicated to the production of the asset for the firm itself (cost of curtailed production).	+ Opportunity cost concept is attractive because it encourages neutrality in the decision of making or buying the asset. - Difficulty of measurement because the lost opportunity changes continuously with the evolution of the ratio of capacity to work load and backlog of orders.

As this topic is generally not dealt with in accounting standards (the FRS 15 "Tangible Fixed Assets" in the UK being an exception), practice is diversified and mainly based on professional judgment. Method (c) in Table 7.2A is the most commonly used, especially when the company is operating at full capacity.

Appendix 7.3 Calculation of capitalized interest costs

To illustrate the capitalization of interest costs, assume that Purcell Company is constructing a plant for use in its own operations. This project will take a few years. In year 1, the costs of raw materials, labor and overhead incurred on the project amount to 1,000 currency units. The "Tangible assets – Plant" account is therefore showing a balance (before interest expense) at the end of the year (December 31) of 1,000 currency units. Cash outlays in year 1 were incurred (for simplicity sake) in two installments one of 300 currency units in early April X1 and another for 700 currency units in early July. On February 1, X1, Purcell Co. took out a 200 currency unit 10% loan from its main bank to partially finance the construction. The remaining cash required for the project in year 1 in the project came from available cash within the company. The company has a substantial amount of additional debt outstanding at an average interest rate of 8%.

Table 7.3A shows how to calculate the amount of interest to be capitalized.

Table 7.3A Computation of capitalized interest

Date	Amount	x	Capitalization period (number of months)	=	Weighted average accumulated expenditures
April 1	300		9		300 x 9/12 =225
July 1	700		6		700 x 6/12 =350
Total	1,000				575

- The capitalization period is the number of months between the date of expenditure and the date the interest capitalization stops or the end of the accounting period, whichever comes first (in this case December 31).
- The weighted-average accumulated expenditures is obtained by weighting the various cash outlays by the amount of time during which they are actually financed by the enterprise.

The interest capitalization for Year 1 is computed as shown below:

200	(portion corresponding to the loan)	x	10%	=	20
375	(weighted-average accumulated expenditures less portion corresponding to the loan = 575 [see Table 7.3A] – 200)	x	8%	=	30
575	(see Table 7.3A)				50

- For the portion of weighted-average accumulated expenditures that is less than or equal to the dedicated loan, the interest rate pertaining to that loan is used.
- For the portion of weighted-average accumulated expenditures that is greater than the dedicated amount borrowed, a weighted average of interest rates incurred on all other outstanding debt during the period is used.

The recording of the capitalization is the following:

BS (A+)	Plant		50	
IS (R+) or IS (E-)		Production capitalized or Interest expense		50

Appendix 7.4 Sum of the years' digits

Principle

This method calculates the annual depreciation expense by multiplying the depreciable amount by a fraction decreasing each year. The fraction is defined by the number of years remaining to depreciate (numerator) and the sum of the digits representing the number of years in the useful life (denominator). This method never has to reverse to straight line:

$$Depreciation\ expense\ for\ one\ year = \frac{Number\ of\ remaining\ years\ of\ life}{Sum\ of\ digits}\ x\ Depreciable\ amount$$

For assets with relatively long lives, the following shortcut helps calculating the sum of digits:

Sum of digits = N(N+1)/2 (where N is the number of years of the asset's useful life)

The sum of the years' digit method is rarely allowed by tax authorities and its use in reporting to shareholders is declining. For example, since the US Internal Revenue Service disallowed for tax calculations the sum of the years' digits method in 1980, the method's popularity has declined regularly in reporting to shareholders to become quite rare to date.

Illustration: Purcell Company

The useful life of the asset is 5 years. Thus the sum-of-the-years' digits is 5 + 4 + 3 + 2 + 1 = 15.

Table 7.4A Depreciation schedule – Sum-of-the-years' digits

End of year	Depreciable basis	Applicable fraction	Annual depreciation expense	Balance: accumulated depreciation	Year-end book value
-					6,000
Year 1	5,000	5/15	1,667	1,667	4,333
Year 2	5,000	4/15	1,333	3,000	3,000
Year 3	5,000	3/15	1,000	4,000	2,000
Year 4	5,000	2/15	667	4,667	1,333
Year 5	5,000	1/15	333	5,000	1,000

Appendix 7.5 Depreciation for partial years (fractional year problems)

In the previous examples, we have assumed that the depreciation year and the financial reporting period are the same. However, fixed assets are not always acquired at the beginning of a fiscal period. Likewise, assets are not always disposed of at the end of the period. Logically, assets are bought when they are needed and sold when they are no longer useful.

The computation of the annual depreciation expense differs, however, only for those methods in which depreciation is based on the passage of time. Depreciation for partial years under the activity-based methods is computed in the same way as for full years of use, because the expense is based on productive output or service quantity rather than a time period.

If one assumes that the closing date is December 31, Table 7.5A lists some methods used to record partial depreciation. Each method defines the portion of the annual depreciation

expense that would be recorded in the first and last periods of life of an asset in the books of the firm.

Table 7.5A Partial years depreciation calculation

Policy	How to recognize depreciation	Examples
Policy 1	Number of days	Acquisition date: November 25 → 37 (6 + 31) days/365
Policy 2	Number of full months (including the month of the acquisition for a full month)	Acquisition date: November 25 → 2 months/12
Policy 3	To nearest full month	Acquisition date: November 10 → 1st year = 2 months/12 Acquisition date: November25 → 1st year = 1 month/12
Policy 4	To nearest full year	Acquisition date: March 10 → 1st year = 1 year Acquisition date: November 25 → 1st year = 0 year No depreciation is taken in the first year if the enterprise acquired the asset in the second half of the year.
Policy 5	To nearest half year	Acquisition date: January-March → 1st year = 1 year Acquisition date: April-September → 1st year = 1 half year Acquisition date: October-December → 1st year = 0 year
Policy 6	One half year's depreciation in period of acquisition and one-half year in period of disposal (or in the last period)	Acquisition date: January-December → 1st year: 1 half year Selling date: January-December → last year: 1 half year
Policy 7	Full-year's depreciation in period of acquisition and none in period of disposal (or in the last period)	Acquisition date: January-December → 1st year: 1 year Selling date: January-December → last year: no depreciation
Policy 8	No depreciation in period of acquisition and full year in period of disposal (or in the last period)	Acquisition date: January-December → 1st year: no depreciation Selling date: January-December → last year: 1 year

For example, in Italy, one half year's depreciation is computed in the period of acquisition.

Appendix 7.6 Accounting for a sale of fixed asset - Illustration: Purcell Company

Let's take the example seen in the chapter of the Purcell Company and assume that the equipment is sold on December 31, X4 for a sale price of 2,500. We assume this asset was depreciated following the straight-line method. As the sale takes place on December 31, we assume that the depreciation expense of year 4 has already been recorded. Had the sale taken place at another date not corresponding to the end of the fiscal period, a partial year depreciation would have had to be recorded first.

Method 1 (one entry – gain or loss recorded in one account) (country example: USA)

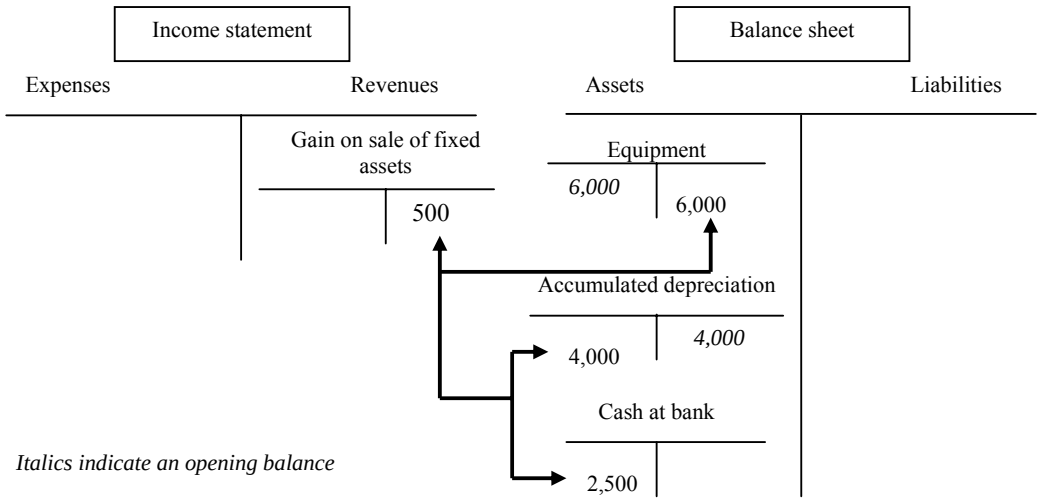
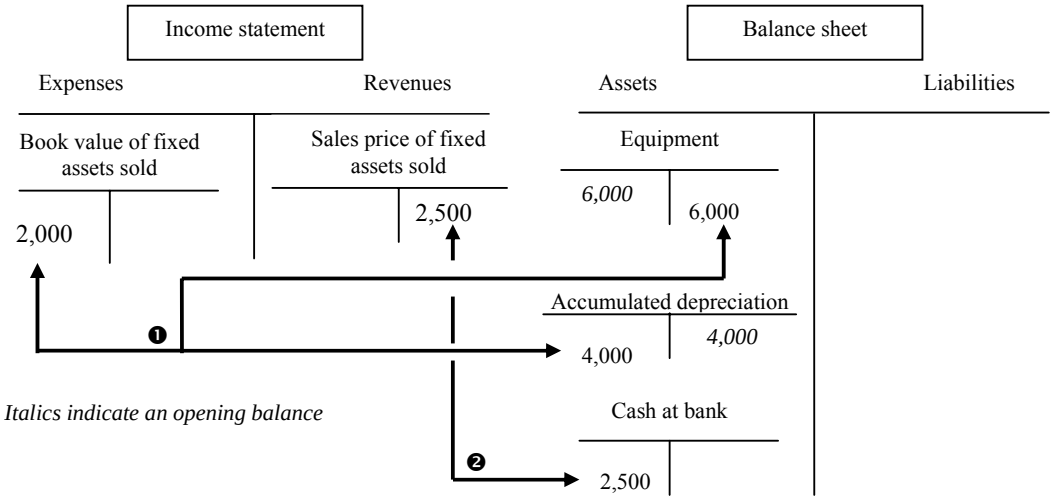


Figure 7.1A Method 1

- Accumulated depreciation: see depreciation schedule (straight-line method – end of Year 4).
- Book value = 6,000 (acquisition cost) – 4,000 (accumulated depreciation) = 2,000
- Gain on sale = 2,500 (selling price) – 2,000 (book value) = 500

Method 2 (two entries – gain or loss recorded in two accounts) (country example: France)

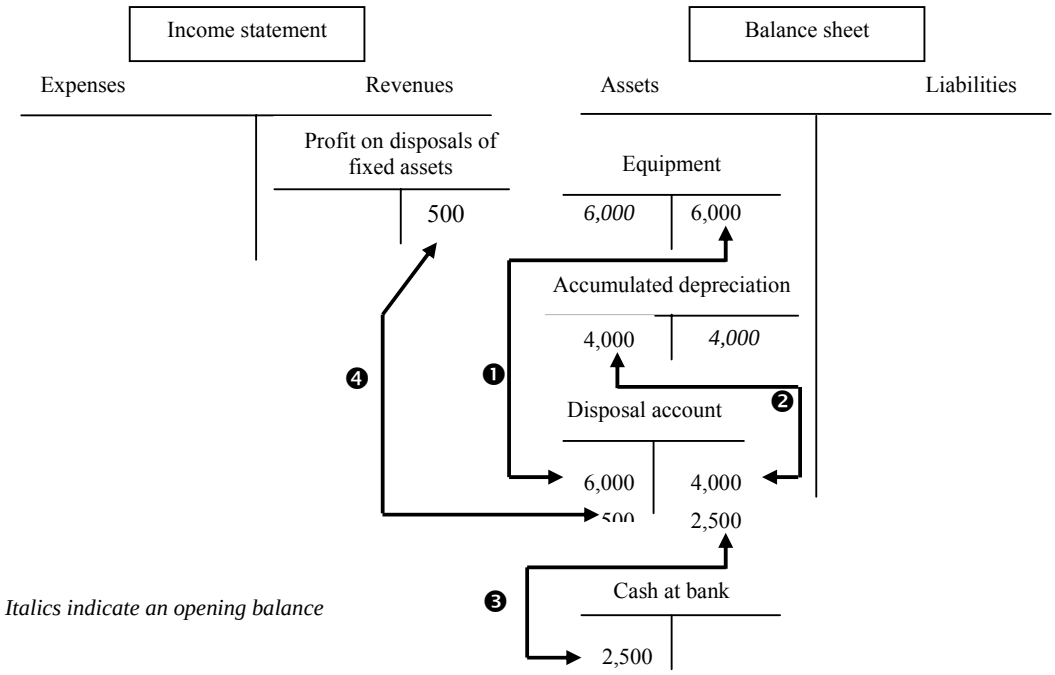


Gain = revenue - expense = 2 500 - 2 000.

❶ First step: cancellation of the fixed asset
❷ Second step: proceeds from the sale.

Figure 7.2A Method 2

Method 3 (Use of an intermediary account "Disposal account") (country example: UK)



❶ First step: cancellation of the acquisition cost of the tangible asset
❷ Second step: cancellation of the accumulated depreciation of the tangible asset
❸ Third step: proceeds from the sale. Gain = balance of the Disposal account (- 6,000 + 4,000 + 2,500 = 500 [credit]).
❹ Fourth step: transfer of the gain (or loss) to the income statement

Figure 7.3A Method 3

Appendix 7.7 Removing a fully depreciated tangible asset from the book

When a tangible asset is fully depreciated, it can be removed from the books if it is no more used. The following entry is recorded:

BS (A+)	Accumulated depreciation	x	
BS (A-)	Tangible asset		x

Appendix 7.8 Impact of the choice of a depreciation method on the financial statements

Although total income over the life of the asset is unaffected by the choice of a depreciation method, because the same total depreciable cost is expensed, this choice may have a significant impact on the timing of the measurement of income and, as a consequence, on the apparent financial situation of a company. In the consolidated financial statements of many

groups, the notes to the financial statements indicate that tangible assets have been depreciated over their useful lives on a straight-line basis. With a different depreciation method, such as the double-declining balance method, we could assume that the profit before income tax would have been different.

Most local accounting standards specify that notes to financial statements must disclose the depreciation method used.

Chapter 8 - Intangible Assets

Appendix 8.1 Accounting for computer software

Method 1: two steps depending on the degree of completion (used, for example, in the United States)

Software production costs are defined as the costs of design, coding, testing, documentation, and preparation of training materials. These costs are expensed until technological feasibility of the product is established (e.g. date of completion of a detailed program design or, date of completion of a working model of the product). When a project enters the development phase of a well-defined product, capitalization is legitimate since the future stream of future economic benefits becomes very likely.

After this date, all software production costs are capitalized until the product is ready for general release to customers. From that date onwards, software production costs cannot be capitalized and must be expensed as incurred.

Method 2: a different answer for each of three sequential steps in the development cycle of the software

Early costs are expensed, then they are capitalized in the second phase and expensed in the latter phase. French practice, for example, falls in this category as described in Figure 8.1A.

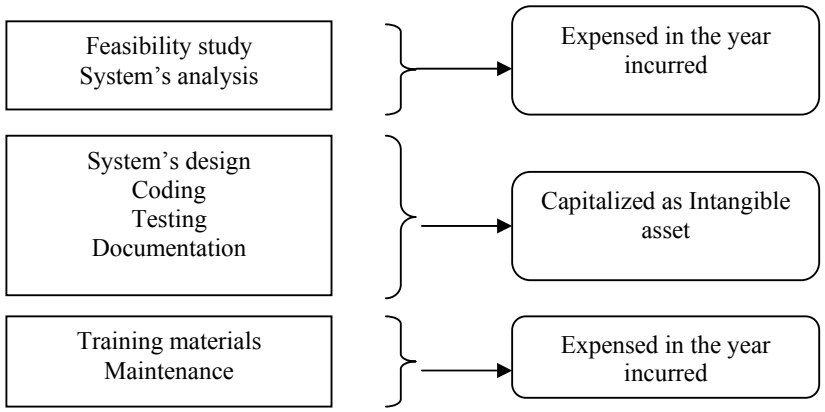


Figure 8.1A Accounting for software in France

Appendix 8.2 R&D intensity

The interested reader can usefully consult the *R&D Scoreboard*, which is prepared annually for the UK Department of Trade and Industry (DTI) by Company Reporting in Edinburgh. This survey can be freely obtained from the DTI or can be downloaded from the following websites: http://www.innovation.gov.uk/projects/rd_scoreboard/home.asp. The 2004 version is based on annual reports of 700 international companies.

In this sample, the average R&D intensity for the year 2004 is 4.2%, with very large standard deviations between and within countries.

Table 8.1A provides the R&D intensity for the biggest countries, clearly showing the difference between "traditional economies" (France or UK) and the more innovative ones (USA and and Japan)

Table 8.1A R&D intensity by country (source: R&D scoreboard 2004)

Country	USA	Japan	Germany	France	UK
R&D intensity (R&D as % of sales)	4.90%	4.20%	4.30%	3.10%	2.30%

Table 8.2A provides a listing of the top 12 international companies ranked by R&D investment.

Table 8.2A Top 12 international companies (Source: R&D Scoreboard 2004)

Rank	Company	R&D expense
1	Ford	£4.2bn
2	Pfizer	£4.0bn
3	DaimlerChrysler	£3.9bn
4	Siemens	£3.9bn
5	Toyota Motor	£3.5bn
6	General Motors	£3.2bn
7	Matsushita Electric	£3.0bn
8	Volkswagen	£2.9bn
9	IBM	£2.8bn
10	Nokia	£2.8bn
11	GlaxoSmithKline	£2.8bn
12	Johnson & Johnson	£2.6bn

Chapter 9 - Inventories

Appendix 9.1 Differences between physical and accounting inventory count

Even when one uses the perpetual inventory system, a periodic physical inventory counting is necessary because many possibilities may create discrepancies between the actual quantities on hand in inventory and the theoretical quantity implied by the inventory accounting balance. These discrepancies or differences are often called "inventory shrinkage" because it is more common than not to come out short in the physical inventory count compared to the accounting based estimated quantity. These shortages (physical quantity is less than account records show) or overages (the physical quantity is greater than the estimated quantity in the accounting records) may stem from a variety of sources such as improper data or accounting entry (inadequate recording), theft, short changing customers, evaporation (in the case of liquids), damage, spoilage, breakage, waste, etc. After a physical inventory counting, the accounting records can be adjusted to agree with quantities on hand. This adjustment has to be recorded and the appropriate entry flows are shown in Figure 9.1A.

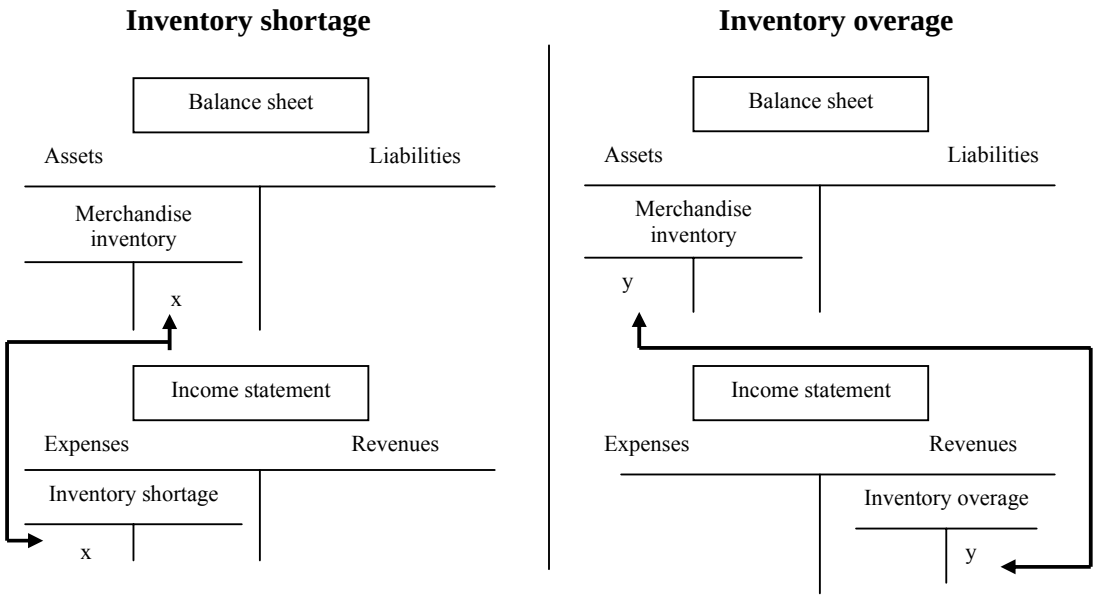


Figure 9.1A Recording of inventory differences

Inventory shortage

IS (E+)	Inventory shortage		x
	BS (A-)	Inventory	x

Inventory overage

BS (A+)	Inventory		y
	IS (R+)	Inventory overage	y

The accounts Inventory shortage (and Inventory overage) may be included in the cost of goods sold, as many companies do, or recorded as other expenses or revenues. Under the periodic inventory system, there is no need for such entry since the cost of goods sold is defined by deduction and there is no estimated physical quantity in the accounting books because withdrawals are not counted at all, but estimated globally at the end of the period. Overages and shortages, if they are any (but they cannot, by construction, be known) are by default charged to income statement as they are included in the cost of goods sold or in the change in inventory account.

The analysis by management of the discrepancies between the two counts (physical and accounting) is a source of continuous improvement and militates in favor of some form of the perpetual inventory system (such as monthly accounting and annual physical counting).

Appendix 9.2 Comparison of advantages and limits of perpetual and periodic inventory systems

Perpetual inventory system

Advantages

- It provides up-to-date information about inventory movements and inventory levels.
- Periodic operating income can be calculated quickly for periods of any duration.
- Accounting follows the same rules as used in inventory management (physical flows and accounting flows are matched).
- Superior internal control tool: inventory losses (inventory "shrinkage") can be identified by comparing the calculated accounting balance with the valuation through the end of period physical inventory.
- The perpetual inventory system allows the immediate impact of any change in the price or cost of goods entering the inventory on the cost of goods withdrawn.

Limits

- The perpetual inventory system is more costly to operate than the periodic system. It requires some infrastructure (closed storeroom, counting upon entry and withdrawal, data processing) and burdensome procedures to record all movements but these are often required for the physical management of inventory. When inventories are of low value or when the levels of inventories change little over the period, the perpetual system is considered by some to be too expensive.
- Maintaining a perpetual inventory account implies that the company be capable of attributing a cost or a value to each withdrawal from inventory at the time it takes place. It means that an effective cost accounting system be in place and that one of the methods of valuation (specific identification, FIFO, LIFO or Weighted Average Cost – see Part 2 of the chapter) is followed consistently.
- Despite it being called the perpetual inventory, it is a most often a periodic inventory with a period of about one month combined with the recording of all movements in value and quantity (thus not requiring a physical inventory until the end of the year). Practically speaking this method often values the withdrawals of one (monthly) period on the basis of information relevant to the previous period (month) because it would be too expensive to calculate the updated cost after each movement.

Periodic inventory system

Advantages

- The system is relatively inexpensive and often sufficient for products that turn over rapidly (it may not be useful to enter the goods in inventory if they are going to leave immediately) and/or have low unit costs, such as groceries and hardware.

Limits

- The system is far from ideal for inventory planning and control (issues of misuse, pilferage or shrinkage -see Appendix 9.2 on “inventory differences”).
- It does not allow one to understand the impact of an evolution of prices or costs on the cost of goods sold unless the level of inventory is negligible.
- It does not support managerial information such as cost flows to specific cost objects (products, orders, projects, customers, etc.) and interim statements without a costly physical inventory taking.

In practice, the perpetual inventory system is the most useful system, but also the most complicated to implement. Some businesses follow the perpetual inventory system for physical quantities and not for value. Such a choice is generally referred to as the "modified perpetual inventory system". This system helps protect against physical stock-outs. In practice, there is also a possibility, in order to minimize the overall cost of operations, to account for part of the inventory on a periodic basis (for example for commodity supplies that are available on a self service basis to the workers) and the remainder on a perpetual basis.

Appendix 9.3 Other LIFO considerations

Let's precise that the same considerations would apply in the exact opposite way for FIFO.

LIFO liquidation

When a company uses the LIFO method, it may have to liquidate inventory (use goods currently recorded as being in inventory to serve current withdrawals) during a period if sales in quantity are higher in quantity than the purchases. In this case, the cost of goods sold will include some of the beginning inventory items, which are, in all likelihood (assuming rising prices) valued at a lower unit cost than the most recent purchases. As a consequence, the cost of goods sold is lower and the income is higher than if the company had not liquidated inventory, by purchasing or producing goods for consumption.

This phenomenon is illustrated with the example of the Prokofiev Company which, at the end of year X2, owns an inventory which is composed of the following "layers" of inventory, assuming that the replacement cost of units is 300 currency units per unit at the beginning of year 3:

Year of purchase	Units	Cost per unit	Total	"LIFO reserve" as of 1/1/X3	
X1	10	100	1,000	(300 - 100) x 10 =	2,000
X2	30	200	6,000	(300 - 200) x 30 =	3,000
Total	40		7,000		5,000

The difference between the replacement cost and the historical cost of inventory is called "LIFO reserve". It is a potential gain or maneuvering space available for the company which can prove to be very important in defining a marketing strategy, especially if there is a strong competitive attack on the firm. When it is reported (which is a rare occurrence), it is more likely to be found in the Notes than in the Financial Statements.

During year X3, Prokofiev Company purchases 20 units at a cost of 300 currency units per unit and sells 35 units for a sale price of 400 currency unit each.

The inventory account will be updated appropriately as shown below:

		Quantity of Units	Cost per unit	Total
Purchases		20	300	6,000
Sales		-20	300	-6,000
		-15	200	-3,000
Total		-35		-9,000
Ending inventory	Acquired in X1	10	100	1,000
	Acquired in X2	15	200	3,000
Total		25		4,000

In the LIFO method, the oldest "layers" of goods are removed last. That is the reason why Prokofiev Company first satisfies demand by taking out first of inventory those goods purchased in X3, but since there are not enough it has to dip into the most recent "layer" of goods composing the inventory and therefore "liquidates" one half (15 units) of the goods in the layer acquired in X2.

The impact of these transactions on the income statement of year 3 is the following:

	Units	Price per unit Cost per unit	
Sales Revenue	35	400	14,000
Cost of goods sold:			
Goods acquired in X3	-20	300	-6,000
Goods acquired in X2	-15	200	-3,000
			-9,000
Gross margin			5,000

In this example, the gross margin is larger than it would have been had we used the replacement value which is the "real" operational income. It is so because goods purchased in X2 (at a lower cost) are matched with sales of X3. If we restate the cost of goods sold to value the inventory outflow at its replacement cost of 300, we obtain the following gross margin:

	Units	Price per unit Cost per unit	
Sales	35	400	14,000
Cost of goods sold	-35	300	-10,500
Gross margin (at current cost)			3,500

The difference between the two margins (5,000 – 3,500) represents the LIFO liquidation profit or LIFO liquidation effect on net income. It represents the extra profit the firm earned not solely through the efforts of the sales force but because of its ability (or misfortune) of having purchased goods at a lower price and held them in inventory. It is interesting as a shareholder to then compare this liquidation profit and the cost of capital consumed in financing this inventory. Unless inflation is severe, the benefit of holding inventory may not be worthwhile in terms of return on capital. The liquidation profit can also be found in the following way:

Liquidation profit = quantity withdrawn from a "layer" of the beginning inventory to satisfy demand (15) x [replacement cost (300) – historical cost (200)] = 1,500.

Companies often disclose in their annual reports the amount of LIFO liquidation profit.

LIFO valuation adjustment

Principles

A company may use LIFO for shareholder reporting as well as for income tax computation (if allowed), and another method internally (FIFO or WAC). In this context, since it would be too costly, and in any case illegal, to keep two sets of books, an adjustment is made to the value of the inventory reported in the internal accounting method in order to obtain the figure reported externally for the same items using LIFO. This adjustment is equal to the difference, between each method, in the change in inventory between beginning and ending values. It is reported in both the cost of goods sold and in the ending inventory (with opposite effects on these two account balances). The adjustment is often called "LIFO valuation adjustment", "valuation allowance" or "LIFO reserve" (which is, alas, a confusing term since the same word communicates a meaning different from that of "LIFO reserve" described earlier).

Appendix 9.4 Effect of an inventory misstatement

As shown in Table 9.1A, the misstatement of withdrawals in a given year will have the opposite impact the following year, because the ending inventory of the current year becomes the beginning inventory of the following year.

Table 9.1A Impact of inventory misstatement

	Simulation N° 1		Simulation N° 2	
	Year 1 →	Year 2	Year 1 →	Year 2
Inventory	Ending ↗	Beginning ↘	Ending ↘	Beginning ↗
Cost of goods sold or withdrawals for consumption in the transformation process	↘	↗	↗	↘
Net income	↗	↘	↘	↗

overstatement ↗ understatement ↘

Chapter 10 – Current assets (other than inventories)

Appendix 10.1 Value added tax

Value Added Tax (VAT) is payable on sales and deductible on purchases. The accounting of VAT therefore creates both payables and receivables. Although this chapter is dedicated to short term assets, we will cover here both VAT payable and receivable since the whole VAT process cannot be separated in two distinct parts.

Principle of the Value Added Tax

This form of sales tax has been adopted, under one name or another, in most European countries as well as in Canada, Mexico, New Zealand and Russia. VAT is an indirect consumption tax collected step by step each time the transformation process generating a sellable product or service requires an at arms length transaction between economic entities. In this context the "value added" is defined at the time of each transaction as the difference between the price of the item in the transaction and the cost of the resources acquired or purchased to produce the item. Although exceptions may exist in that some professions or lines of business may be exempted from VAT (and these vary between countries), each and every economic actor contributes to the process of collecting the VAT which, in the end, is neutral for all economic actors involved except the final consumer.

In a sequential value chain, each actor increases its untaxed selling price by the percentage of VAT applicable to their trade. Each economic actor is therefore theoretically a surrogate tax collector. Conversely, each economic entity receives credit from the tax authority for the VAT it has paid on its own purchases. In order to reduce paper work on both sides, the tax authorities generally only ask that the economic entity pay (in general monthly or quarterly) to the State only the net balance between VAT collected and VAT paid. Thus the VAT net payable or net receivable can be computed according to the following formula:

	VAT collected on sales of goods and services (output tax)
minus	VAT deductible on expenses (input tax)
minus	VAT deductible on acquisitions of fixed assets
=	VAT payable (if the balance is positive)
or =	VAT receivable (if the balance is negative).

We will not deal here with the details of VAT fiscal policies[4]. Each country has its own rates and may even have several categories of rates for various types of goods or services (normal, reduced and super-reduced are three categories often found). The normal rate ranges generally between 12% and 20%.

The event that causes VAT to become due or deductible is called chargeable event. The concept defines both the nature of the event and its date. In each country tax authorities specify the characteristics of chargeable events. In the European Union, VAT becomes chargeable either:

- no later than the date of issue of the invoice or the document serving as an invoice; and,
- no later than the receipt of payment.

Specific rules have been adopted in each country specifying the date of chargeability for different kinds of items sold. For instance, VAT may be due at the time of the invoice for a sale of tangible goods but only at the time of completion of the service rendered for intangible activities. Table 10.1A provides an example of calculation of VAT payable.

Table 10.1A Example of computation of VAT payable

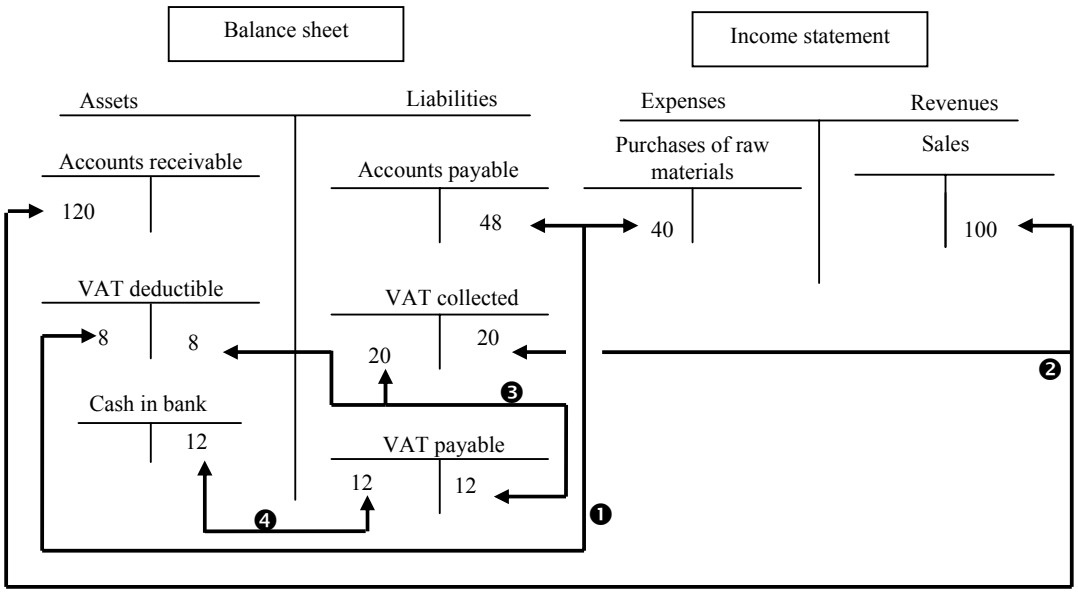
	VAT collected (output tax) on sales of goods invoiced during month M1
+	VAT collected (output tax) on cash sales during month M1 of goods or services to customers
-	VAT deductible (input tax) on tangible resource expenses for which an invoice was received in month M1
-	VAT deductible (input tax) on services paid to the supplier in month M1
-	VAT deductible (input tax) on acquisitions of fixed assets for which an invoice was received in month M1
=	VAT payable (if the balance is positive) (payment will take place during Month M2)
=	VAT receivable (if the balance is negative) (may be deducted from the VAT payable in M2 or a later month)

Accounting for VAT

IAS 18 (IASB 1993: § 8) provides the general principle of VAT accounting: "Revenue includes only the gross inflows of economic benefits received and receivable by the entity on its own account. Amounts collected on behalf of third parties such as sales taxes, goods and services taxes and value added taxes are not economic benefits which flow to the entity and do not result in increases in equity. Therefore, they are excluded from revenue".

Figure 10.1A provides a schematic view of the key accounting entries for an enterprise selling tangible goods. In this example, the assumed applicable VAT rate is 20%.

[4] For more details see Nexia (1994). For an example of VAT in a European country (UK for instance), see



❶ Purchases creating VAT deductible (rate of 20%).
❷ Sales revenue creating a VAT collected (rate of 20%).
❸ At the end of the month, computation of VAT payable (net): VAT collected (20) – VAT deductible (8)
❹ Payment of the VAT, in general during the following month.

Figure 10.1A Accounting for VAT

It is important to note that, as illustrated above, purchases (any expense) and sales (any revenue) are recorded exclusive of VAT whereas accounts receivables and accounts payable appear in the books as amounts including VAT. This situation consequently biases key operating ratios, as explained in the section devoted to financial statement analysis (see Part two).

Impact on doubtful accounts

Doubtful account receivables usually include VAT. It is therefore logical that any provision taken for a doubtful account be written to cover also the VAT although the latter may have already been paid to the tax authorities before the receivable becomes due or even doubtful. Some but not all countries (for instance UK and France) using VAT allow a reversal of the VAT payment in case a doubtful claim becomes uncollectible. In such countries it is then logical to only take the provision for any doubtful account only on its ex-VAT amount.

Lymer and Hancock (2003/04).

Appendix 10.2 Bank reconciliation

A fundamental control activity required to validate the cash accounts and secondly to verify that all entries have been completed in a coherent way consists in verifying that the bank(s) has (have) recorded the same payments as the firm has in its own books and to validate those entries that have not yet been recorded by the bank (for example if the customer's check has not been cleared yet or if a payment check has not been cashed yet by the beneficiary. Such activity is called "bank reconciliation".

The term reconciliation refers to the activity of checking the coherence of two "reciprocal" accounts each held by different parties (such as accounts receivables in the seller's books and the corresponding accounts payables in the customer's book). Differences between two reciprocal accounts can originate from:

- errors
- omissions
- differences in the dates on which transactions are recorded due to administrative or mail delays.

In current practice, the use of the word reconciliation, when used outside the context of auditing, seems to have evolved towards referring mainly to verifying the coherence of the "Bank" account in a firm's books and the bank balance as it appears in the statement describing the position of the firm in the books of the bank itself. Such an activity is generally carried out monthly.

For a given month M, one must check both the entries of M-1 (or previous months if any transaction is still outstanding) that were not handled completely during that month and the entries of the current month in order to determine the transactions that are still in limbo (i.e. handled by one party but not by the other).

The reconciliation statement consists of a listing of all transactions needed to reconcile the accounting cash balance and the cash bank balance.

Any entry in the bank statement pertaining to month M-1 that was not recorded in the accounting system (for example interest earned, transaction fees or interest expense) must be recorded in the month M unless they are undue (for example due to a mistake of the bank).

There exist many ways of organizing the bank reconciliation. Most accounting software packages offer their own approach to reconciliation and such an activity can also be carried out using any standard spreadsheet program. Table 10.2A offers an illustrative and generic format for carrying out a reconciliation which could easily be used to structure a spreadsheet or a dedicated accounting software program.

Table 10.2A Schematics of a bank reconciliation

Balance per books (before reconciliation), End of Month M	(A)
Add: deposits mentioned on the bank statement and not yet recorded - bank transfers - interest income - dividend income - collection of notes receivable - correction of errors (deposits recorded but understated) - correction of errors (withdrawals recorded but overstated)	(B)
Minus: withdrawals and expenses mentioned on the bank statement and not yet recorded - automatic withdrawals - payment of notes payable - fees and service charges (such as checking account fee or safe deposit fee) - interest expense - non-sufficient funds (NSF) checks (checks deposited and returned unpaid by the maker's bank) - collection fee on notes receivable - checks omitted in company's records - correction of errors (deposits recorded but overstated) - correction of errors (withdrawals recorded but understated)	(C)
Minus: deposits recorded by the company but not credited by the bank - deposits in transit (checks deposited on the bank account but not yet recorded by the bank) - notes receivable	(D)
Add: withdrawals and expenses recorded by the company but not debited by the bank - Outstanding checks (checks issued and recorded by the company but not yet recorded by the bank) - Notes payable (notes not yet recorded by the bank)	(E)
Equals Adjusted balance per bank, end of month M	(F)=(A+B-C-D+E)
Balance per bank, End of month M (on the bank statement)	(G)
Control	(F)=(G)

Comments

- The amounts in categories (B) and (C) must be recorded by the firm.
- In practice, some businesses record first the amounts in categories (B) and (C) and establish their bank reconciliation from a balance after these.
- The control equation (F) = (G) must be verified to the penny, since the slightest error may be a signal of a larger problem. When the equation is verified, the terms of trade is to declare that the balance per books and per bank are "in agreement".

Appendix 10.3 Note receivable paid at maturity

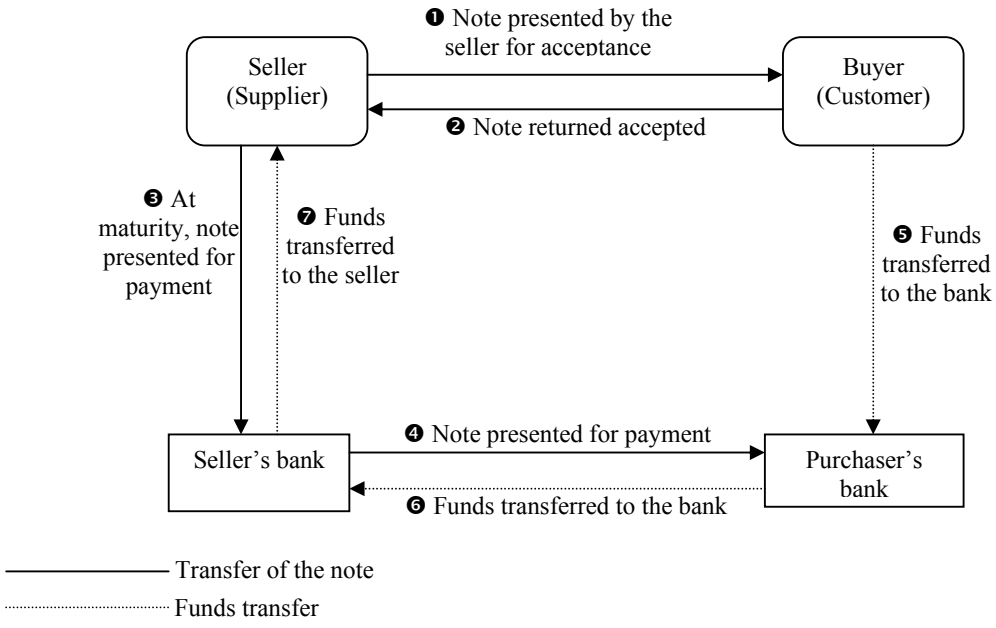
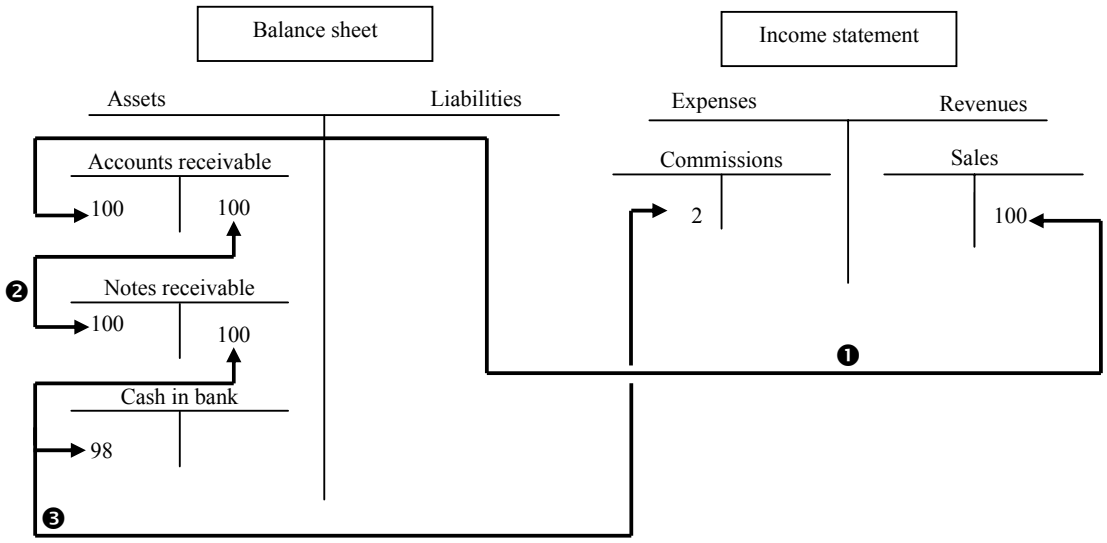


Figure 10.2A Note receivable paid at maturity (draft emitted by the seller and accepted by the buyer)

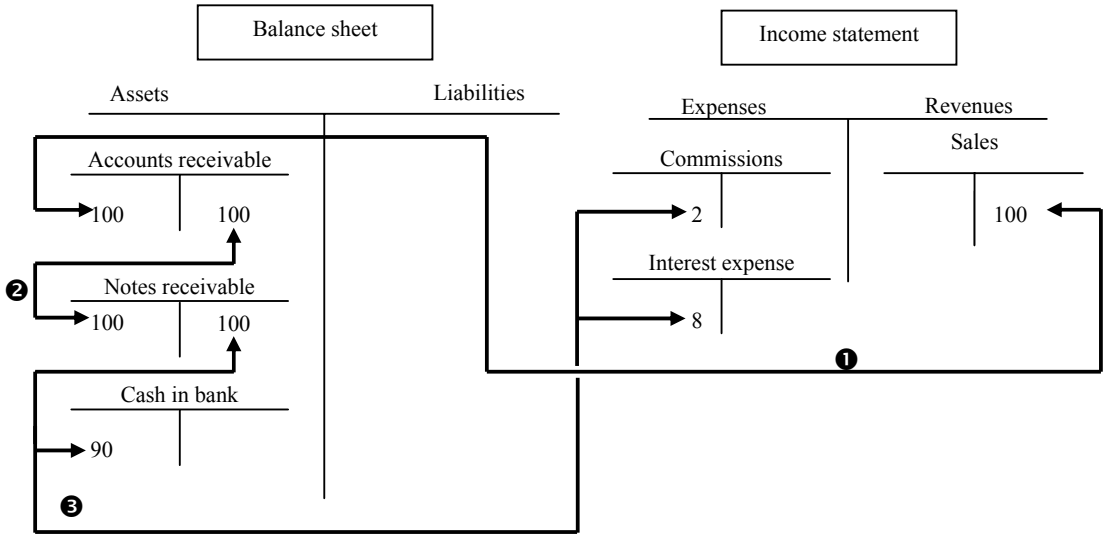
Appendix 10.4 Recording of notes receivable

Figure 10.3A illustrates the accounting entries for a note corresponding to a sale of 100 and which is carried by the supplier until maturity (corresponding entries in the buyer's accounts are covered in Chapter 12).



❶ Original sale
❷ Creation of the note and acceptation. The note is recognized in the balance sheet by transferring the receivable amount to "notes receivable'.
❸ At maturity, the note is paid in cash. The bank charges a handling commission (the amount shown here is illustrative only and should not be considered to be representative of practices which vary greatly between banks and countries).

Figure 10.3A Accounting for a note receivable paid at maturity



❶ Original sale
❷ Creation of the note and acceptation. The note is recognized in the balance sheet by transferring the receivable amount to "notes receivable".
❸ Before maturity: discounting of the note. The asset note receivable is cancelled and cash is debited while the bank collects a fee or commission. (Amounts shown here are illustrative only and bear no relation to current practice which may vary between banks and between countries and over time). An alternative entry can be used in order to recognize the fact the discounting is done with recourse: in this case the note receivable remains on the asset side and a debt towards the bank (bank overdraft) is recognized for the same amount.
❹ If the alternative approach mentioned in the previous step has been adopted, the note receivable will be cancelled as well as the debt toward the bank on the maturity date if the original drawer of the note settles as agreed.

Figure 10.4A Accounting for a note receivable discounted with recourse before maturity

IAS 39 (IASB 2003b: § 20) recommends that only the "alternative solution" mentioned in step ❸ above be adopted, (i.e. the note is kept in the assets and a financial liability is recorded). It states that "When an entity transfers a financial asset (…) if the entity retains substantially all the risks and rewards of ownership of the financial asset, the entity shall continue to recognize the financial asset".. In fact IASB states that in the case of discounting a note with recourse, the firm discounting the note receivable does not lose control over it.

Chapter 11 – Shareholders' equity

Appendix 11.1 Different categories of reserves

Legal reserve

Commercial law in certain countries, mainly in the European Union, specifies that a legal reserve be added to every year through the allocation of a percentage of earnings for the year (in general between 5 and 10%) until the accumulated reserve amount equals a specified percentage (in general between 10% and 50%) of the original legal share capital (number of shares times the par). It represents an attempt at making sure the capital of the firm increases with the passage of time so that the liability guarantee offered to creditors and possible other third party claimants remain minimally realistic.

For instance, the percentage of annual earnings contributed to the legal reserve is 5% in Brazil, France, Greece, Italy and Switzerland and 10% in Spain and Saudi Arabia. In Japan and Korea an amount of not less than 10% of the cash distributions paid out in the form of cash dividends and bonuses to directors and corporate auditors must be appropriated to the legal reserve. The legal reserve is contributed to until the pre-established level is reached: 10% of common capital in France, 20% in Brazil, Italy, Spain and Switzerland, 25% in Korea, 33 1/3% in Greece and 50% in Saudi Arabia and Japan. Once the threshold has been reached, contributions to the legal reserve are no longer required.

There are no requirements to set-up such a legal reserve in several countries including Australia, Canada, Hong Kong, South Africa and the USA.

Statutory reserves

Statutory reserves are those prescribed by company by-laws. This type of reserve is relatively unusual because of its lack of flexibility.

Regulated reserves

Regulated reserves are those associated with regulatory (generally fiscal) rules. Some tax regulations offer a preferential treatment (lower effective tax rate on earnings, for example) to corporations that grow their reserves beyond the legal minimum. Such a conditional fiscal incentive is a flexible way to achieve, when needed and for an adjustable period, a purpose

equivalent to that of the legal reserve, i.e. increasing the protection of creditors and third parties.

Revaluation reserve

This is a restricted reserve that cannot be distributed. It holds the unrealized holding gains resulting from the recording of fixed assets for their revalued amounts (when revaluation of assets is legally authorized).

Capital redemption reserve or reserve for treasury shares (own shares)

Corporations have the right, under certain conditions, to acquire their own shares. In such a case a capital redemption reserve or reserve for own shares (treasury stock in US English) must be created. (This topic will be further explored in the second part of this chapter).

Optional (or voluntary) reserves

Shareholders during the Annual General Meeting or the Board of Directors in accordance with the by-laws of the corporation (and the local company law) may decide to set up any reserve they see fit in order to set aside a part of the earnings in anticipation of a specified future expense. These reserves represent *de facto* the largest part of reserves. Their creation is entirely at the initiative of the shareholders or of their representatives.

Profit/loss brought forward

In some countries financial statements may show on the balance sheet a line that reads “profit or loss brought forward” (also called “un-appropriated retained earnings”). This item may have the following meaning:

- If the balance is positive (credit): it represents the undistributed earnings of the previous year that still could be distributed because no final ruling has been approved by the shareholders as to its destination;
- If the balance is negative (debit): it represents losses accumulated throughout the previous years and which have not been offset by a reduction of reserves or of the legal capital on the grounds that the management and the shareholders are optimistic about the high probability that positive earnings will be generated in the future.

Appendix 11.2 Differences in the meaning of retained earnings

Most of the time the term “retained earnings” is a part of “shareholders’ equity”. However an analyst of the financial position of the firm must beware of the fact that the term retained

earnings may cover different realities depending on the country whose laws and practices are followed.

Before reviewing the relevant terminology, we will show that a few different ways exist in reporting earnings and the accumulated undistributed part of earnings within the shareholders' equity segment of the balance sheet.

The basic reason for the existence of different reporting approaches originates in the fact shareholders' equity can be reported before or after profit appropriation. Figure 11.A1 summarizes the possibilities. There are several reasons for the existence of alternative ways of reporting:

- In most European countries, shareholders make all decisions regarding retaining or distributing earnings during their Annual General Meeting. The meeting is held several months after the closing of the accounts. Published accounts are considered definitive only after the Annual General Meeting approved them. A choice therefore exists: either the accounts published before the General Assembly are reflecting the complete reality and are presented before appropriation of earnings; or, the published accounts are considered to reflect assumed acceptance of the proposed appropriation. In this case the undistributed earnings are the only ones listed in the shareholders' equity. Dividends if they have yet been paid out are listed as a liability (owed to the shareholders). Although this second solution is quite common there is still a (faint) risk that the Annual General Meeting might modify the accounts.
- In other countries, and notably in the United States, it is the Board of Directors that decides on retaining or distributing earnings. In addition, unlike what is common practice in most European countries, dividends are often paid out by anticipation and in installments throughout the year. For these reasons, shareholders' equity is reported after appropriation and there are no Dividends payable.

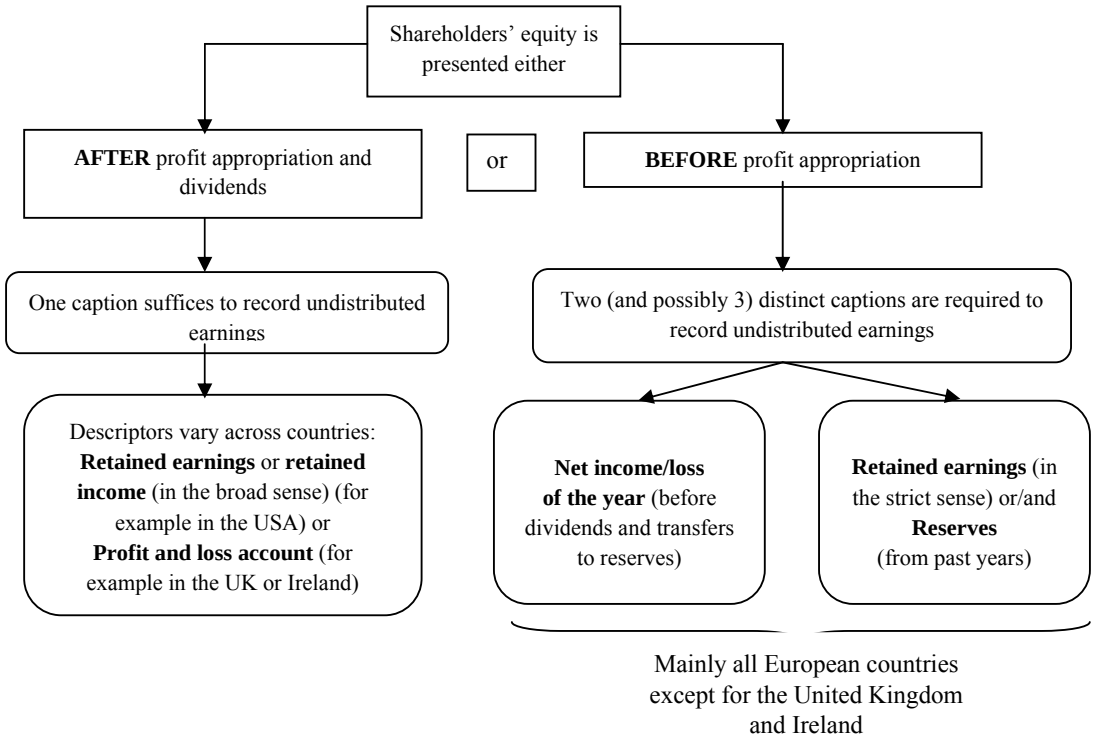


Figure 11.1A Different ways to present shareholders' equity.

Appendix 11.3 Unrestricted and restricted reserves

Most countries' generally accepted accounting principles offer two categories of earnings that have been retained in the business (or reserves). These two categories are:

- The reserves that could be distributed at a later date at the initiative of the body with power of decision over dividends (Annual General Meeting of Shareholders or Board of Directors); they are called unrestricted or available, and
- The reserves that cannot be distributed or for which a distribution would require special authorization beyond the normal power of decision of either the General Meeting or the Board of Directors; they are called restricted reserves.

Specific rules may differ from country to country. Table 11.1A recapitulates the most common categories of reserves.

Table 11.1A Restriction on reserves distribution

Description of reserve	Possibility of distribution	Comments
Legal reserve	Restricted	This reserve is considered an integral part of the capital exactly like the original capital at par and cannot be distributed under any circumstances.
Statutory reserve	Restricted	Only a modification of the by-laws could allow the distribution of such reserves.
Regulated reserve	Unrestricted	The fiscal deduction that was obtained in exchange for the constitution of the reserve could be reversed if this reserve were distributed.
Revaluation reserve	Restricted	In some countries, it is however an unrestricted reserve to the extent that it corresponds to subsequently realized assets.
Capital redemption reserve (Reserve for treasury stock)	Restricted	The purpose of this reserve is to maintain the "permanent capital" (capital and non-distributable reserves) even though the corporation holds some of its own shares.
Optional reserves	Unrestricted	However they are generally created for a special purpose.
Profit/loss brought forward	Unrestricted	-
Share premium	Restricted/Unrestricted	Although this is not strictly a reserve, it still is wealth belonging to shareholders. Some countries treat it as restricted while others consider it unrestricted and allow its distribution to all shareholders.

Reporting for restricted/unrestricted reserves may vary across countries. In practice, the choice is between the following three approaches:

1. Separate reserves into restricted/unrestricted classes in the shareholders' equity section of the balance sheet. It is for example the case in Sweden (see an illustration in Part 1 in the excerpt from the Ericsson annual report).
2. Report such a distinction only in the notes to the financial statement.
3. Not report the distinction in any public document.

Appendix 11.4 Share (stock) split

In a share (or stock) split, the old shares are divided in a given number of new shares (for example 2 to 1 or 3 to 1). New shares are issued in exchange of old shares but the amount of shareholders' equity remains unchanged.

One major advantage of a share (stock) split is that it makes the current shareholders' investment more liquid since the unit market value of the share will be mechanically reduced thus making it more easily tradable and, in all likelihood, more desirable to potential investors. The market value of the firm, all things being equal, may even increase because of the greater liquidity.

Appendix 11.5 Reduction of the share capital due to accumulated losses

Principle

This situation may appear when the reserves are insufficient to cover the accumulated losses and the prospects of the firm are not good regarding future earnings. In order to "clean-up" the financial statements it is therefore logical to reduce the share capital so as to let users of financial information know that the ability of the corporation to assume its responsibilities has been reduced.

As the reduction of share capital threatens the creditors position, therefore company law in most countries contains measures to protect the creditor. Consequently, accumulated losses can be set against share capital only in a specific, legally approved scheme of reorganisation.

Illustration

Hopkinson Ltd. has a share capital of 200,000 CU. Accumulated losses amount to 150,000 CU. Shareholders believe that future earnings will probably never allow the complete compensation of these accumulated losses within the foreseeable future. Even if the business were to become profitable again, no dividend could be paid-out until the accumulated losses have been compensated. This situation makes it highly unlikely that new investors could be brought-in to shore up the capital. Eliminating the accumulated losses by reducing the capital will clarify the financial situation. The accounting entries for this "reduction of capital" or "capital write-down" are illustrated in Figure 11.2A.

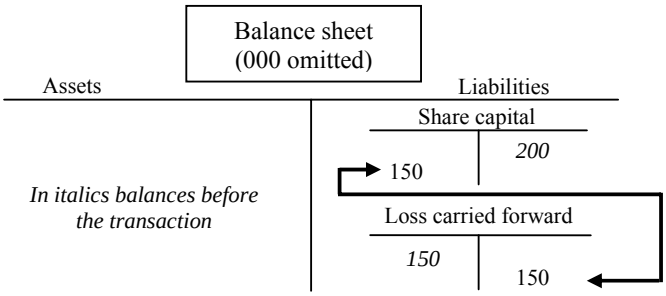


Figure 11.2A Accounting for a reduction of capital

The accumulated losses can, depending on the country, be recorded in either “loss carried forward” or “retained earnings” or “reserves”.

Appendix 11.6 Share dividend in North America

A share dividend is sometimes reported not in cash terms but as a percentage of the currently issued number of shares (this is a common practice in North America). For example, a 3 % stock dividend means that every shareholder holding 100 shares would be eligible to receive 3 shares as dividend. The number of issued shares is then multiplied by the market value of the company. The share capital and a share premium (additional paid-in capital) are increased.

Let’s assume that Powell Company decides to distribute a share (stock) dividend of 4%. Its share capital is composed of 100,000 shares with a par value per share of 1 currency unit. The market value of the share is 5. The number of issued shares is equal to 100,000 x 4% = 4,000 shares, worth 20,000 currency units. The accounting entry recording the share dividend would be the following:

BS (L-)	Retained earnings (4,000 x 5)		20,000	
	BS (L+)	Share capital (4,000 x 1)		4,000
	BS (L+)	Share premium [4,000 x (5-1)]		16,000

Appendix 11.7 Reporting for comprehensive income

Let us revisit the case of Mittal Steel, the Dutch steel company we looked at in section 3.4 (part 1) above. Its consolidated financial statements are established following the US GAAP. Table 11.2A illustrates how this company presents its comprehensive income.

Table 11.2A Reporting for comprehensive income

Consolidated statements of income (millions of US dollars)

	2003	2004
(…)		
Net income	1,182	4,701

Consolidated statements of comprehensive income (millions of US dollars)

	2003	2004
Net income	1,182	4,701
Other comprehensive income (loss), net of tax		
Foreign currency translation adjustment	113	929
Minimum pension liability adjustment	(79)	15
Unrealized gains on available for sale security	69	66
Unrealized gains on derivative financial instruments	6	4
	109	1,014
Comprehensive income	1,291	5,715

Consolidated balance sheets (millions of US dollars)

	2003	2004
Shareholders' equity		
Common shares	59	59
Treasury stock	(110)	(123)
Additional paid-in capital	584	552
Retained earnings	2,423	4,739
Accumulated other comprehensive income	(395)	619
Total shareholders' equity	2,561	5,846

Consolidated statements of changes in shareholders' equity (millions of US dollars)

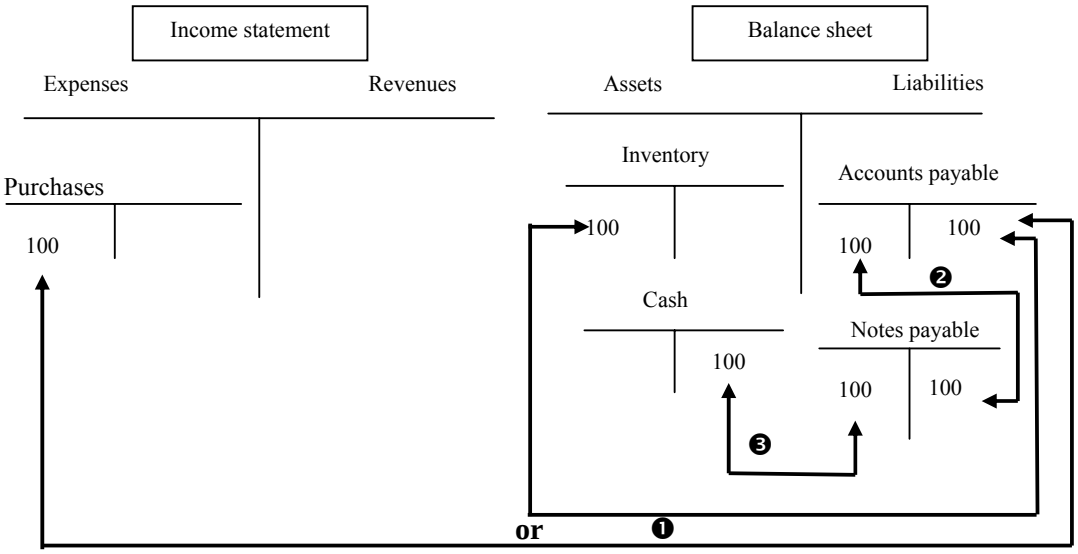
					Cumulative other comprehensive income				
	Common shares	Treasury stock	Additional paid-in capital	Retained earnings	Foreign currency translation adjustment	Minimum pension liability	Unrealized gains on derivative financial instruments	Unrealized gains on available for sale security	Shareholders' equity
Balance at December 31, 2003	59	(110)	584	2,423	135	(601)	2	69	2,561
Net income				4,701					4,701
Other comprehensive income					929	15	4	66	1,014
Treasury stock		(13)	(32)						(45)
Dividends				(2,385)					(2,385)
Balance at December 31, 2004	59	(123)	552	4,739	1,064	(586)	6	135	5,846

The arrows highlight the linkages between the various documents.

Chapter 12 – Liabilities and provisions

Appendix 12.1 Accounting for notes payable

Our illustration of the recording of notes payable will continue the example given in Chapter 10 as applied in Figures 10.3A and 10.4A. Figure 12.1A illustrates the recording process of the three steps involving a 100 currency unit purchase (❶) settled through a note (❷) which is later paid in cash (❸). The fact the seller discounted the note (in order to get its cash quicker) has no impact on the accounting entries in the customer's books.



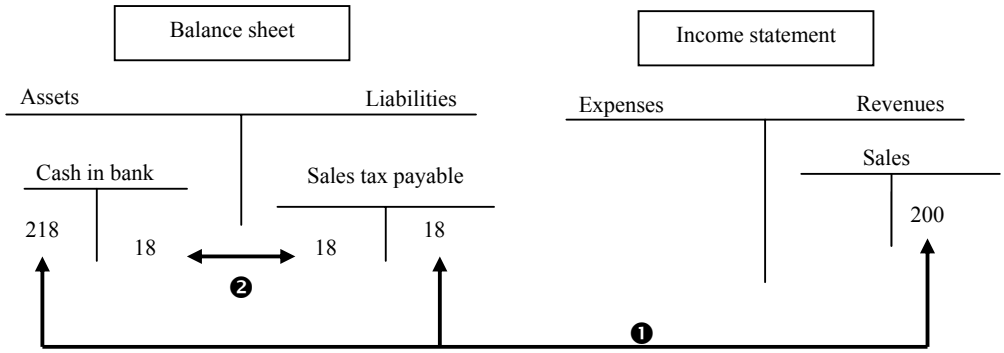
❶ Original purchase.
❷ Creation of the note and endorsement. The note is recorded in the balance sheet in the "notes payable".
❸ At maturity, payment of the note.

Figure 12.1A Accounting for notes payable

Even if the note is discounted by the seller (i.e. sold to another entity which will collect on the date of settlement - see Chapter 10), the recording of the note payable in the purchaser's records is not affected since the same amount will have to be paid on the due date. The only element that has been modified is the identity of the beneficiary of the settlement. In practice, the purchaser is not even informed of the discounting.

Appendix 12.2 Accounting for sales tax

Figure 12.2A illustrates the sales tax payable accounting entries with the example of a 9% sales tax rate on gross sales of 200 currency units assumed here, for the sake of simplicity, to have been paid cash by customers.



❶ Sales with a tax payable collected (rate of 9%: 0.09 x 200 = 18).
❷ Payment of the sales tax, according to a periodicity that varies between countries.

Figure 12.2A Accounting for sales tax

The sales tax - or the VAT- payable appears on the balance sheet as a liability until the taxes are paid to the fiscal administration. The sales shown on the income statement is 200, not 218. In other words, the sales tax does not affect the income statement.

Appendix 12.3 Interest and time value of money

Accounting for long-term liabilities requires understanding the principles -and the mastery- of the principles and techniques of compound interest, future value and present value. These principles and techniques are presented in a very simplified approach in this appendix. The essential principle is that a currency unit to be paid (or received) in the future is not worth as much as a currency unit today. The essential terms to quantify the implications of this principle are:

Principal: amount borrowed on which interest accrues.

Interest: periodic cost or rental charge paid by the borrower to the lender for the use of the principal. The interest is generally expressed as a periodic interest rate.

Simple interest = unchanging principal x interest rate

Example:

Principal	100 currency units
Interest rate	10% per annum
Duration of the loan (in years)	3 years

Principal at end of period = Future value = Principal + interest = 100 + (100 x 0.10 x 3) = 100 + (10 x 3) = 130.

Compound interest = (principal increased by accumulated interest) x (interest rate)

If we choose the following symbols:

FV = future value;

P = principal;

i = interest rate per period (year);

n = number of periods (years); and

we have for three years:

FV after one year = $P + Pi = P \times (1+i)$

FV after two years = $P \times (1+i) \times (1+i) = P \times (1+i)^2$

FV after three years = $P \times (1+i)^2 \times (1+i) = P \times (1+i)^3$

From this simple recurring illustration one can derive the generic formula:

$$\text{FV after n years} = P(1+i)^n$$

The table below lists the actual amounts for each of the three years of the example:

	Principal	**Compound interest**	**Balance at the end of year**
Year 1	100	10.0	110.0
Year 2	110	11.0	121.0
Year 3	121	12.1	133.1

Table 12.1A gives the value of $(1+i)^n$ for a variety of interest rates and periods.

Thus, FV at the end of year 3 = $100(1.10)^3$ = 100 x 1.3310 (intersection of the 3 years line and the 10% column) = 133.10.

Present value (PV) = value today of a future cash flow: $PV = \frac{FV}{(1+i)^n} = FV \times (1+i)^{-n}$.

Table 12.2A gives the value of $\frac{1}{(1+i)^n}$ for a variety of interest rates and periods. Using the data of the above illustration, the future value in three years of the capital was shown to be 133.10 currency units. This future value is worth today: $133.10/(1.10)^3 = 133.10 \times 0.7513$ (the 0.7513 factor is found at the intersection of the 3 years line and the 10% column)= 100 (rounded).

Present value of an ordinary annuity. The present value of an ordinary annuity (PV_A) is the present value of a series of equal cash flow payments (CF) which take place at the end of successive periods of equal length.

$$PV_A = CF \times \sum_{t=1}^{n} \frac{1}{(1+i)^t} = CF \times \frac{1-(1+i)^{-n}}{i}$$

Let us assume a sequence of 3 equal 50 currency units yearly cash flows paid at the end of the year. We assume a discounting (opportunity interest rate) rate of 10% per annum. Table 12.3A gives for this combination (3 years, 10%) the value of $\frac{1-(1+i)^{-n}}{i}$ as 2.4869 (intersection of the 3 years line and the 10% column). The present value of this annuity is therefore equal to:

$$50 \times \frac{1-(1.10)^{-3}}{0.10} = 50 \times 2.4869 = 124.345 \text{ currency units (rounded).}$$

The mathematics of the calculation of the present value of an ordinary annuity can be used in reverse to identify the implied rate if the cash flows, present values and the number of periods are known. Such a calculation was used in the determination of the implied interest rate of the Lindblad example in part 2, section 2.4.

In other cases, the present value, the duration and the interest rate are known and what the manager or the analyst wants to calculate is the implicit annual cash flow. Such a calculation is used for example to define the annuities required for reimbursing a loan in equal

installments. (See Review problem 12.1 for a complete example). The recurring cash flow is found by applying the following formula:

$$\text{Amnnuity Cash flow payments} = \text{Amount of the principal (debt)} \times \frac{i}{1-(1+i)^{-n}}$$

In this case, the easy solution consists in reading Table 12.3A backwards.

Most commercially available off-the-shelf spreadsheet software are generally capable of doing all these calculations with a simple click of the mouse.

Table 12.1A Future value of 1 CU = $(1 + i)^n$

Periods	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	11%	12%	13%	14%	15%	16%	17%	18%	19%	20%
1	1.0100	1.0200	1.0300	1.0400	1.0500	1.0600	1.0700	1.0800	1.0900	1.1000	1.1100	1.1200	1.1300	1.1400	1.1500	1.1600	1.1700	1.1800	1.1900	1.2000
2	1.0201	1.0404	1.0609	1.0816	1.1025	1.1236	1.1449	1.1664	1.1881	1.2100	1.2321	1.2544	1.2769	1.2996	1.3225	1.3456	1.3689	1.3924	1.4161	1.4400
3	1.0303	1.0612	1.0927	1.1249	1.1576	1.1910	1.2250	1.2597	1.2950	1.3310	1.3676	1.4049	1.4429	1.4815	1.5209	1.5609	1.6016	1.6430	1.6852	1.7280
4	1.0406	1.0824	1.1255	1.1699	1.2155	1.2625	1.3108	1.3605	1.4116	1.4641	1.5181	1.5735	1.6305	1.6890	1.7490	1.8106	1.8739	1.9388	2.0053	2.0736
5	1.0510	1.1041	1.1593	1.2167	1.2763	1.3382	1.4026	1.4693	1.5386	1.6105	1.6851	1.7623	1.8424	1.9254	2.0114	2.1003	2.1924	2.2878	2.3864	2.4883
6	1.0615	1.1262	1.1941	1.2653	1.3401	1.4185	1.5007	1.5869	1.6771	1.7716	1.8704	1.9738	2.0820	2.1950	2.3131	2.4364	2.5652	2.6996	2.8398	2.9860
7	1.0721	1.1487	1.2299	1.3159	1.4071	1.5036	1.6058	1.7138	1.8280	1.9487	2.0762	2.2107	2.3526	2.5023	2.6600	2.8262	3.0012	3.1855	3.3793	3.5832
8	1.0829	1.1717	1.2668	1.3686	1.4775	1.5938	1.7182	1.8509	1.9926	2.1436	2.3045	2.4760	2.6584	2.8526	3.0590	3.2784	3.5115	3.7589	4.0214	4.2998
9	1.0937	1.1951	1.3048	1.4233	1.5513	1.6895	1.8385	1.9990	2.1719	2.3579	2.5580	2.7731	3.0040	3.2519	3.5179	3.8030	4.1084	4.4355	4.7854	5.1598
10	1.1046	1.2190	1.3439	1.4802	1.6289	1.7908	1.9672	2.1589	2.3674	2.5937	2.8394	3.1058	3.3946	3.7072	4.0456	4.4114	4.8068	5.2338	5.6947	6.1917
11	1.1157	1.2434	1.3842	1.5395	1.7103	1.8983	2.1049	2.3316	2.5804	2.8531	3.1518	3.4785	3.8359	4.2262	4.6524	5.1173	5.6240	6.1759	6.7767	7.4301
12	1.1268	1.2682	1.4258	1.6010	1.7959	2.0122	2.2522	2.5182	2.8127	3.1384	3.4985	3.8960	4.3345	4.8179	5.3503	5.9360	6.5801	7.2876	8.0642	8.9161
13	1.1381	1.2936	1.4685	1.6651	1.8856	2.1329	2.4098	2.7196	3.0658	3.4523	3.8833	4.3635	4.8980	5.4924	6.1528	6.8858	7.6987	8.5994	9.5964	10.6993
14	1.1495	1.3195	1.5126	1.7317	1.9799	2.2609	2.5785	2.9372	3.3417	3.7975	4.3104	4.8871	5.5348	6.2613	7.0757	7.9875	9.0075	10.1472	11.4198	12.8392
15	1.1610	1.3459	1.5580	1.8009	2.0789	2.3966	2.7590	3.1722	3.6425	4.1772	4.7846	5.4736	6.2543	7.1379	8.1371	9.2655	10.5387	11.9737	13.5895	15.4070
16	1.1726	1.3728	1.6047	1.8730	2.1829	2.5404	2.9522	3.4259	3.9703	4.5950	5.3109	6.1304	7.0673	8.1372	9.3576	10.7480	12.3303	14.1290	16.1715	18.4884
17	1.1843	1.4002	1.6528	1.9479	2.2920	2.6928	3.1588	3.7000	4.3276	5.0545	5.8951	6.8660	7.9861	9.2765	10.7613	12.4677	14.4265	16.6722	19.2441	22.1861
18	1.1961	1.4282	1.7024	2.0258	2.4066	2.8543	3.3799	3.9960	4.7171	5.5599	6.5436	7.6900	9.0243	10.5752	12.3755	14.4625	16.8790	19.6733	22.9005	26.6233
19	1.2081	1.4568	1.7535	2.1068	2.5270	3.0256	3.6165	4.3157	5.1417	6.1159	7.2633	8.6128	10.1974	12.0557	14.2318	16.7765	19.7484	23.2144	27.2516	31.9480
20	1.2202	1.4859	1.8061	2.1911	2.6533	3.2071	3.8697	4.6610	5.6044	6.7275	8.0623	9.6463	11.5231	13.7435	16.3665	19.4608	23.1056	27.3930	32.4294	38.3376
21	1.2324	1.5157	1.8603	2.2788	2.7860	3.3996	4.1406	5.0338	6.1088	7.4002	8.9492	10.8038	13.0211	15.6676	18.8215	22.5745	27.0336	32.3238	38.5910	46.0051
22	1.2447	1.5460	1.9161	2.3699	2.9253	3.6035	4.4304	5.4365	6.6586	8.1403	9.9336	12.1003	14.7138	17.8610	21.6447	26.1864	31.6293	38.1421	45.9233	55.2061
23	1.2572	1.5769	1.9736	2.4647	3.0715	3.8197	4.7405	5.8715	7.2579	8.9543	11.0263	13.5523	16.6266	20.3616	24.8915	30.3762	37.0062	45.0076	54.6487	66.2474
24	1.2697	1.6084	2.0328	2.5633	3.2251	4.0489	5.0724	6.3412	7.9111	9.8497	12.2392	15.1786	18.7881	23.2122	28.6252	35.2364	43.2973	53.1090	65.0320	79.4968
25	1.2824	1.6406	2.0938	2.6658	3.3864	4.2919	5.4274	6.8485	8.6231	10.8347	13.5855	17.0001	21.2305	26.4619	32.9190	40.8742	50.6578	62.6686	77.3881	95.3962
26	1.2953	1.6734	2.1566	2.7725	3.5557	4.5494	5.8074	7.3964	9.3992	11.9182	15.0799	19.0401	23.9905	30.1666	37.8568	47.4141	59.2697	73.9490	92.0918	114.4755
27	1.3082	1.7069	2.2213	2.8834	3.7335	4.8223	6.2139	7.9881	10.2451	13.1100	16.7386	21.3249	27.1093	34.3899	43.5353	55.0004	69.3455	87.2598	109.5893	137.3706
28	1.3213	1.7410	2.2879	2.9987	3.9201	5.1117	6.6488	8.6271	11.1671	14.4210	18.5799	23.8839	30.6335	39.2045	50.0656	63.8004	81.1342	102.9666	130.4112	164.8447
29	1.3345	1.7758	2.3566	3.1187	4.1161	5.4184	7.1143	9.3173	12.1722	15.8631	20.6237	26.7499	34.6158	44.6931	57.5755	74.0085	94.9271	121.5005	155.1893	197.8136
30	1.3478	1.8114	2.4273	3.2434	4.3219	5.7435	7.6123	10.0627	13.2677	17.4494	22.8923	29.9599	39.1159	50.9502	66.2118	85.8499	111.0647	143.3706	184.6753	237.3763

Table 12.2A Present value of 1 CU = $1/(1+i)^n$

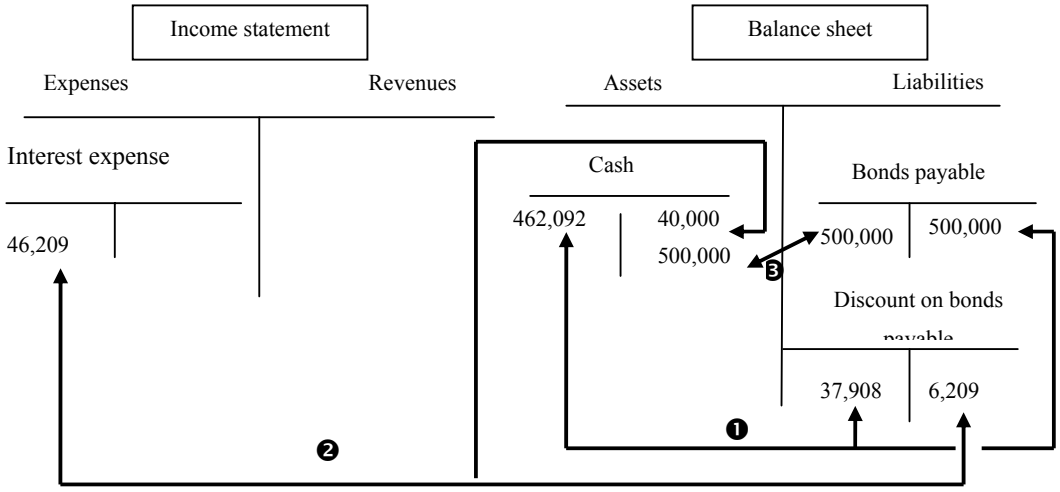
Periods	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	11%	12%	13%	14%	15%	16%	17%	18%	19%	20%
1	0.9901	0.9804	0.9709	0.9615	0.9524	0.9434	0.9346	0.9259	0.9174	0.9091	0.9009	0.8929	0.8850	0.8772	0.8696	0.8621	0.8547	0.8475	0.8403	0.8333
2	0.9803	0.9612	0.9426	0.9246	0.9070	0.8900	0.8734	0.8573	0.8417	0.8264	0.8116	0.7972	0.7831	0.7695	0.7561	0.7432	0.7305	0.7182	0.7062	0.6944
3	0.9706	0.9423	0.9151	0.8890	0.8638	0.8396	0.8163	0.7938	0.7722	0.7513	0.7312	0.7118	0.6931	0.6750	0.6575	0.6407	0.6244	0.6086	0.5934	0.5787
4	0.9610	0.9238	0.8885	0.8548	0.8227	0.7921	0.7629	0.7350	0.7084	0.6830	0.6587	0.6355	0.6133	0.5921	0.5718	0.5523	0.5337	0.5158	0.4987	0.4823
5	0.9515	0.9057	0.8626	0.8219	0.7835	0.7473	0.7130	0.6806	0.6499	0.6209	0.5935	0.5674	0.5428	0.5194	0.4972	0.4761	0.4561	0.4371	0.4190	0.4019
6	0.9420	0.8880	0.8375	0.7903	0.7462	0.7050	0.6663	0.6302	0.5963	0.5645	0.5346	0.5066	0.4803	0.4556	0.4323	0.4104	0.3898	0.3704	0.3521	0.3349
7	0.9327	0.8706	0.8131	0.7599	0.7107	0.6651	0.6227	0.5835	0.5470	0.5132	0.4817	0.4523	0.4251	0.3996	0.3759	0.3538	0.3332	0.3139	0.2959	0.2791
8	0.9235	0.8535	0.7894	0.7307	0.6768	0.6274	0.5820	0.5403	0.5019	0.4665	0.4339	0.4039	0.3762	0.3506	0.3269	0.3050	0.2848	0.2660	0.2487	0.2326
9	0.9143	0.8368	0.7664	0.7026	0.6446	0.5919	0.5439	0.5002	0.4604	0.4241	0.3909	0.3606	0.3329	0.3075	0.2843	0.2630	0.2434	0.2255	0.2090	0.1938
10	0.9053	0.8203	0.7441	0.6756	0.6139	0.5584	0.5083	0.4632	0.4224	0.3855	0.3522	0.3220	0.2946	0.2697	0.2472	0.2267	0.2080	0.1911	0.1756	0.1615
11	0.8963	0.8043	0.7224	0.6496	0.5847	0.5268	0.4751	0.4289	0.3875	0.3505	0.3173	0.2875	0.2607	0.2366	0.2149	0.1954	0.1778	0.1619	0.1476	0.1346
12	0.8874	0.7885	0.7014	0.6246	0.5568	0.4970	0.4440	0.3971	0.3555	0.3186	0.2858	0.2567	0.2307	0.2076	0.1869	0.1685	0.1520	0.1372	0.1240	0.1122
13	0.8787	0.7730	0.6810	0.6006	0.5303	0.4688	0.4150	0.3677	0.3262	0.2897	0.2575	0.2292	0.2042	0.1821	0.1625	0.1452	0.1299	0.1163	0.1042	0.0935
14	0.8700	0.7579	0.6611	0.5775	0.5051	0.4423	0.3878	0.3405	0.2992	0.2633	0.2320	0.2046	0.1807	0.1597	0.1413	0.1252	0.1110	0.0985	0.0876	0.0779
15	0.8613	0.7430	0.6419	0.5553	0.4810	0.4173	0.3624	0.3152	0.2745	0.2394	0.2090	0.1827	0.1599	0.1401	0.1229	0.1079	0.0949	0.0835	0.0736	0.0649
16	0.8528	0.7284	0.6232	0.5339	0.4581	0.3936	0.3387	0.2919	0.2519	0.2176	0.1883	0.1631	0.1415	0.1229	0.1069	0.0930	0.0811	0.0708	0.0618	0.0541
17	0.8444	0.7142	0.6050	0.5134	0.4363	0.3714	0.3166	0.2703	0.2311	0.1978	0.1696	0.1456	0.1252	0.1078	0.0929	0.0802	0.0693	0.0600	0.0520	0.0451
18	0.8360	0.7002	0.5874	0.4936	0.4155	0.3503	0.2959	0.2502	0.2120	0.1799	0.1528	0.1300	0.1108	0.0946	0.0808	0.0691	0.0592	0.0508	0.0437	0.0376
19	0.8277	0.6864	0.5703	0.4746	0.3957	0.3305	0.2765	0.2317	0.1945	0.1635	0.1377	0.1161	0.0981	0.0829	0.0703	0.0596	0.0506	0.0431	0.0367	0.0313
20	0.8195	0.6730	0.5537	0.4564	0.3769	0.3118	0.2584	0.2145	0.1784	0.1486	0.1240	0.1037	0.0868	0.0728	0.0611	0.0514	0.0433	0.0365	0.0308	0.0261
21	0.8114	0.6598	0.5375	0.4388	0.3589	0.2942	0.2415	0.1987	0.1637	0.1351	0.1117	0.0926	0.0768	0.0638	0.0531	0.0443	0.0370	0.0309	0.0259	0.0217
22	0.8034	0.6468	0.5219	0.4220	0.3418	0.2775	0.2257	0.1839	0.1502	0.1228	0.1007	0.0826	0.0680	0.0560	0.0462	0.0382	0.0316	0.0262	0.0218	0.0181
23	0.7954	0.6342	0.5067	0.4057	0.3256	0.2618	0.2109	0.1703	0.1378	0.1117	0.0907	0.0738	0.0601	0.0491	0.0402	0.0329	0.0270	0.0222	0.0183	0.0151
24	0.7876	0.6217	0.4919	0.3901	0.3101	0.2470	0.1971	0.1577	0.1264	0.1015	0.0817	0.0659	0.0532	0.0431	0.0349	0.0284	0.0231	0.0188	0.0154	0.0126
25	0.7798	0.6095	0.4776	0.3751	0.2953	0.2330	0.1842	0.1460	0.1160	0.0923	0.0736	0.0588	0.0471	0.0378	0.0304	0.0245	0.0197	0.0160	0.0129	0.0105
26	0.7720	0.5976	0.4637	0.3607	0.2812	0.2198	0.1722	0.1352	0.1064	0.0839	0.0663	0.0525	0.0417	0.0331	0.0264	0.0211	0.0169	0.0135	0.0109	0.0087
27	0.7644	0.5859	0.4502	0.3468	0.2678	0.2074	0.1609	0.1252	0.0976	0.0763	0.0597	0.0469	0.0369	0.0291	0.0230	0.0182	0.0144	0.0115	0.0091	0.0073
28	0.7568	0.5744	0.4371	0.3335	0.2551	0.1956	0.1504	0.1159	0.0895	0.0693	0.0538	0.0419	0.0326	0.0255	0.0200	0.0157	0.0123	0.0097	0.0077	0.0061
29	0.7493	0.5631	0.4243	0.3207	0.2429	0.1846	0.1406	0.1073	0.0822	0.0630	0.0485	0.0374	0.0289	0.0224	0.0174	0.0135	0.0105	0.0082	0.0064	0.0051
30	0.7419	0.5521	0.4120	0.3083	0.2314	0.1741	0.1314	0.0994	0.0754	0.0573	0.0437	0.0334	0.0256	0.0196	0.0151	0.0116	0.0090	0.0070	0.0054	0.0042

Table 12.3A Present value of ordinary annuity of 1 CU = $[1 – (1 + i)^{-n})]/i$

Periods	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	11%	12%	13%	14%	15%	16%	17%	18%	19%	20%
1	0.9901	0.9804	0.9709	0.9615	0.9524	0.9434	0.9346	0.9259	0.9174	0.9091	0.9009	0.8929	0.8850	0.8772	0.8696	0.8621	0.8547	0.8475	0.8403	0.8333
2	1.9704	1.9416	1.9135	1.8861	1.8594	1.8334	1.8080	1.7833	1.7591	1.7355	1.7125	1.6901	1.6681	1.6467	1.6257	1.6052	1.5852	1.5656	1.5465	1.5278
3	2.9410	2.8839	2.8286	2.7751	2.7232	2.6730	2.6243	2.5771	2.5313	2.4869	2.4437	2.4018	2.3612	2.3216	2.2832	2.2459	2.2096	2.1743	2.1399	2.1065
4	3.9020	3.8077	3.7171	3.6299	3.5460	3.4651	3.3872	3.3121	3.2397	3.1699	3.1024	3.0373	2.9745	2.9137	2.8550	2.7982	2.7432	2.6901	2.6386	2.5887
5	4.8534	4.7135	4.5797	4.4518	4.3295	4.2124	4.1002	3.9927	3.8897	3.7908	3.6959	3.6048	3.5172	3.4331	3.3522	3.2743	3.1993	3.1272	3.0576	2.9906
6	5.7955	5.6014	5.4172	5.2421	5.0757	4.9173	4.7665	4.6229	4.4859	4.3553	4.2305	4.1114	3.9975	3.8887	3.7845	3.6847	3.5892	3.4976	3.4098	3.3255
7	6.7282	6.4720	6.2303	6.0021	5.7864	5.5824	5.3893	5.2064	5.0330	4.8684	4.7122	4.5638	4.4226	4.2883	4.1604	4.0386	3.9224	3.8115	3.7057	3.6046
8	7.6517	7.3255	7.0197	6.7327	6.4632	6.2098	5.9713	5.7466	5.5348	5.3349	5.1461	4.9676	4.7988	4.6389	4.4873	4.3436	4.2072	4.0776	3.9544	3.8372
9	8.5660	8.1622	7.7861	7.4353	7.1078	6.8017	6.5152	6.2469	5.9952	5.7590	5.5370	5.3282	5.1317	4.9464	4.7716	4.6065	4.4506	4.3030	4.1633	4.0310
10	9.4713	8.9826	8.5302	8.1109	7.7217	7.3601	7.0236	6.7101	6.4177	6.1446	5.8892	5.6502	5.4262	5.2161	5.0188	4.8332	4.6586	4.4941	4.3389	4.1925
11	10.3676	9.7868	9.2526	8.7605	8.3064	7.8869	7.4987	7.1390	6.8052	6.4951	6.2065	5.9377	5.6869	5.4527	5.2337	5.0286	4.8364	4.6560	4.4865	4.3271
12	11.2551	10.5753	9.9540	9.3851	8.8633	8.3838	7.9427	7.5361	7.1607	6.8137	6.4924	6.1944	5.9176	5.6603	5.4206	5.1971	4.9884	4.7932	4.6105	4.4392
13	12.1337	11.3484	10.6350	9.9856	9.3936	8.8527	8.3577	7.9038	7.4869	7.1034	6.7499	6.4235	6.1218	5.8424	5.5831	5.3423	5.1183	4.9095	4.7147	4.5327
14	13.0037	12.1062	11.2961	10.5631	9.8986	9.2950	8.7455	8.2442	7.7862	7.3667	6.9819	6.6282	6.3025	6.0021	5.7245	5.4675	5.2293	5.0081	4.8023	4.6106
15	13.8651	12.8493	11.9379	11.1184	10.3797	9.7122	9.1079	8.5595	8.0607	7.6061	7.1909	6.8109	6.4624	6.1422	5.8474	5.5755	5.3242	5.0916	4.8759	4.6755
16	14.7179	13.5777	12.5611	11.6523	10.8378	10.1059	9.4466	8.8514	8.3126	7.8237	7.3792	6.9740	6.6039	6.2651	5.9542	5.6685	5.4053	5.1624	4.9377	4.7296
17	15.5623	14.2919	13.1661	12.1657	11.2741	10.4773	9.7632	9.1216	8.5436	8.0216	7.5488	7.1196	6.7291	6.3729	6.0472	5.7487	5.4746	5.2223	4.9897	4.7746
18	16.3983	14.9920	13.7535	12.6593	11.6896	10.8276	10.0591	9.3719	8.7556	8.2014	7.7016	7.2497	6.8399	6.4674	6.1280	5.8178	5.5339	5.2732	5.0333	4.8122
19	17.2260	15.6785	14.3238	13.1339	12.0853	11.1581	10.3356	9.6036	8.9501	8.3649	7.8393	7.3658	6.9380	6.5504	6.1982	5.8775	5.5845	5.3162	5.0700	4.8435
20	18.0456	16.3514	14.8775	13.5903	12.4622	11.4699	10.5940	9.8181	9.1285	8.5136	7.9633	7.4694	7.0248	6.6231	6.2593	5.9288	5.6278	5.3527	5.1009	4.8696
21	18.8570	17.0112	15.4150	14.0292	12.8212	11.7641	10.8355	10.0168	9.2922	8.6487	8.0751	7.5620	7.1016	6.6870	6.3125	5.9731	5.6648	5.3837	5.1268	4.8913
22	19.6604	17.6580	15.9369	14.4511	13.1630	12.0416	11.0612	10.2007	9.4424	8.7715	8.1757	7.6446	7.1695	6.7429	6.3587	6.0113	5.6964	5.4099	5.1486	4.9094
23	20.4558	18.2922	16.4436	14.8568	13.4886	12.3034	11.2722	10.3711	9.5802	8.8832	8.2664	7.7184	7.2297	6.7921	6.3988	6.0442	5.7234	5.4321	5.1668	4.9245
24	21.2434	18.9139	16.9355	15.2470	13.7986	12.5504	11.4693	10.5288	9.7066	8.9847	8.3481	7.7843	7.2829	6.8351	6.4338	6.0726	5.7465	5.4509	5.1822	4.9371
25	22.0232	19.5235	17.4131	15.6221	14.0939	12.7834	11.6536	10.6748	9.8226	9.0770	8.4217	7.8431	7.3300	6.8729	6.4641	6.0971	5.7662	5.4669	5.1951	4.9476
26	22.7952	20.1210	17.8768	15.9828	14.3752	13.0032	11.8258	10.8100	9.9290	9.1609	8.4881	7.8957	7.3717	6.9061	6.4906	6.1182	5.7831	5.4804	5.2060	4.9563
27	23.5596	20.7069	18.3270	16.3296	14.6430	13.2105	11.9867	10.9352	10.0266	9.2372	8.5478	7.9426	7.4086	6.9352	6.5135	6.1364	5.7975	5.4919	5.2151	4.9636
28	24.3164	21.2813	18.7641	16.6631	14.8981	13.4062	12.1371	11.0511	10.1161	9.3066	8.6016	7.9844	7.4412	6.9607	6.5335	6.1520	5.8099	5.5016	5.2228	4.9697
29	25.0658	21.8444	19.1885	16.9837	15.1411	13.5907	12.2777	11.1584	10.1983	9.3696	8.6501	8.0218	7.4701	6.9830	6.5509	6.1656	5.8204	5.5098	5.2292	4.9747
30	25.8077	22.3965	19.6004	17.2920	15.3725	13.7648	12.4090	11.2578	10.2737	9.4269	8.6938	8.0552	7.4957	7.0027	6.5660	6.1772	5.8294	5.5168	5.2347	4.9789

Appendix 12.4 Bonds issued at a discount

Accounting entries



❶ On Jan. 1, X1, at issuance date: receipt of the principal. The discount on bonds payable is recorded in some countries as a contra-liabilities account (it is deducted from bonds payable) and as an asset in others. In this example, it has been recorded as a reduction of liabilities. It is also possible to record the bonds in one single account, net of the discount.
❷ On Dec. 31, X1 (and on December 31 on each of the four following years): payment of the interest and amortization of the discount (see Table 12.4A below).
❸ At maturity (Dec. 31, X5): repayment of the principal.

Figure 12.3A Accounting for bonds issued at a discount

The problem of amortization of the discount is similar (although reversed) to what applies to the handling of a bond issue with premium (see above). Table 12.4A shows the amortization of the discount with the effective interest rate method.

Table 12.4A Schedule of interest and book value - Effective interest method - Discount case

Year ending	Interest expense	Cash (interest paid)	Discount amortization (increase in book value)	Book value of bonds
	(1)=(4) previous line x 10%	(2)	(3)=(1)-(2)	(4)
				462,092
Dec. 31, X1	46,209	40,000	6,209	468,301
Dec. 31, X2	46,830	40,000	6,830	475,131
Dec. 31, X3	47,513	40,000	7,513	482,645
Dec. 31, X4	48,264	40,000	8,264	490,909
Dec. 31, X5	49,091	40,000	9,091	500,000
Total	237,907	200,000	37,907	

(1) = book value x 10%

For bonds issued at a discount, the amount of the discount represents an additional interest expense.

Appendix 12.5 Sales and leaseback transactions

Principles

"A sale and leaseback transaction involves the sale of an asset by the vendor and the leasing of the same asset back to the vendor" (IAS 17, § 49). Such transaction can be entered into for a variety of reasons, such as:

- providing liquidity to a cash thirsty business, or
- transforming into a cost perceived to be controllable per square meter (the rent) what used to be an essentially uncontrollable and sunk fixed cost (the depreciation), or
- increasing the costs effectively deducted from income (when the rent is higher than the depreciation was, which would be the case if the occupancy contract is for a period of time that is shorter than the depreciable life of the building or if the building was old and fully depreciated), or
- offering a legal but disguised way to effectively revalue the building to have it reflect its market value and therefore allow for a larger tax deduction of the cost of ownership, or
- allowing the effective deductibility of the value of the land that is sold and leased back (the rent becomes deductible while it could not be depreciated when owned outright).

For example a business builds or acquires a building for its headquarters. The new construction is recorded as an asset and is depreciated on a regular basis in accordance with accepted rules. After a few years, the business is in a financial pinch and needs to have

significant liquidity either for an investment or for financing a strategic project. Rather than selling the building and moving to another location which would cause disturbances and the occurrence of significant non value-adding costs, the firms engages in a sale and leaseback agreement with a financial institution. Two contracts are signed simultaneously, one that transfers title to the property to the financial institution and one in which the seller commits to renting the building from the financial institution for a period of time that is acceptable to the new owner. The contract may even include a clause of repurchase at the end of the rental period for a residual value that may be very low.

A sale and leaseback agreement does neither substantially change the availability of the resource (generally a building) for creating future economic benefits, nor the obligations of the user of the building or property to care for it. Such a transaction is therefore an instrument of liquidity creation in which the lessor essentially offers financing to the lessee with the property offered as a security.

Figure 12.4A illustrates that the accounting treatment of the gain or loss on a sale and leaseback transaction depends on the type of lease involved.

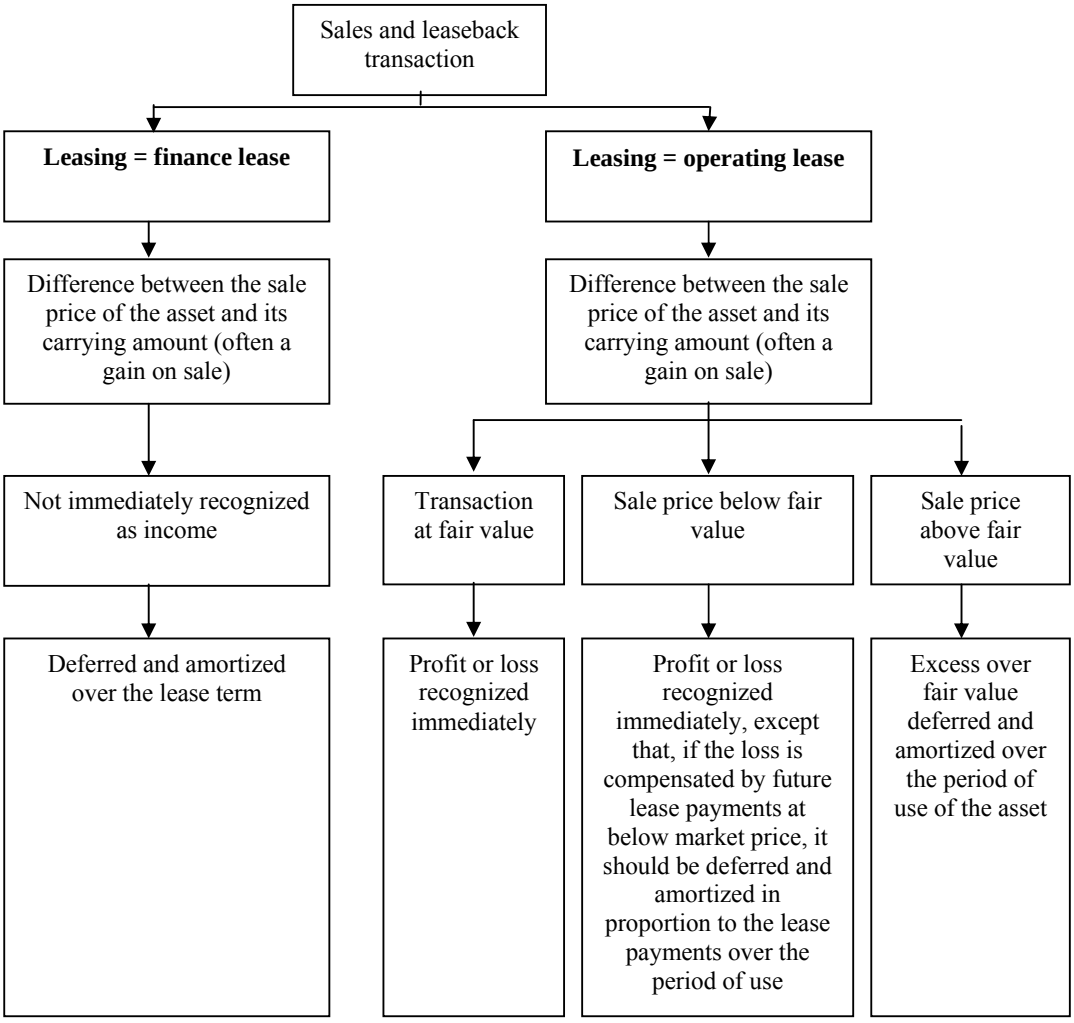
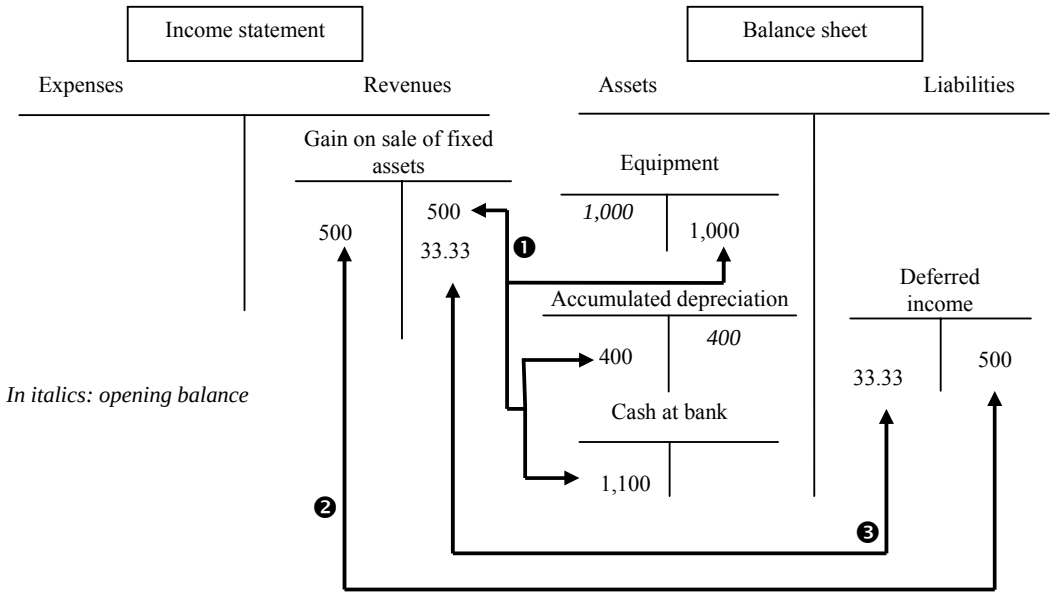


Figure 12.4A Accounting for gain (or loss) on a sale and leaseback transaction

One major issue in a sale and leaseback transaction is the treatment of the difference (often a gain) realized at the time of the sale between the sale price and the carrying amount (book value) of the fixed asset sold. When the leaseback is a finance lease, the transaction is a means for the lessor to provide financing to the lessee, with the asset as security. It is therefore not appropriate to consider the gain (or loss) on sale as income. When the leaseback is an operating lease, Figure 12.4A shows that the accounting handling of the sale will depend on whether the sale price can be considered to reflect the fair value or not of the asset. For instance, if the sale price and the lease payments are established at fair value, there has in effect been a normal sale transaction and any profit or loss should be recognized immediately.

Example

Lindblad S.A. owns a building it has acquired 8 years ago. The gross value of the building is recorded as 1,000 currency units. The accumulated depreciation (based on the use of the straight-line method over 20 years) is currently at 400 currency units. At the beginning of fiscal year X1, the building is sold for 1,100 currency units in a leaseback transaction. The agreement qualifies as a finance lease. The annual lease rent (payment) is agreed to be 136 currency units and will remain constant for a period of 15 years. The tax effect of the transaction will be neglected at this time (It will be dealt with in Chapter 13). Figure 12.17 illustrates the accounting entries used to record this transaction.



❶ The sale of fixed asset is recorded. As explained in Chapter 7, part 2, there are different methods to record a sale of a fixed asset. In this example, the gain is recorded in the "gain on sale of asset" account.
❷ As the leaseback is a finance lease, the gain on the sale is deferred.
❸ The gain on the sale will be recorded as income in installments over the life of the contract. In this example, the part of the gain on the sale to be recognized as revenue is 1/15 of the total gain. The revenue pertaining to this transaction and recognized in year 1 is therefore (500/15 = 33.33). Given that entries 1 and 2's effect on the income statement effectively cancel one another, the impact of the transaction on the net income of the first year will only be 33.33 currency units.

Figure 12.5A Sale and leaseback transaction

If the finance lease is capitalized, the entries mentioned for accounting for leases (see part 2) will be appropriately used for the duration of the lease.

Appendix 12.6 Environmental liability

More and more businesses are aware that their business activity may create environmental risks. They not only explicitly manage such risk but also want to report the potential liabilities this creates (both as a signaling move to customers and other stakeholders, and for the sake of completeness of reporting to shareholders, analysts and investors). Examples of environmental risks abound that may include the disposal of waste, the possible inadvertent discharge of pollutants in the air, ground water or close-by stream, the noise pollution created by the normal activity of the business (airports, metallurgy…), etc.

Financial reports include a variety of approaches in disclosing environmental liabilities. Besides the management discussion section where the qualitative aspects of the liability and their management are presented, many enterprises in a variety of countries report the anticipated risk by recording either a dedicated provision or an accrued [or contingent] liability. There does not seem to be, at this time, any best or dominating practice as the following examples show.

CFC International, Inc. (USA – US GAAP – Source: Annual report 2004 – Production and sale of chemically complex, transferable, multi-layer coatings)

Note 13. Commitments and Contingencies

The Company's former parent was named by government environmental agencies as a "potentially responsible party" with respect to environmental liabilities at the Fisher-Calo Superfund site in Kingsbury, Indiana in 1991. The former parent and other potentially responsible parties entered into a settlement agreement with the governmental agencies in 1991 that provides for remediation of the site and estimated the cost to be approximately $39 million based upon available facts. While the Company has been named a potentially responsible party, the former parent and the Company have reached an agreement whereby the former parent and the Company will share equally in 0.24% (or 0.12% each) of the total cost of remediation that is ultimately determined to be attributed to waste produced by the Company's former parent. There is no assurance that remediation of the Fisher-Calo site can be accomplished for $39 million. In 1992, the Company recorded a liability of approximately $300,000 related to these matters, of which approximately $50,000 was paid in 1996. In 2000, the Company revised its estimate and reduced the accrual by approximately $110,000. In January 2002, the Company made a payment of approximately $44,000 representing a progress payment for remediation of this site. At December 31, 2004 and 2003, the remaining accrual of approximately $96,000, represents in management's opinion its estimate of expected future costs, based upon investigation of the quantities and types of waste disposed and the other parties involved in the remediation of this site. The adequacy of the accrued liability is reviewed periodically as additional information becomes available.

The reader will have noticed that the note is entitled "Commitments and Contingencies" while it is in fact a clarification of an "accrued liability", i.e. a liability that has actually been already recorded. The use of the term "contingency" implies that substantial risk may exist beyond the

recorded liability. However it is the management's opinion that such a risk, although extant, can be considered to be essentially immaterial with regard to the financial position of the firm.

To make the reporting even more complete but difficult to interpret, the firm chose to record this potential obligation as an "accrued liability", choice that reinforces the "certainty aspect" of the obligation (see Part 1, Section 7.2).

Bayer (Germany - German/IAS-GAAP – Source: Annual report 2005 – Pharmaceuticals, Chemicals)

Excerpts from the notes to consolidated financial statements

[Note 29] Other provisions

€ million	Dec. 31, 2004		Dec. 31, 2005	
	Total	of which current	Total	of which current
(…)				
Provisions for environmental remediation	249	41	279	81
(…)				
Total	3,911	2,707	4,349	3,009

Provisions for environmental remediation as of December 31, 2005 amounted to €279 million (2004: €249 million). The material components of the provisions for environmental remediation costs primarily relate land reclamation, rehabilitation of contaminated sites, recultivation of landfills, and redevelopment and water protection measures. The provisions for environmental remediation costs are recorded on a discounted basis where environmental assessments or clean-ups are probable, the costs can be reasonably estimated and no future economic benefit is expected to arise from these measures. The above amount of provisions represents anticipated future remediation payments totaling €363 million (2004: €249 million), discounted at risk-free average rates of between 3.0 percent and 7.0 percent. These discounted amounts will be paid out over the period of remediation of the relevant sites, which is expected to be 20 years.

In this case, the environmental risk has been recorded as a provision.

Chapter 13 – Financial fixed assets and business combinations

Appendix 13.1 Value adjustment to lower of cost or market

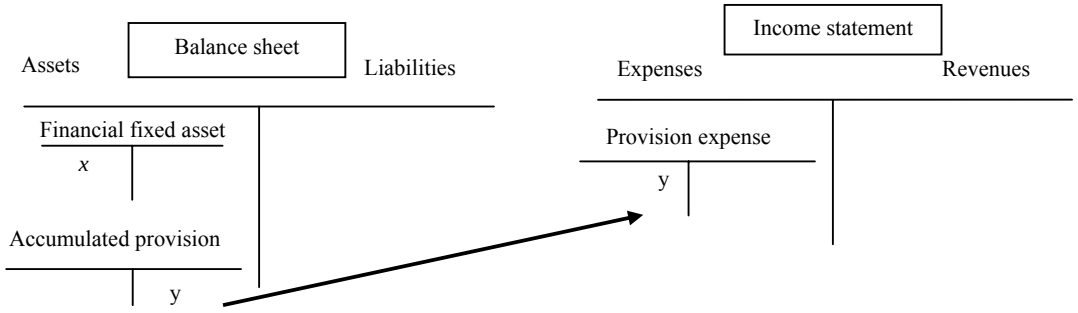


Figure 13.1A Recording of a provision expense

Appendix 13.2 Uniting of interests and the pooling of interest method

Principles

The uniting of interests has been defined in the first part of this chapter. It is no longer authorized by the IASB (IFRS 3, 2004c). The following developments are based on the old role (IAS 22, 1998). It is characterized by an exchange of voting common shares between the combining enterprises. In substance, no acquisition has occurred and there has been a continuation of the mutual sharing of risks and benefits that existed prior to the business combination. An important consequence of this rule is the fact that "the combined entity recognizes the assets, liabilities and equity of the combining enterprises at their existing carrying amounts adjusted only as a result of conforming the combining enterprises' accounting policies and applying those policies to all periods presented. There is no recognition of any new goodwill" (IASC, IAS 22, 1998: § 81). The basic idea of the uniting of interests is that no "acquisition" has occurred and there is only a mere juxtaposition. The fact that no goodwill has been created is seen by many as a big plus in favor of this method while others think that no recognition of goodwill is, on the contrary, a mortal flaw since the pooling of interests financial statements do not add any additional information to the previously existing mutual sharing of risks and benefits.

Concretely, instead of having a cash transaction to acquire another company, the business combination is based on an exchange of shares.

IAS 22 (§ 15) specifies several conditions that qualify a combination as a uniting or pooling of interests:

(a) The substantial majority, if not all, of the voting common shares of the combining enterprises are exchanged or pooled;
(b) The fair value of one enterprise is not significantly different from that of the other enterprise; and
(c) The shareholders of each enterprise maintain substantially the same voting rights and interest in the combined entity, relative to each other, after the combination as before.

Let us explore the mechanics of such an operation by revisiting our Hol and Van Rennes example. In part 2, section 4 above, the merger was handled as a purchase of Van Rennes by Hol and the "purchase method" was applied.

Let us assume now that the merger is no longer a purchase but a pooling of interests. Technically the same data cannot be used for both approaches; even further, the data do not strictly meet the criteria set by IAS 22 for a pooling of interests approach (the fair values of the companies are too different, there will not be an equal exchange of shares, one of the merged firms is dissolved after the merger – which is not the case in most pooling of interest combinations, etc.). However this is only for the sake of illustration of the mechanism. We trust the reader will bear with us and will see the benefit of not reinventing new data and thus increasing comparability.

Table 13.1A shows the balance sheet after the merger, using the pooling of interests method.

Table 13.1A Balance sheet after merger (pooling of interests)

Balance sheet	Hol	Merger entries		Balance sheet after merger
Assets	1,500	500	(a)	2,000
Total	1,500	500		2,000

	Hol	Merger entries		Balance sheet after merger
Capital	400	100	(b)	500
Merger premium		100	(b)	100
Reserves	800	50	(b)	850
Liabilities	300	250	(a)	550
Total	1,500	500		2,000

(a) Integration of the net assets of the merged company at book value (500 – 250 = 250). No goodwill is recognized.

(b) The capital is increased by 100 (as in purchase accounting). The theoretical merger premium is the difference between the net assets (250) and the increase of capital (100), i.e. 150. However, in the pooling of interests, the reserves of Van Rennes that existed prior to the merger transaction must be combined. The merger premium is thus reduced by the amount of the reserves of Van Rennes: 150 – 50.

Comparison Purchase versus Pooling

Table 13.2A compares the balance sheet after the merger using the purchase and the pooling of interests

Table 13.2A Balance sheets comparison

	Balance sheet after:		
	Purchase accounting	Pooling of interests	Difference
Assets	2,020	2,000	20
Goodwill	30		30
Total	2,050	2,000	50
Capital	500	500	0
Merger premium	200	100	100
Reserves	800	850	-50
Liabilities	550	550	0
Total	2,050	2,000	50

In purchase accounting, the purchased assets and liabilities are valued at their fair value. Under pooling of interests, the book values of the merging (acquiring) and merged (acquired) companies are carried forward (simply added up at book value). Additionally, reserves (retained earnings) of the merged (acquired) company are not recorded in the purchase accounting and recorded in the pooling of interests approach. Consequently, the income subsequent to the combination is higher under pooling than under purchase because under the latter, goodwill must be amortized and the increase in value of assets should be depreciated if it relates to depreciable assets. Moreover, the return on assets ratio (net income/total assets) is

higher with the use of the pooling of interests method because the numerator (net income) is higher and the denominator (total assets) is smaller.

The points made in the previous paragraph may explain the popularity of the pooling of interests method with many companies and was used in recent mergers such as the mergers of Daimler-Benz and Chrysler, Pfizer and Warner-Lambert as well as in the Exxon and Mobil merger. According to Bine and Péricard (2000), in 1998, combinations carried under the pooling of interest represented, in the United States of America, more than 44% of the total value of mergers and acquisitions.

Because the pooling of interests method does not create the revaluation of assets, unlike what happens when the purchase method is used, the income generated, if the merger is strategically successful, is larger than under other methods but the balance sheet can be considered to fail to give a true and fair view of the situation. The acceptability of the pooling of interests method is currently being challenged by regulators. The position of the Financial Accounting Standards Board (regulatory authority in the United States) is now opposed to using the pooling of interests method. The US standard-setter has issued in June 2001 a new standard on business combinations (FASB 2001a) requiring all business combinations to be accounted for using the purchase method, thus effectively prohibiting use of the pooling method. The main objection to the prohibition of the pooling of interests method arises from the fact that the purchase method may create a huge goodwill which must be amortized. Not only does the amortization of goodwill create an additional expense reducing the visible profit, but the very amortization of goodwill is problematic in itself.

Goodwill reflects many intangible elements. It is quasi impossible to trace the goodwill to any specific tangible reality. In theory the goodwill could either be amortized all at once to recognize its possible evanescence over time or not amortized at all if the reality of the intangible does not “evaporate” (as might be the case of a well-managed, well-established brand). The FASB had opted in June 2001 (SFAS 142, FASB 2001b) for a test of impairment, i.e. the yearly validation of the reality of the existence of the intangibles that are represented by the goodwill and the recognition as a goodwill amortization expense of the impairment (reduction in value) that has occurred due to changes in the competitive environment or the implementation of the firm’s strategy. The test of impairment is conceptually interesting but seems very complex to implement, and would probably be very difficult to audit for the

protection of shareholders. Many fear that the required use of the purchase method might slow down significantly, at least in the near future, the flow of mergers and acquisition in the perimeter where the FASB rules apply. Time will tell. It may not be such a bad thing if only strategically positive mergers and acquisitions (i.e. value creating) were carried out. Many recent "pooling of interests" mergers have created paper value but not industrial or commercial value.

The attitude of the IASB (formerly IASC), consecutive to the new position of the FASB, will be a topic of interest to all analysts and accountants in the near future. Will it revise its standard IAS 22 and also forbid the use of the pooling method? Will it replace amortization of goodwill over 20 years by an impairment test? Nowadays, some countries (including France) still allow the pooling method to be used and the evolution of the IASB's position probably will have a significant influence on shaping future practice.

Appendix 13.3 Deferred taxation on consolidation

Impact of deferred taxation

The consolidated balance sheet and income statement must take into account deferred tax issues resulting from the following sources:

- Temporary timing differences between revenue and expenses that affect the taxable income of an accounting period.
- Tax losses carry-forward (as long as their tax deductibility against future profit is likely) - and carry-back - of companies that are part of the scope of consolidation.
- Tax issues arising from restatements carried out in accordance with intra-group harmonization procedures.
- Restatements incurred in order to eliminate entries that were required by tax regulations.
- And, at last, the tax consequences of eliminating intra-group profit (which may not have been taxed homogeneously between countries where the various group companies operate - see Figure 13.2A).

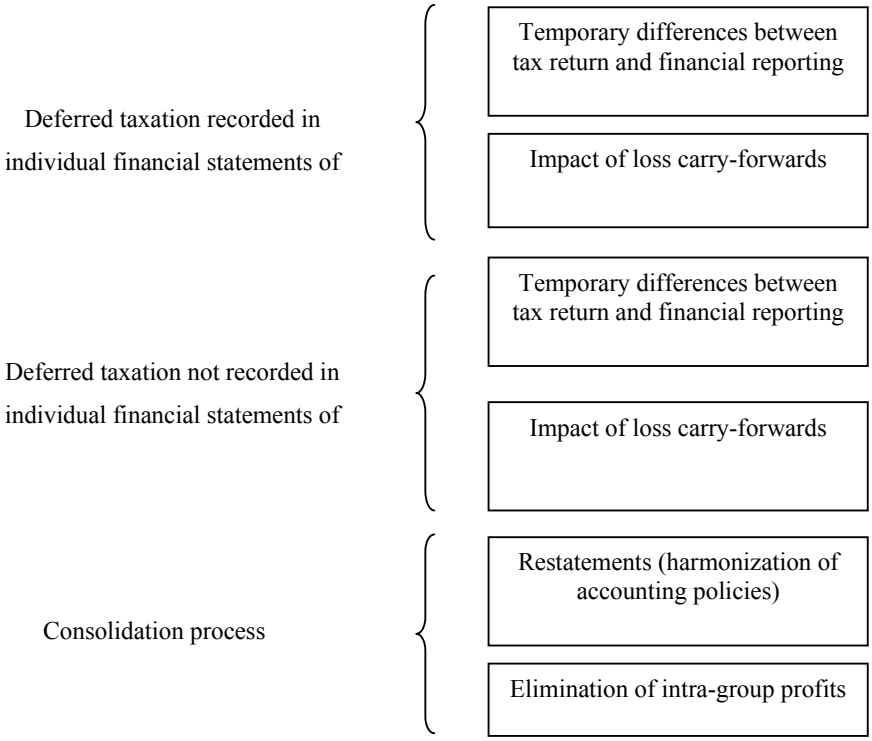


Figure 13.2A Origins of deferred taxation

Timing differences between tax regulations and financial reporting and loss carry-forwards have been introduced in Chapter 6. In countries allowing/requiring the reporting of deferred taxation in individual financial statements of the consolidated companies (subsidiaries), this deferred taxation will carry over to the consolidated financial statements. However, when deferred taxes have not been recorded in the subsidiaries' books, the consolidation process will require that they be restated in the subsidiary's statements before being carried over to the consolidated financial statements. This step in the consolidation process applies generally to foreign subsidiaries and requires that the consolidating accountant have a very detailed knowledge of local tax regulations applying to the subsidiary under scrutiny.

The consolidation process (harmonization of rules and principles, tax regulation reconciliation, options, intra-group income, etc.) generates temporary differences. The next two subsections cover intra-group accounting harmonization and elimination of intra-group profits.

Harmonization Restatement

Group accounting policy

Both Consolidation and Accounting Guides define strict guidelines to ensure homogeneity of financial statements between consolidated subsidiaries. The guidelines cover at least the following points:

- Duration and mode of depreciation for each class of depreciable asset (accelerated or straight-line for example) (see Chapter 7);
- Rules regarding the valuation of inventories and inventory variations (see Chapter 9);
- Rules regarding the establishment of provisions or write down applying to elements of the working capital need (see Chapter 10);
- Rules for computing pension liabilities (see Chapter 12);
- Rules for the conversion of debts and claims expressed in foreign currencies;
- Rules regarding the specific accounting of certain types of transactions such as research and development costs (see Chapter 8), long-term contracts (see Chapter 6), valuation of works in progress, or re-useable packaging.

The "restated financial statement" of a subsidiary is the one obtained by applying the group accounting rules instead of the local (often tax-based) accounting regulations.

Restatement entries are essentially simple. They imply the cancellation of the original entry and its replacement by a new entry following new or different rules. Once all statements have been restated, their integration in the consolidation process is much easier as all derive from the same rules and principles.

Illustration

Obrecht Company is one of the subsidiaries of the Oblinks Group. Obrecht has purchased a fixed equipment on January 1st, X1 for 2,000 currency units. It chose to depreciate this asset over 5 years using an accelerated method (double declining balance method in this case) in order to reduce the taxable income in the early years of the life of the asset and have a more favorable net present value of the net cash flow (economic benefits) derived from this asset. The Group Accounting Guide calls for depreciating this class of tangible fixed assets by applying the straight-line method over 5 years. The income tax rate in Obrecht's country is 40%.

Table 13.3A compares the depreciation schedule arising from using either method.

Table 13.3A Depreciation schedules

Period of depreciation	5 years	5 years	
Method of depreciation	Declining balance	Straight-line	
Rate of depreciation	40%	20%	
			Difference
X1	800	400	400
X2	480	400	80
X3	288	400	-112
X4	216	400	-184
X5	216	400	-184
	2,000	2,000	0

When applying the declining balance method, the depreciation switches to straight-line when the rate (40%) applied to the residual value of the asset yields a lower periodic depreciation expense than the straight-line rate computed on the number of remaining years (50% for two years – see details in Chapter 7). Figures 13.3A and 13.4A illustrate the different accounting entries required to recast the accounts to satisfy group accounting principles.

Year 1

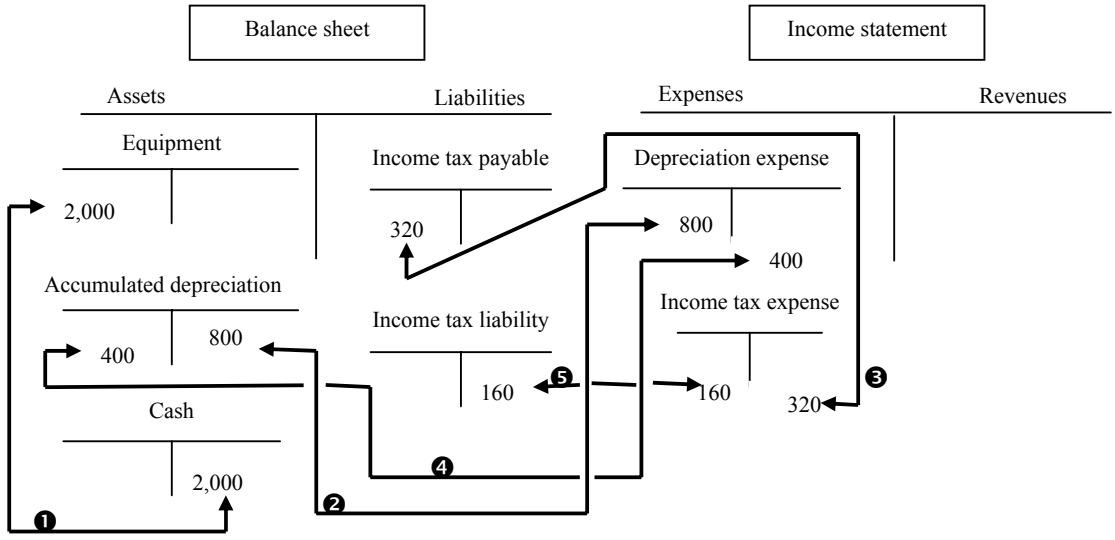


Figure 13.3A Deferred taxation on depreciation - Year X1

❶ Purchase of the equipment in cash: 2,000.
❷ Depreciation expense in the individual financial statements following the double-declining balance method: 800 (see Table 13.15).
❸ Reduction of the income tax payable in the individual financial statements due to depreciation expense: 800 x 40% = 320.
❹ Harmonization restatement to adopt straight-line. Cancellation of the difference between the double-declining and the straight-line depreciation: 400 (see Table 13.1A).
❺ Adjustment of the income tax base on the restatement: 400 x 40% = 160. The income tax payable account cannot be modified as it represents a real liability of the company towards the tax administration. A deferred tax liability is shown.

If straight-line depreciation had been used by Obrecht in the first place, the tax deductible depreciation expense would have been lower than it actually was. Without further restatement, applying a dual set of principles to the accounts makes them potentially not coherent with reality: they would reflect a straight-line depreciation expense on one hand but a tax expense reflecting an accelerated depreciation on the other. It is therefore important to complete the restatement by bringing the tax-deductible expense to its new level. This means the recognition of a higher tax liability than actually incurred locally for the period.

However the actual tax liability cannot be modified for the period X1 as income taxes are based on local income and not on restated income. The creation of a deferred tax account will be required to balance the books by acknowledging a debt (or an asset) of deferred taxes, i.e. postponed to a future date.

The accelerated method of depreciation created a larger tax-deductible expense in the early years of the life of the asset. The application of the Group Accounting guide will therefore lead to the recognition of the deferred taxes as a debt to the tax authorities since the early benefits derived form the larger depreciation expense are expected to reverse in the future.

Since the depreciation expense using straight-line is smaller than it was when using the accelerated method, the adjusted income will have to reflect such a difference. The adjustment will be equal to the difference between the depreciation expense under both methods. Net income is increased by the difference between accelerated and straight-line depreciation expense and reduced by the tax due on the difference.

Year 2

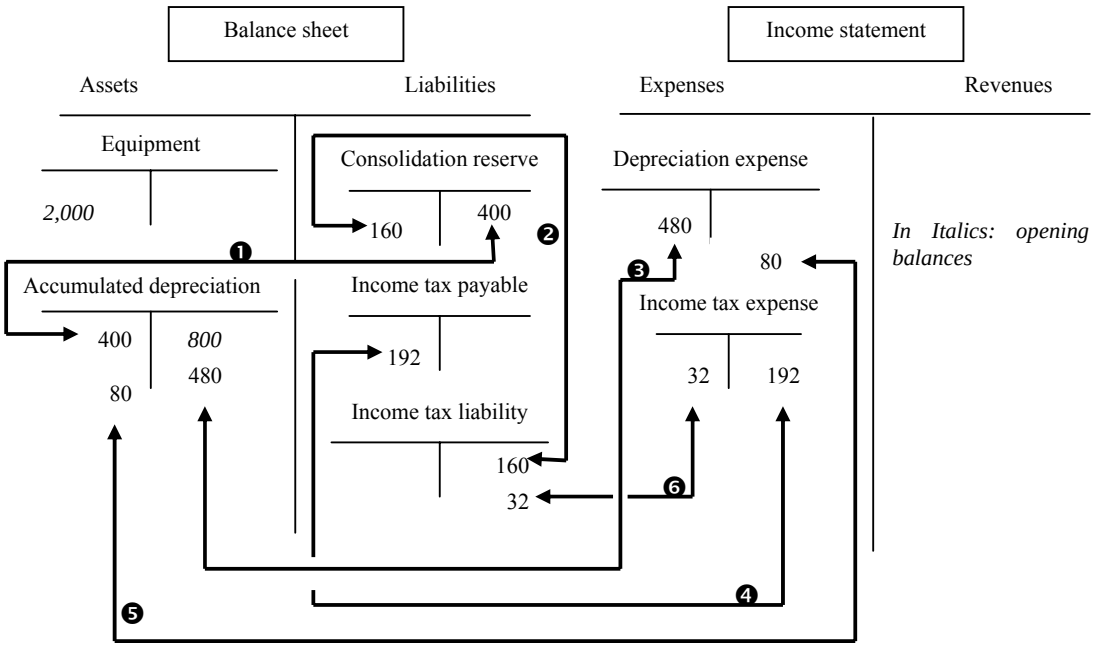


Figure 13.4A Deferred taxation on depreciation - Year X2

❶ Opening accumulated depreciation restated in year X1: 400.

❷ Opening income tax liability created in year X1: 160.

❸ Depreciation expense in the individual financial statements following the double-declining balance method: 480 (see Table 13.1A).

❹ Reduction of the income tax payable in the individual financial statements following the depreciation expense: 480 x 40% = 192.

❺ Harmonization restatement to adopt the straight-line. Cancellation of the difference between the double-declining and the straight-line depreciation: 80 (see Table 13.1A).

❻ Adjustment of the income tax base on the restatement: 80 x 40% = 32.

The prior year restatement entries (i.e. pertaining to X1, here) have not, of course, been included in Obrecht's books since they are only used for consolidation work and do not affect the local accounting of the subsidiary. Thus at the beginning of X2, it is important to realign the book values with the facts. The depreciation taken by Obrecht in X1 was 800 currency units but under straight-line depreciation (per the Oblinks Group Accounting Guide) it would have been only 400 thus the accumulated depreciation is first adjusted (reduced) by 400 currency units which is the difference due to straight-line versus accelerated. The entry reduces the accumulated depreciation by increasing (creating, if it is the first time) a "consolidation reserve" account. The consolidation reserve account is the focus of the

adjustment of income: on one hand it is increased by the depreciation expense differential and on the other hand it is reduced by the taxes that would have been owed, had the depreciation expense been lower. The net balance of the consolidation reserve is therefore reflecting the difference in income that would have been earned had the Group Accounting Guide been applied from day one by Obrecht.

The line item "consolidation reserve" is kept distinct from "statutory reserves" or "legal reserves", since the latter two are not subject to adjustments and result from decisions on the part of the parent company that have nothing to do with consolidation.

Each year, until the asset is fully depreciated, Obrecht will need to record an adjustment through the consolidation reserve in order to reconcile its local tax depreciation policy and the application of the Group Accounting Guide (impact on both accumulated depreciation and tax liability). The entry which here, in the early years of the life of the asset, created a credit balance in the consolidation reserve (because the accelerated depreciation expense was greater than straight-line depreciation expense would have been) will move the cumulated balance of the reserve account in the reverse direction in the latter part of the life of the asset (Table 13.1A shows that the straight-line depreciation expense is larger than the accelerated depreciation expense in years 3, 4 and 5). All things being equal, the consolidation reserve account cumulated balance should mathematically be zero at the end of the life of the asset. However this consolidation reserve is a critical account because businesses grow (and therefore the balance may never revert to zero due to continuous investment in new assets), thus the net balance of the consolidation account tends to never revert to zero.

Most national accounting standards or policies emphasize the notion of materiality. Therefore the philosophy regarding consolidation is generally to recommend that coherent and homogeneous methods be used unless the cost of their strict application is disproportionate compared to the estimated benefits of better reporting on the financial position of the consolidated entity.

Deferred taxes from lease contracts

Figure 13.4A illustrates the diversity of processes and decisions that can lead to the recognition of deferred taxes in lease contracts. Chapter 12 presented the deferred tax issues deriving from accounting for leases. Figure 13.5A illustrates the fact that three possible

outcome may be obtained in capitalizing leases in a consolidation: no reported deferred taxes, deferred taxes originating in the consolidation operations and deferred taxes originating only from the subsidiary's books and carried over to the consolidated accounts.

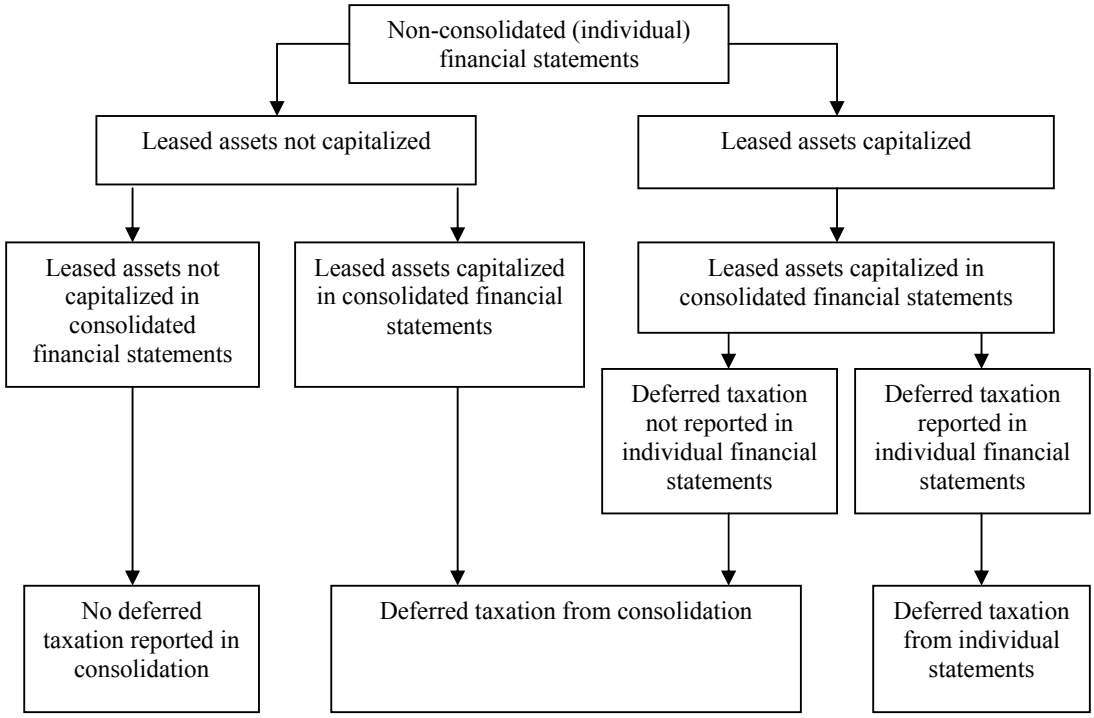


Figure 13.5A Deferred taxation on leasing

Regardless of the origin of the deferred taxes (carry-over of deferred taxes from individual non-consolidated financial statements or "new" deferred taxation resulting from the consolidation process), principles and methodology are identical.

Continuing the example provided in Chapter 12 (Tables 12.8 and 12.9), we observe that (in that example) the sum of interest and depreciation (which represents an expense) is greater than the lease payments recorded in the non-consolidated accounts. Consequently, the adjusting entries will lead to a reduction of income before tax. The income tax expense must therefore be adjusted also. Since the taxes have already been paid to the tax authorities, the counterbalancing entry must create a "negative" (i.e. prepaid) deferred tax, i.e. a deferred tax balance on the asset side of the restated financial statements. Since the restated accounts use a higher amount for the expense pertaining to the availability of use of the leased asset (interest plus depreciation expense) than the non-consolidated accounts did (lease payment only), the

adjusting entry is equivalent to a reduction of the taxable base. The prepaid deferred tax balance will, of course, reverse itself over the life of the lease, as can be seen from Tables 12.7 and 12.8 since the interest plus depreciation expense flow becomes smaller than the constant lease payment in the latter part of the life of the lease.

Getting back to the Obrecht example, assume this subsidiary has signed a lease contract on January 1, X1, granting it exclusive rights to use a fixed asset which could have been purchased outright for 600 currency units. The lease contract extends over a 5-year period. The contract calls for 5 equal annual rent payments of 160 currency units (paid up-front at the beginning of each year). Had the fixed asset been purchased, it would have been depreciated over a 6-year period. The applicable income tax rate is 40%.

Table 13.5A presents the schedule of repayment of the debt associated with the lease contract (for detailed explanations see Chapter 12, part 2).

Table 13.5A Lease amortization schedule

Dates of payments	Expense (Annual lease payment)	Reduction of debt	Interest
1 January X1	160	80	80
1 January X2	160	100	60
1 January X3	160	120	40
1 January X4	160	140	20
1 January X5	160	160	0
Total	800	600	200

Figure 13.6A illustrates the recording of the leased asset and the impact of deferred taxation.

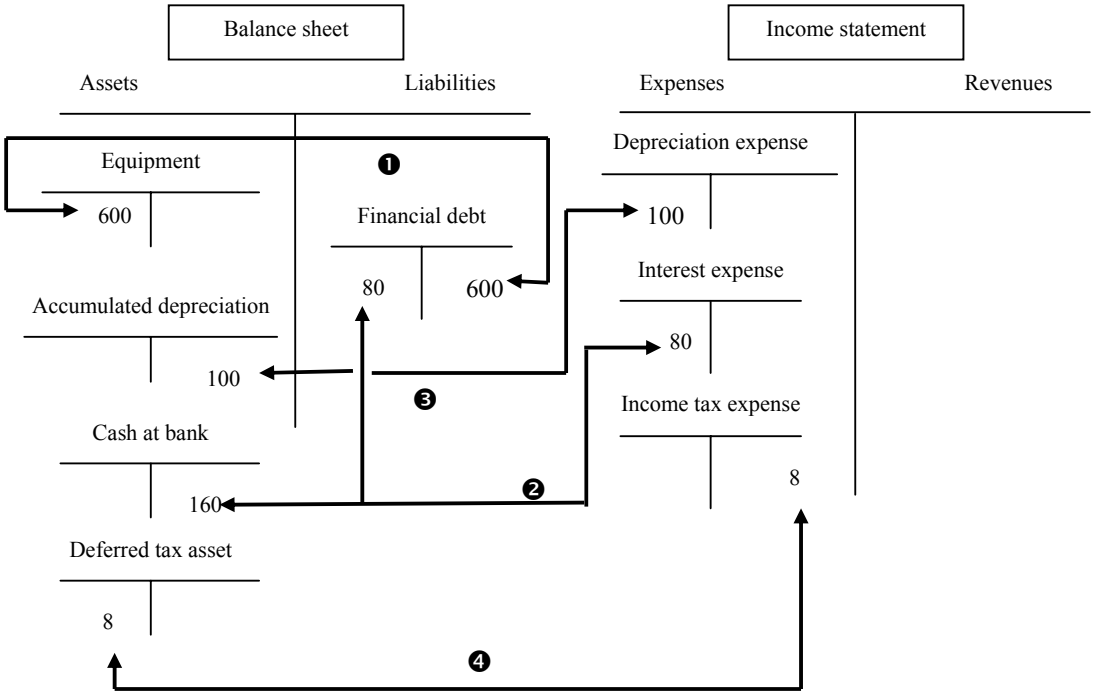


Figure 13.6A Capitalization of a leased equipment

❶ The leased equipment is recorded as an asset and a liability for the same amount.
❷ The leased payment (160) is split between interest expense and repayment of the financial debt (source of the figures: Table 13.17).
❸ The leased asset is depreciated over 6 years (100=600/6).
❹ Since there is a timing difference between the expense paid (lease payment of 160) and the reported expense (depreciation expense + interest expense = 100 + 80 = 180), a deferred taxation will arise based on the difference: (180 – 160) x 40% = 20 x 40% = 8.

Restatement of inter-companies transactions

Tax adjustments may be required during the elimination of intra-group (inter-company) profits. Since the taxable income of each individual subsidiary reflected these transactions, eliminating the transaction will require the creation of a deferred tax entry. Major transactions affected are:

- sales of goods between consolidated companies;
- internal sales of fixed assets;
- payment of dividends within the group.

These entries are beyond the scope of this book. The reader wishing to explore this point further is encouraged to consult a more advanced text such as Skousen *et al.* (2003).

Appendix 13.4 Foreign currency translations

Principles

Once the individual non-consolidated financial statements have been restated and harmonized in keeping with the prescriptions of the Group Accounting Guide, and before they can be aggregated, it is essential to express all accounts in the same currency. The unique currency or "reporting currency" used in establishing the consolidated accounts is generally the parent's. Foreign exchange rates therefore affect the translation of financial statements, established originally in foreign currencies, for all entities that are included in the perimeter of either a full or proportionate consolidation or the application of the equity method.

Exchange rates affect all accounting transactions involving two or more currencies. This text does not cover the handling of foreign exchange in "normal" operations and this section focuses only on the impact of foreign exchange rate in reporting on business combinations, relying mainly on IAS 21 (IASB 2003a). The issue here is to translate the financial statements of a foreign operation which is defined as "an entity that is a subsidiary, associate, joint venture or branch of a reporting entity, the activities of which are based or conducted in a country or currency other than those of the reporting entity" (IAS 21: § 8).

Figure 13.7A illustrates the issues: choice of an exchange rate (rate on the closing date or closing rate, rate on the transaction date or transaction rate, average periodic rate (week or month)) and impact of the exchange differences on shareholders' equity and income. A translated amount is supposed to describe the same economic reality as in the original currency but the currency units used refer to a different purchasing power.

If we have a quantity of resources valued at 200 local currency units (LCU) and the rate of exchange of the reporting currency is 1 unit of reporting currency (RCU) equals 4 LCU, the resources valued at 200 LCU are valued at 50 RCU. All accounting calculations assume that exchange rates create parity of purchasing power, i.e. that foreign exchange markets are efficient. However rates change frequently and the date retained for the translation and for the choice of exchange rate will have great impact on the meaningfulness of the measure of future economic benefits that accrue in the future.

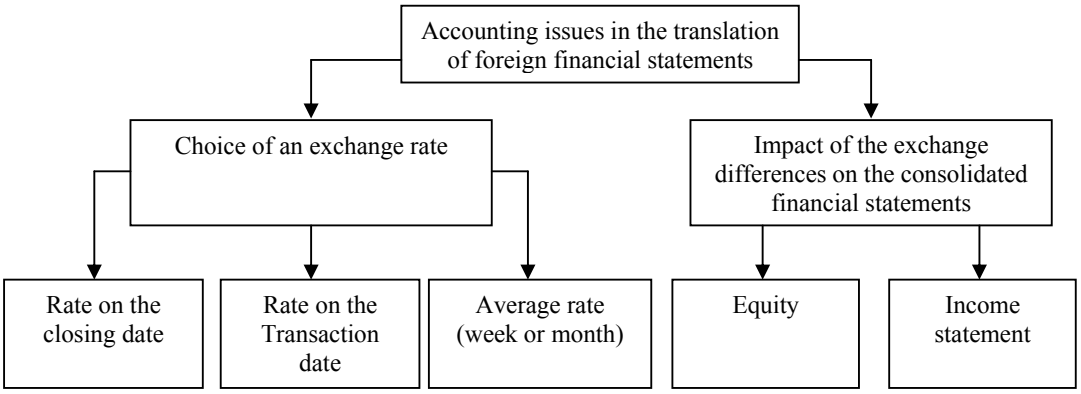


Figure 13.7A Accounting issues

IAS 21 defines the functional currency as "the currency of the primary economic environment in which the entity operates" and the presentation currency as "the currency in which the financial statements are presented".

The approach required by IAS 21 can be summarized as follows:

1. "In preparing financial statements, each entity – whether a stand-alone entity, an entity with foreign operations (such as a parent) or a foreign operation (such as a subsidiary or branch) – determines its functional currency […].
2. The entity translates foreign currency items into its functional currency
3. and reports the effects of such translation […]." (IASB 2003a: § 17)

"The results and financial position of an entity whose functional currency is not the currency of a hyperinflationary economy shall be translated into a different presentation currency using the following procedures:

(a) assets and liabilities for each balance sheet presented shall be translated at the closing rate at the date of that balance sheet;

(b) income and expenses for each income statement shall be translated at exchange rates at the dates of the transactions; and

(c) all resulting exchange differences shall be recognized as a separate component of equity." (IASB 2003a: § 39)

The fact that different exchange rates (rates generally vary with the date of the translation) are applied in the conversion of balance sheet and income statement accounts creates differences called "exchange differences" and defined by IASBC as "the difference resulting from

translating a given number of units of one currency into another currency at different exchange rates" (IASB 2003a: § 8).

Example

The following is an illustration of the foreign entities method. We assume that Sweelinck Company is a foreign entity of the Z group. Z Group acquired Sweelinck on January 1, X1. The subsidiary's financial statements are stated in a foreign currency (FC) and the exchange rates with the reporting currency (RC) applicable to our example are the following:

Rate on 1 January X1	1FC = 3.0RC
Rate on 31 December X1	1FC = 4.0RC
Average rate for X1	1FC = 3.6RC

The beginning balance sheet is the following (se Table 13.6A).

Table 13.6A Sweelinck Balance sheet as of 1 January X1

Assets	FC	RC	Equity and liabilities	FC	RC
Fixed assets	300	900	Capital	500	1,500
Current assets	500	1,500	Reserves	100	300
			Liabilities	200	600
Total assets	800	2,400	Total equity and liabilities	800	2,400

The balance sheet items have been all translated with the exchange rate extant on the date of the acquisition of Sweelinck by Z (1 FC = 3 RC). At the end of year X1, the financial statements are prepared (see Table 13.7A).

Table 13.7A Sweelinck Income statement for the year X1

	FC	RC
Sales	1,000	3,600
Other revenues	200	720
Operating expenses	-800	-2,880
Other expenses	-250	-900
Net income	150	540

All the income statement items have been translated using the average rate (1 FC = 3.6 RC).

Table 13.8A Sweelinck Balance sheet as of 31 December X1

Assets	FC	RC
Fixed assets	300	1,200
Current assets	500	2,000
Total assets	800	3,200

Equity and liabilities	FC	RC
Capital	500	1,500
Reserves	100	300
Exchange difference		660
Net income	150	540
Shareholders' equity	750	3,000
Liabilities	50	200
Total equity and liabilities	800	3,200

The closing balance sheet items have been translated using the closing rate (1 FC = 4 RC), with the exception of capital and reserves which have been translated using the exchange at the date of the transaction (acquisition) (1 FC = 3 CU). The net income is translated with the average rate (3.6 RC).

The exchange difference is, of course, the difference between the revalued assets and all the other items of equity and liabilities at their new value in the reporting currency: [3,200 – (1,500 + 300 + 540 + 200) = 660 RC]. The same exchange difference can also be obtained by looking at the equity side. The balance sheet equation leads mechanically to the same result. The table 13.9A below illustrates the calculation of the exchange difference from the equity data:

Table 13.9A Equity data

Shareholders' equity components	Ending amount in foreign currency (FC)	Closing rate	Exchange rate used in the ending balance sheet	Exchange difference
	(1)	(2)	(3)	(4)=(1)x[(2)-(3)]
Capital	500	4	3	500
Reserves	100	4	3	100
Net income	150	4	3.6	60
				660

The exchange difference allows the shareholders' equity of the subsidiary expressed in reporting currency (3,000 RC) (which includes this difference) to be equal to its amount in foreign currency (750 FC) translated at the closing rate (4 RC for 1 FC).

Real-life example

Toray Industries (Japan – Japanese GAAP - Source: Annual report 2005 - Manufacturer of synthetic fibers and textiles)

Notes to consolidated financial statements (Year ended March 31, 2005)
Translation of foreign currency financial statements: Translation of foreign currency financial statements of overseas subsidiaries into Japanese yen for consolidation purposes is made by using the current exchange rates prevailing at their balance sheet dates, with the exception that the translation of stockholders' equity is made by using historical rates. Revenue and expense accounts are principally translated at the average exchange rates during the year.

As shown in the illustration above, the shareholders' equity is converted at the historical rate.

Chapter 14 – Cash flow statement

Appendix 14.1 Contents of the activities according to IAS 7

Operating activities (IAS 7: § 14)

(a) cash receipts from the sale of goods and the rendering of services;
(b) cash receipts from royalties, fees, commissions and other revenue;
(c) cash payments to suppliers for goods and services;
(d) cash payments to and on behalf of employees;
(e) cash receipts and cash payments of an insurance enterprise for premiums and claims, annuities and other policy benefits;
(f) cash payments or refunds of income taxes unless they can be specifically identified with financing and investing activities; and
(g) cash receipts and payments from contracts held for dealing or trading purposes.

Investing activities (IAS 7: § 16)

(a) cash payments to acquire property, plant and equipment, intangibles and other long-term assets. These payments include those relating to capitalized development costs and self-constructed property, plant and equipment (see Chapters 7 and 8);
(b) cash receipts from sales of property, plant and equipment, intangibles and other long-term assets (see Chapters 7 and 8);
(c) cash payments to acquire equity or debt instruments of other enterprises and interests in joint ventures (other than payments for those instruments considered to be cash equivalents) (see Chapter 13);
(d) cash receipts from sales of equity or debt instruments of other enterprises and interests in joint ventures (other than payments for those instruments considered to be cash equivalents);
(e) cash advances and loans made to other parties;
(f) cash receipts from the repayment of advances and loans made to other parties.

Financing activities (IAS 7: § 17)

(a) cash proceeds from issuing shares or other equity instruments (see Chapter 11);
(b) cash payments to owners to acquire or redeem the enterprise's shares (see Chapter 11);

(c) cash proceeds from issuing debentures, loans, notes, bonds, mortgages and other short or long-term borrowings (see Chapter 12);
(d) cash repayments of amounts borrowed (see Chapter 12); and
(e) cash payments by a lessee for the reduction of the outstanding liability relating to a finance lease (see Chapter 12).

Appendix 14.2 Differences in classification

Interest paid

In terms of logic, the inclusion by an enterprise of interest paid in the operating activities category is highly debatable, and has been subject to much discussion. For example, in the United States, SFAS 95 supporting considering interest paid as an operating cash flow was only adopted by four votes to three. The position of the three opposing FASB members was that interest expenses should be included in the financing activities category. The FASB's majority position is criticized by economists and financial analysts alike.

Not only interests paid remunerate the creditors in the same way as dividends remunerate investors, and could therefore logically be considered as a component of financing activities, but the inclusion of interest expenses or revenue in the cash flow from operating activities implies a confusion between operating management and financial policy, thus reducing the usefulness of the cash flow statement as an analytical and predictive tool. Furthermore, separating interest paid from the changes in borrowed capital, makes it impossible to estimate the effect of the enterprise's transactions with bank and credit institutions.

Interest received

Interest received is generally reported as a part of operating activities (see Table 14.15), however IAS 7 (§ 33) states that it could also be classified as an investing cash flow, as it represents a return on investments.

Dividends paid

Dividends paid are generally reported under financing activities as they are a cost of obtaining financial resources (see Table 14.15). According to IAS 7 (§ 34), dividends paid may be also classified as operating cash flows in order to assist users in determining the ability of an enterprise to pay dividends out of operating cash flows.

Dividends received

Dividends received are generally classified as operating cash flows because they enter into the determination of net income. Alternatively, IAS 7 (§ 33) states they may also be classified as investing cash flows, as they represent a return on investments.

Taxes paid

Income taxes arise from transactions that give rise to cash flows classified in any one of the operating, investing or financing activities. In practice, tax cash flows are often difficult to identify and classify. Not only do they arise from the three types of cash flows but they often materialize in a period different from that when the underlying transaction cash flows took place. By default, most countries classify taxes as operating activities. The standard for the UK and Ireland creates a separate "taxation" classification: (see Appendix 14.3). However, as IAS 7 points out (§ 35-36), income taxes could also be classified as investing and financing activities if they can be specifically traced to these activities.

Appendix 14.3 The UK/Ireland model

In the first section of Advanced issues, the existing differences in classification of certain transactions were highlighted. The model used in the United Kingdom and Ireland (FRS 1: ASB 1991) is actually quite different from the model set out by the IASB (IAS 7) and in other countries, and thus merits further discussion.

Under FRS 1, cash flows should be classified under the following nine standard headings:

- Operating activities
- Dividends from joint ventures and associates
- Returns on investments and servicing of finance
- Taxation
- Capital expenditure and financial investments
- Acquisition and disposals
- Equity dividends paid
- Management of liquid resources
- Financing.

As an illustration of the British/Irish model, we will use the example of the British company First Technology, which develops sensor applications. This company presents a cash flow

statement in its annual report for 2000 (Year ended 30th April 2000). This statement comprises the standard headings listed above, but is also accompanied by detailed notes. Putting the two together results in the detailed statement shown below in Table 14.1A.

Table 14.1A First Technology – Group Cash Flow Statement for the year ended 30th April 2005

	2005 £'m	2004 £'m
Net cash inflow from operating activities	**29.5**	29.1
Returns on investments and servicing of finance	**(3.4)**	(0.4)
Taxation	**(2.3)**	(3.6)
Capital expenditure and financial investment	**(7.3)**	(3.1)
Acquisitions and disposals	**(109.0)**	(12.2)
Equity dividends paid	**(7.5)**	(7.2)
Net cash inflow before financing	**(100.0)**	2.6
Financing	**103.8**	0.4
Increase in cash in the year	**3.8**	3.0

Reconciliation of operating profit to net cash inflow from operating activities

	2005 £'m	2004 £'m
Operating profit	**13.2**	15.1
Depreciation and amortisation charges	**18.3**	12.1
(Increase)/decrease in stocks	**(2.4)**	1.7
(Increase)/decrease in debtors	**(0.3)**	2.8
Increase/decrease in creditors	**0.6**	(1.1)
Loss on disposal of fixed assets	**0.1**	0.1
Adjustment for pension funding	**(0.4)**	(0.4)
Exchange differences	**0.4**	(1.2)
Net cash inflow from operating activities	**29.5**	29.1

The following observations can be made.

Cash flow from operating activities

The cash flow from operating activities is computed using an indirect method based on the operating profit (rather than the net profit). This is because the income statement items that come after operating profit (such as interest for instance) are included further down the cash flow statement.

Returns on investments and servicing of finance

This heading records interest received and paid separately from operating activities.

Taxation

This heading is used to record taxes paid separately from other operating items.

In fact, the sum total of the first three functions (operating activities, returns and taxation) corresponds to the "operating activities" referred to in IAS 7 and SFAS 95.

Capital expenditure and financial investment

The traditional "investing activities" are split between "Capital expenditure and financial investment" and "Acquisitions and disposals". The first of these functions includes all the transactions related to the acquisition and disposal of any fixed asset (including investments) and current asset investments not regarded by the company as liquid resources (which are included later in the statement).

Acquisitions and disposals

This heading includes acquisition and disposals of any trade, business or entity that is an associate, joint venture or a subsidiary undertaking.

Equity dividends paid

Equity dividends paid by the reporting entity should be disclosed separately.

Financing

This heading includes receipts from or repayments to external providers of finance.

Increase/decrease in cash

As indicated above, this amount refers only to cash on hand and deposits repayable on demand, less overdrafts repayable on demand.

One of the objectives of the cash flow statement is to provide information that is useful in assessing the liquidity, solvency and financial adaptability of an enterprise. Therefore, the revised standard requires a note that reconciles the change in cash in the period with the change in net debt for the period. Table 14.2A shows this reconciliation statement for First Technology.

Table 14.2A First Technology – Reconciliation of net debt (note 25 to financial statements)

	2005 £'m	2004 £'m
Increase in cash in the year	**3.8**	3.0
Cash inflow from increase in debt	**(103.8)**	(0.4)
(Decrease)/increase in cash resulting from cashflows	**(100.0)**	2.6
Amortisation of facility fees	**(0.4)**	(0.1)
Translation differences	**2.4**	0.5
Increase in net (debt)/cash in the year	**(98.0)**	3.0
Net cash at 1st May	**3.1**	0.1
Net (debt)/cash at 30th April	**(94.9)**	3.1

Appendix 14.4 Funds flow statement or statement of changes in financial position

A model of statement of changes in financial position is provided in Table 14.3A. It falls into two parts: the first part computes the change in working capital from the top of the balance sheet, while the second part works from the bottom of the balance sheet.

Table 14.3A Example of a statement of changes in financial position

TABLE 1	
SOURCES Potential cash flow (excluding movements of provisions on current assets - inventories and accounts receivable) Proceeds from sales of fixed assets Increase in share capital Increase in financial debts	
TOTAL SOURCES	(1)
USES Dividends paid Acquisition of fixed assets Decrease in financial debts	
TOTAL USES	(2)
CHANGE IN WORKING CAPITAL (+ = net sources)	(3)=(1)-(2)

TABLE 2 (Use = +, Source = -)	
OPERATIONS Changes in inventories (net) Changes in accounts receivable (net) Changes in accounts payable and accrued expenses Changes in social security and operating taxes payable Changes in other receivables Changes in other payables	
Change in working capital needs	(4)
CASH AND CASH EQUIVALENTS Change in cash Change in bank overdrafts	
Change in cash and cash equivalents	(5)
CHANGE IN WORKING CAPITAL	(6)=(4)+(5)

Check: (3)=(6)

Repsol YPF, the Spanish oil and gas company, annual reports includes a "statement of sources and applications of funds". It is reproduced as Table 14.4A, with comments.

Table 14.4A Repsol statement of sources and applications of funds

Millions of Euros					
Applications of funds	2004	2003	**Source of funds**	2004	2003
Additions			Funds obtained from operations	5,367	4,477
Property, plant and equipment	2,391	2,241			
Intangible assets	83	80	Capital subsidies and other deferred revenues	41	47
Long-term financial investments	189	392			
Acquisitions of consolidated affiliates	1,083	1,124			
Total additions	3,747	3,837	Long-term debt		
Deferred charge	37	24			
TOTAL	**3,784**	**3,861**	Loans received	1,767	2,045
Net long-term assets and liabilities related to the consolidation of new affiliates	(158)	13	Other payable	65	95
Net change in long-term assets and liabilities due to translation	(22)	(498)	Fixed assets disposals		
Dividends			Property, plant and equipment	39	116
Of the parent company	549	440	Long-term investments and other	222	112
Of the Group companies attributed to minority interests	203	194			
Repayment or transfer of long-term debt	2,236	3,220			
INCREASE IN WORKING CAPITAL	**909**	**-**	**DECREASE IN WORKING CAPITAL**	**-**	**338**
TOTAL FUNDS APPLIED	**7,501**	**7,230**	**TOTAL FUNDS OBTAINED**	**7,501**	**7,230**

This corresponds to the first part of the model shown as table 1 in Table 14.3A, but presented in an horizontal format. The first source heading is "funds obtained from operations", which the company details as shown in Table 14.5A.

Table 14.5A Repsol - Funds obtained from operations

Millions of Euros		
	2004	**2003**
Net income for the year	1,950	2,020
Adjustments to determine the funds obtained from operations		
Depreciation and amortization expense	2,572	2,419
Net provisions recorded	756	260
Income attributed to minority interests	230	210
Gains on assets disposals	(21)	(56)
Cancellation of deferred tax liabilities and other	(120)	(376)
Funds obtained from operations	**5,367**	**4,477**

The item "funds obtained from operations" is fundamentally equivalent to the "potential cash flow" introduced in Figures 14.2 and 14.4.

To check the balance of the statement, the company publishes a separate statement (see Table 14.6A) showing details of the changes in working capital. This corresponds to the second part of the model shown as table 2 in Table 14.3A.

Table 14.6A Changes in working capital

Millions of Euros				
	2004		2003	
	Increases	Decreases	Increases	Decreases
Inventories	543	-	-	10
Accounts receivable	817	-	112	-
Accounts payable	787	-	-	1,250
Short-term investments and cash	-	1,224	813	-
Accrual accounts, net	-	14	-	3
TOTAL	**2,147**	**1,238**	**925**	**1,263**
Changes in working capital	**-**	**909**	**338**	**-**
	2,147	**2,147**	**1,263**	**1,263**

Appendix 14.5 Different titles and different models

A statement's name does not necessarily indicate its actual content. The names used fall into two main categories: statement of changes in financial position (or statement of sources and applications of funds) and cash flow statement. Table 14.7A attempts a typological distinction.

Table 14.7A Typological distinction

Statement of changes in financial position or **Statement of sources and applications of funds** or **Funds flow statement**
- a statement that explains the changes in assets between the opening and closing balance sheets; - a statement that provides an overview of the financial equilibrium; - a statement that is used for analysis of the corporate assets; - a statement that focuses on the change in working capital.
Cash flow statement
- a statement that gives priority to the economic viewpoint, describing flows related to the company's operations; - a statement that shows the link between the company's operations and the financial equilibrium; - a statement that aims to explain the changes in cash throughout the year.

This distinction has its limits. For example, it would clearly be exaggerating to claim that a statement of changes in financial position takes no account of the economic viewpoint of the company's operations. In any case, strictly speaking, all statements of changes in financial position are in fact cash flow statements, since they show flows, rather than changes.

Chapter 15 – Financial statement analysis

Appendix 15.1 Value added

Principles

The term value is ambiguous and used to mean different things. Economists have at least two different definitions:

- increase in wealth of an economic entity obtained through its intelligent and willful activity (difference between the resources consumed that had been acquired from third parties and the revenue generated);
- amount of resources a customer is willing to forego in order to secure rights of use over another resource, i.e. the price that balances demand and supply.

Marketing and strategy specialists convey yet another meaning of value, although derived from the second definition above, which is the "usefulness" perceived by the customer of the service or product offered, thus defining its attractiveness and a maximum price that would make the buyer neutral between acquiring or not acquiring the goods or services.

In finance the term value has been associated specifically with the return to shareholders. We have covered this aspect in Advanced issues, section 2. In this appendix we will consider only the first meaning of the term value.

The most basic purpose of an enterprise is to create more resources than it consumes. Income is the metric we have used so far to report on the success of an enterprise in this respect. However many countries, mostly in continental Europe have used the "value added" concept to evaluate another aspect of performance. A retailer that sells merchandise purchased for resale and does not offer a service particularly valued by the customer will not "add much value" to the merchandise (the customer is not willing to pay a large premium over the purchase cost of the merchandise; on the other hand a retailer who would offer a real service (for example by offering in a single location merchandise which would otherwise cause the customer to incur large transaction costs due to the requisite diversity of suppliers) does add a lot of value and the difference between revenue and cost of resources acquired from third parties will be much greater than it was in the first case.

Value added is thus a measure of the economic performance of an economic entity, especially a measure of its contribution to creating a more customer-oriented supply or offer. Thus, it is a form of "income" measurement. The value added represents the wealth created by the firm that will be distributed to the various entitled parties or stakeholders which include personnel, lenders, governments, shareholders, etc. It is also aggregated in the calculation of national income which measures the productive performance of a national economy or National Product or Domestic Product. These last two concepts refer to the value added by a national economy during a specific period and available for distribution to the various classes of actors or stakeholders. The more developed the economy, the larger is its value added (it adds more value to raw resources by transforming them into an elaborated product or service).

There are two approaches to its calculation: subtractive and additive.

- The subtractive method defines value added as the difference between total "production" for the period, to which is added the commercial margin on merchandise sales, and the consumption of goods and services supplied by third parties for that production.
- The additive method defines value added as the sum of remuneration of the various factors of production including internally generated funds. This method is known as "additive" because it mainly adds back to the net income all the expenses which have not been included in the subtractive method as they represent distributions to stakeholders. The term "additive" is, however, not totally correct because one should deduct the revenues which result from a company's non-operating activities, not included in the subtractive computation.

Expenses (net of corresponding revenues), e.g. financial expenses minus financial revenues, represent the remuneration of each factor of production. Thus, value added equals "costs added" plus net income. "Costs added" encompass all costs of a company other than those related to the consumption of goods and services acquired from third parties (as such included in the subtractive method). The major items of "cost added" are wages and salaries, financial expenses, taxes and depreciation.

The computation of value added is easily calculated on the basis of an income statement presented by nature. Value added (calculated by the subtractive form) is one of the standard subtotals of financial performance in the statement of intermediate balances as defined in Figure 15.2.

When the income statement is organized by function, the calculation of intermediate balances is extremely difficult and that of value added virtually impossible (unless precise additional information is provided regarding the detailed make up of the cost of goods sold).

Table 15.1A illustrates one possibility of calculation of the value added using the additive method.

Table 15.1A Computation of value added by the additive method

+	Taxes and similar expenses (excluding income taxes)
+	Wages and salaries
+	Depreciation expense and provision expense
-	Reversal of provisions
+	Other operating expenses
-	Operating subsidies
-	Other operating revenues
±	Share of profits (losses) from joint ventures
+	Financial expenses
-	Financial income
+	Exceptional expenses
-	Exceptional income
+	Employee profit sharing
+	Income taxes
+	Net income
=	Value added

Typically, the additive table is structured according to the different stakeholders groups. The distribution of value added between them is usually represented as shown in Table 15.2A. In this table the value added is broken down not only between stakeholders but also between "cost added" and "income" since the various quantities and amounts in each cell are the result of different managerial decisions.

Table 15.2A Distribution of value added

Appropriation of the added value	**Value added =**	
	Costs added	**+ Income**
Share of employees	Wages and salaries	+ Employee profit sharing
Capital providers' share	Financial expenses	+ Dividends
Government's share	Taxes and similar expenses (excluding income taxes)	+ Income taxes
Enterprise's share (investors' share)	Calculated charges (Depreciation, amortization and write-back)	+ Profit retained

Ratios about value added

The amount of value added does not, in itself, constitute a criterion of enterprise financial performance. There is no possibility to declare before further analysis whether the amount of value added is appropriate or not, and therefore whether the managers did a good job or not. However, an analysis of the value added can clearly outline the structure of a firm's activity and value added is, therefore, used as a basis for calculating various ratios. Value added is to be evaluated in its dynamic relation to other items of the operating and financial performance of the firm. Value added ratios are primarily used for the purposes detailed below.

Company Structure Analysis

Ratios of vertical integration

Value added/'Production' (in %)	or	Value added/Sales (in %)

Production, as used in this ratio, is defined (see Figure 15.2) as sales revenue plus the increase in inventoried manufactured goods (i.e. goods manufactured by the firm but which were not sold during the period). When there is no manufactured goods, the ratio may be computed over sales.

In addition to serving as an indicator of vertical integration, these ratios are used for measuring the economic efficiency of a company, that is, its capacity to create value out of the factors of production (labor and capital).

Theoretically, the ratio can vary only between zero and one. A ratio close to one indicates that the company is highly integrated and in consequence rarely calls upon third parties. Conversely, the ratios will be close to zero for a company which is outsourcing most of its business activity.

Ratios of economic structure

Ratio	Factor
Wages and salaries/Value added (in %)	Labor
Depreciation/Value added (in %)	Investments
Profits/Value added (in %)	Capital and Management

These ratios are used to evaluate the role of the different factors in production in creating the value added. They represent the relative intensity of the use of different productive factors in a firm. The factors which are key in a firm's performance are clearly identified through such ratios.

Ratios of productivity

The following ratios are used to measure the efficiency with which the internal production factors are used. They represent the productivity effort of the company.

Ratios	Productivity effort
Value added/Number of employees	Productivity of Labor
Value added/Labor hours	Productivity of Labor
Value added/Machine hours	Productivity of Labor
Value added/Production investments (in %)	Productivity of Capital
Value added/Depreciation expense (in %)	Productivity of Capital

Development of the Company

Ratio of development of value added calculated over several years

Change in value added/Value added (in %)

Looked at over a period of several years, to smooth out the effect of changes in the economic environment, this ratio becomes a good indicator of the company's development. It shows the growth in value added.

Value added distribution

The value added distribution ratios describe the share of value added awarded to each of the major stakeholders.

Employees	Wages and salaries/Value added (in %)
Capital providers	Financial charges/Value added (in %) or Dividends/Value added (in %)
Government	(Tax on profits, other taxes, duties and similar charges)/Value added (in %)
Company	Profit retained/Value added (in %)

These ratios tend to provoke discussions about the fairness of the apportionment of the wealth created through the operations of a company. They were one major reason for the emergence of the "value added statement" as an instrument of social accounting in the 1970s.

Restatements

It often happens that companies, in addition to the standard list of stakeholders, include other sources of wealth creation acquired from other companies, such as:

- In the labor category: add external personnel (temporary workforce or long term consultants, for example) as it is important to measure how dependant the firm is on the contribution of these external providers of labor (including purchased intellectual capital in the concept of labor).

- In the category of providers of financial capital: add specifically providers of financial leases (used to secure rights of use on certain assets) and lessors of assets.

These external "sources" contribute in the same way other stakeholders do in the company's production of wealth. Consequently in any financial analysis which has the objective of making comparisons between companies with different structures of production factor consumption, and to prepare sectorial data, it becomes necessary to merge the contributions of stakeholders and external sources to calculate the total of resources at the disposal of the company in personnel, production plant and distribution and sales networks.

Temporary personnel

In order to ensure that the value added calculation is unaffected by changes in a company's personnel recruitment policy, it is necessary to include the cost of temporary personnel (accounted for in the cost of third party services consumed under traditional accounting rules) in the value added on the same basis as the cost of regular personnel. The total of value added will thereby be increased by charges for temporary personnel which will then only be deducted after value added.

Finance leasing

In Chapter 12 we have shown that the annual cost of finance leasing, traditionally counted as an external expenses, is composed of both "annual depreciation expense" and "financial expense". If the lease is considered as a mean of financing, the financial cost disappears from the total of consumed third party services and becomes part of added value.

Appendix 15.2 Working capital need in sales days

Working capital was described in the earlier part of the chapter as a measure of the ability of the firm to survive if short-term credit were to be cancelled. It is therefore logical to ask the question: how long can the firm survive? Practitioners have taken the habit of expressing the short-term capability of survival of a business in terms of numbers of days of sales.

Working capital need can also be expressed in terms of sales days. It is the complement to the survival potential in that it describes the number of activity days required to fund the working capital need.

Basic formula

Like all ratios, the working capital need expressed in terms of days of sales can be broken down into actionable sub-components so as to provide the analyst with a clear understanding of the impact of a change in certain variables on the determinants of the working capital need.

An internal analyst can calculate the working capital need in terms of sales days by strict addition of the various distinct elements of the operating cycle.

The external analyst (as is the case of most financial analysts) must use only publicly available data. This, of course, represents some limitation to the possibility of doing the calculation (it can only be done if the income statement is reported by nature) and its precision of the calculation (for example, inventories are composed of diverse raw materials and components, work in process, a variety of semi-finished products and finished products which are valued differently and the proportion of which changes continuously in the firm). However, as will be shown below, the breakdown of the working capital need (in sales days) in its basic components will yield significant (although approximate) information to decision-makers.

The essential definition of this metric is:

$$\textbf{Working capital need (in days of sales)} = \frac{\text{Working capital need}}{\text{Sales revenue}} \times 365$$

If we take as an example the three main components of the working capital need, this equation can be transformed as follows:

$$\text{Working capital need (sales days)} = \frac{\text{Inventories} + \text{Accounts receivable} - \text{Accounts payable}}{\text{Sales revenue}} \times 365$$

Which can be broken down further into three ratios:

$$\frac{\text{Inventories}}{\text{Sales}} + \frac{\text{Accounts receivable}}{\text{Sales}} - \frac{\text{Accounts payable}}{\text{Sales}} = \frac{\text{Working capital need}}{\text{Sales}}$$

(In Europe, and in countries applying VAT, all income statement elements and especially the sales figure exclude VAT)

The components of the working capital need in sales days are not homogeneous at this stage as the first two compare a numerator measured in terms of costs and a denominator measured in terms of selling prices. However, in order to express these in homogeneous terms, we can break each in two multiplicative ratios: duration ratio (measuring the average number of days the item takes in the operating cycle) and structure ratio (describing the weight of the cost component as a proportion of sales revenue).

Duration ratios

The number of days a component of the working capital need takes in the operating cycle has been shown to be the ratio of the two forms under which this item appears in the balance sheet (for example "inventory") and in the income statement (for example the counter-part to "inventory" is "cost of goods sold"). The number of days of activity provided by inventory is:

(Average inventory/Cost of goods sold) x 365.

The number of days of activity provided by accounts receivable is (Average accounts receivable/Sales revenue) x 365. For payables, the ratio of duration is (Average accounts payable/Total purchases) x 365. Similar ratios can be computed for any other component of the working capital need.

Structure ratios

These ratios define the weight (as a % of sales revenue) of the income statement item corresponding to a component of the working capital need. For example here, the "cost of goods sold" is the income statement element corresponding to inventories (a component of the working capital need calculation).

We can see that: duration x structure = number of days of WCN created by this item. To wit:

$$\text{Duration} = \frac{\text{Inventory}}{\text{Cost of goods}} \times 365; \text{ and } \text{Structure} = \frac{\text{Cost of goods}}{\text{Sales}}$$

$$\text{Thus}: \text{Duration x Structure} = \frac{\text{Inventory}}{\text{Sales}} \times 365$$

which means that we can build the "normative" value of the working capital need as long as available financial statements (by nature) provide the basic information. This normative amount can then be compared to the results of the cash flow analysis to help the analyst verify the quality of her or his understanding of the business and its sensitivity to changes in competitive conditions.

The breakdown of the working capital need measured in terms of sales days into duration and structure ratios gives the analyst an understanding of what levers can be activated by management in order to increase or decrease the working capital need.

If the turnover of an item is increased (such as: customers pay quicker, suppliers extend credit terms or it takes less inventory to support identical sales), the duration ratio is decreased (which is a priori good for a smaller working capital need) but if the price to pay for this improvement is, for example, to pay a higher price for the goods purchased, we can see the structure ratio will increase and might overcompensate (and possibly nullify, and even reverse) the positive effect.

Not only is the sales days measure of the working capital need a useful metric to evaluate the short-term strength of a firm, but breaking it down into duration and structure ratios allows the analyst to anticipate the effect of modifications in the environment that affect either of the two ratios (price increase = structure; delays in delivery time due to a strike at the transporter = duration; increased customer credit terms with cancellation of discounts = duration and structure, etc.).

Example

Let's take as an example an activity in which the sales revenue (indexed as 100) breaks down into the following elements:

SALES		100
Personnel expenses	60	
Purchased merchandise	20	
General expenses	5	
Total		85
Depreciation		10
Net income		5

In addition we have the following information:

- Merchandise remain in inventory 45 days on the average before being sold.
- Customers pay 75 days after the month end in which the sale took place.
- Personnel is paid on the last day of the month.
- Suppliers (merchandise and general expenses) are paid 30 days after the month end in which their delivery was made.
- Sales, purchased merchandise and general expenses are VAT taxable at 20%.
- VAT due to the State tax authority is paid on the 20th of each month (see explanations on VAT in Chapter 10).

What are the permanent working capital need of the company under the conditions which have been described?

	Duration Ratio		Structure ratio		Need (1)	Source (2)
Merchandise inventory	45		0.20		9.00	
Accounts receivable	90	(A)	1.20	(C)	108.00	
Accounts payable (merchandise)	45	(B)	0.24	(D)		10.80
Accounts payable (general expenses)	45	(B)	0.06	(E)		2.70
Personnel	15		0.60			9.00
VAT deductible	35	(F)	0.04	(G)	1.4	
VAT collected	35	(F)	0.20	(H)		7
Total					118.40	29.50
Working capital need					88.90	days

(1) Financing needed
(2) Financing supplied

(A) 75 days credit plus 1/2 month of invoicing
(B) 30 days credit plus 1/2 month of delivery
(C) 100 x 1.20/100
(D) 20 x 1.20/100
(E) 5 x 1.20/100
(F) 1/2 month of invoicing or delivery plus 20 days
(G) 20 x 20% /100
(H) 100 x 20%/100

The overall financing need is therefore:

118.40 -29.50 = 88.90 days or approximately 90 days of sales (or about three months).

This need can also be expressed in volume (assuming the index of 100 chosen earlier corresponds to 100 units): 100 (monthly sales) x 90 days/30 days per month = 300 units.

Appendix 15.3 Complementary remarks on ratios computation

When computing the "average collection period" in countries recording the value added tax (European countries mainly) and including it in the accounts receivable (i.e. receivables are recorded at their VAT included price), the following adjustments should be carried in order to have consistent numerator and denominator:

- either exclude the value added tax from the accounts receivable, or
- include the value added tax into sales.

In practice, if this adjustment is not made, which is rather frequently the case, this is not too important if the same "error" is committed in the calculation of the reference ratios from other companies or from other years or accounting periods for the same company.

The above remark concerning value added tax is applicable to the "average payment period" ratio. The value added tax should be excluded from the "accounts payable" or included in purchases.

Appendix 15.4 Business newspapers and magazines – Specialized magazines

All countries have business and financial magazines and newspapers reporting news and current events about the financial and economic world. They represent a wealth of information which can be helpful for financial analysts. Table 15.4A provides some examples of such magazines and newspapers.

Table 15.3A Examples of business magazines and newspapers

Countries	Newspapers	Magazines
Austria	Wirtschaftsblatt (www.wirtschaftsblatt.at)	Trend (www.trend.at)
France	Les Echos (www.lesechos.fr), La Tribune (www.latribune.fr)	L'Entreprise (www.lentreprise.com), L'Expansion (www.lexpansion.com)
Germany	Handelsblatt (www.handelsblatt.com)	
Italy	Il 24 Sole Ore (www.ilsole24ore.com)	
Russia	Commersant (www.commersant.ru)	
Spain	Expansión (www.expansiondirecto.com)	
Sweden	Finanstidningen (www.fti.se), Dagens Industri (www.di.se)	
United Kingdom	Financial Times (www.ft.com)	The Economist (www.economist.com)
USA	Wall Street Journal (www.wsj.com)	Business Week (www.businessweek.com)

Table 15.5A lists some examples of magazines specialized in the field of accounting and auditing.

Table 15.4A Examples of specialized magazines

Countries	Magazines
France	Revue Française de Comptabilité, SIC (www.experts-comptables.fr)
Germany	Die Wirtschaftsprüfung
Spain	Partida Doble; Revista Española de Financiación y Contabilidad (www.aeca.es)
Sweden	Balans (www.far.se/balans); Nytt från revisorn
Switzerland	Der Treuhänder (www.treuhaender.ch)
United Kingdom	Accountancy (www.accountancy-uk.co.uk)
USA	The CPA Journal (www.cpajournal.com)

Appendix 15.5 Databases and statistics publications

Table 15.6A lists several sources of government statistics or publications from private organizations.

Table 15.5A Some databases and statistics useful for a financial analyst

Austria	Verlag Hoppenstedt	CD-rom. Information on companies from Austria, Germany, Hungary, Czech republic and Poland (in German)
	Dun & Bradstreet	Book with financial information on the largest companies (in German)
	Kreditschutzverband	Information on more than 300,000 Austrian companies (www.ksv.at) (in German and English)
Europe	Amadeus	Internet access to the accounts filed by companies (in English) (www.amadeus.com)
France	Bank of France	Financial statement analysis department of the Bank of France (*Centrale des Bilans de la Banque de France*) (www.banque-france.fr) (in French)
	Diane	CD-ROM (in French)
	Kompass	CD-ROM and internet access with financial statements (www.kompass.com) (in French)
	Paris' Stock exchange	Stock market data, sectorial comparisons, indexes (www.bourse-de-paris.fr)
	Boursorama	Stock market data, sectorial comparisons, indexes (www.boursorama.com)
Germany	Börsenforum	Financial information including annual reports (www.boersenforum.de) (in German)
	Digital investor	Financial information and annual reports (www.digital-investor.de) (in German)
Russia	Balance	Annual reports (www.balance.ru) (in Russian)
	Expert	Annual reports (www.expert.ru) (in Russian)
Spain	Buscafinanzas	Financial information and annual reports (www.buscafinanzas.com) (in Spanish)
Sweden	BIT Årsredovisningar	Press releases and annual reports of listed companies (www.bit.se) (in Swedish and English)
Switzerland	Hugin	Annual reports (www.huginonline.ch) (in German and English)
UK	Key Business Ratios	The Guide to British Business Performance, Dun & Bradstreet Ltd, 11th edition 1997 (www.dnb.com)
	IPA UK Industrial Performance Analysis	1996/97 Ed. ICC Business Publications Ltd 1996.
	Company REFS	– Really Essential Statistics: Tables Volume devised by Jim Slater, Hemmington Scott Publication, August 1997 (Issue 36)
	The Company Guide	Hemmington Scott Publication, November Quarter 1997
USA	CompuServe	Value Line : library of financial information
	Compustat II	CompuServe: database of financial statements (www.compustat.com – www.pinanhaweb.com)
	Dun & Bradstreet	Industry Norms and Key Business Ratios (SIC code) (www.dnb.com)
	Gartner Group	Especially for the electronics and telecommunication world) www.gartner.com
	Robert Morris Associates	Annual Statement Studies (Industries are groups using the SIC - Standard Industrial Classification - code)
	SEC Free Edgar	Annual reports of listed companies (www.freeedgar.com)
	Standard & Poor's	Compustat database (financial and market information on US traded companies) (www.compustat.com)
International	Datastream	Accounting and stock market data for 65 countries (www.datastream.com)
	Global (Standard and Poor's)	Financial information of international public companies.
	Hugin	Financial information and annual reports (www.huginonline.com) (Austria, Benelux, Denmark, Finland, Germany, Norway, Sweden, Switzerland and UK)
	Infinancials	Financial information of international public companies (www.infinancials.com).

Appendix 15.6 Filing of financial statements

The following table 15.7A presents the obligation of filing in several countries.

Table 15.6A Obligation to file financial statements

	Administration	Nature of financial statements and deadline
Australia	Australian Securities Commission	All companies must file an annual return each 31 January of the following year. All public and large companies must also file audited financial statements within 4 and 5 months respectively of their year end.
Belgium	National Bank (located within the jurisdiction of the commercial court)	After the general meeting of shareholders approving the financial statements (due 6 months after the balance sheet date)
Canada	Federal Government Office	For large companies, audited annual financial statements must be filed within 100 days after the fiscal year end. Interim financial statements must be filed quarterly within 60 days after the end of the period.
Denmark	Danish Commerce and Companies Agency	All limited companies must file audited financial statements each year.
Finland	National Board of patents and Register of Trade Marks	All limited liability companies and partnerships must file their financial statements within 3 months after the end of the financial year, if at least one of the liable partners is a limited company. The same rule applies to all other accountable individuals and entities exceeding some thresholds.
France	Commercial Court	1 month after the shareholders' business meeting approving the financial statements (due 6 months after year end) = 7 months after year-end.
Germany	Trade Register (file) Federal Gazette (publish)	Large GmbHs, AGs and other entreprises subject to the Publicity Law must file their audited annual financial statements within 9 months after the fiscal year end.
Greece	Ministry of Commerce	For all SAs, audited statements must be filed at least 20 days before the annual general meeting of the shareholders.
Honk-Kong	Registrar of Companies	Audited annual financial statements must be filed within 6 months after the fiscal year end. Interim financial statements must be filed every 6 months within 4 months after the end of the period.
India	Department of Company Affairs / Registrar of Companies	After the shareholders annual meeting approving a corporation's balance sheet and profit and loss statements.
Ireland	Registrar of Companies	Audited annual financial statements must be filed after the fiscal year end. Interim financial statements must be filed every 6 months within 4 months after the end of the period (for listed companies).
Italy	Register of Business Enterprises	Audited annual financial statements must be filed within 4 months after the fiscal year end. Interim financial statements must be filed every 6 months within 3 months after the end of the period.
Japan	Ministry of Finance	Audited annual financial statements must be filed within 3 months after the fiscal year end. Interim financial statements must be filed every 6 months within 3 months after the end of the period.
Netherlands	Trade Registrar of the Chamber of Commerce	Audited annual financial statements must be filed within 5.5 months after the fiscal year end. Interim financial statements must be filed every 6 months within 4 months after the end of the period.
New Zealand	Registrar of Companies	The financial statements must be signed by 2 directors within 5 months after the balance date and audited; and be delivered for registration within a further 20 working days.
Russia	Tax Authority & Department of Statistics	The annual financial reporting is required to be presented by enterprises by April 1 of the following year, and quarterly financial reporting within 30 days after the end of the quarter.
South Africa	Registrar of Commerce	Unaudited interim and audited financial statements must be filed within 3 months of the end of the half-year and financial year, respectively.
Spain	Mercantile Register (= Commercial Register)	Audited annual financial statements must be filed within 1 month after the shareholders' meeting. Interim financial statements must be filed every 6 months within 60 days after the end of the period.
Switzerland	Swiss Official Gazette of Commerce	For corporations having bonds outstanding or shares are listed on a stock exchange, the individual and consolidated financial statements must be published.
UK	Company House, Registrar of companies	10 months after year end.
USA	Securities and Exchange Commission (SEC)	For listed companies: Audited annual financial statements must be filed within 90 days after the fiscal year end. Interim financial statements must be filed quarterly within 45 days after the end of the period.

Appendix 15.7 Scoring models

One main preoccupation of analysts is to identify the risk of a business failing. Whether it is an investor, a customer or a supplier, the risk of bankruptcy is of great interest to a user of financial information.

Principles

The objective of the method is to establish, for each firm, a synthetic index or "score" which will indicate in which of the two populations the firm should be placed (healthy of in difficulty). The process of establishment of the synthetic index (derived from research) is called the scoring model. These are established by comparing, generally *ex post facto,* two samples of enterprises (same industrial sector and same sizes of firms between the two samples), one of failed enterprises and the other one of healthy surviving enterprises and use statistical analysis to find the ratios (current and past periods) that discriminate between the two populations. In a second stage the identified discriminant function will be tested as a predictive tool on two other samples of firms to verify the predictive power of the scoring model. Scoring models are generally using a two to three year predictive time horizon.

The discriminant function used to establish the score is generally a weighted average of various ratios. The score calculated for each firm is compared to some threshold and the risk is evaluated by how far above or below the threshold value the score is. Scoring models allow a fairly accurate measure of an increase in the risk of bankruptcy of a firm two to three years before and thus allow for corrective actions to be taken by managers and stakeholders.

Example of a scoring model

Edward I. Altman developed the first multivariate model aimed at the prediction of bankruptcy. The model highlights five ratios weighted in a discriminant function called the Z score:

$$Z = 1.2\ X_1 + 1.4X_2 + 3.3\ X_3 + 0.6X_4 + 1.0X_5.$$

The five ratios are defined as follows:

X_1	Working capital/Total assets
X_2	Retained earnings/Total assets
X_3	Earnings before interest and taxes/Total assets
X_4	Market value of equity/Book value of total debt
X_5	Sales/Total assets

With this model, the lower the Z score, the more likely that the firm will fall into bankruptcy. In a later study, Altman and McGough (1974) showed that a score of 2.675 was a practical cutoff point.

Altman's methodology was transposed to other countries and economic environments. The ratios in the Z function are clearly affected by the US GAAP and the existence of a financial market (for the market value of equity). The choice and definition of ratios as well as the weights have to be adjusted to a different regulatory and economic environment. In many countries researchers have calculated the parameters of the discriminant function that is relevant in their context.

Interest and limitations

Scoring methods are powerful tools for forecasting, anticipation and prevention of bankruptcy. The score is more an alarm signal than an diagnostic signal. It reveals some underlying phenomenon but does not provide the analyst with a key to what needs to be done. It is generally seen as the beginning of an investigation process that will search deeply in the business model to identify why the tendency seems to point out towards possible or probable failure. Scoring analysis is, like most financial analysis, external to the firm and using only publicly available information. A bad score is not necessarily an indicator of impending doom. Other information must be collected also on such elements as competitiveness, productivity, investments policy, research projects, intellectual capital, etc. that give an additional reading as to the risks attached to the firm.