13

Financial Reporting in an Environment of Price Changes

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13

Learning Outcomes

After studying this chapter students should be able to:

- discuss the problems of profit measurement and alternative approaches to asset valuations;
- discuss measures to reduce distortion in financial statements when price levels change.

13.1 Introduction

Historical cost accounting, which has been the accounting system adopted traditionally in the preparation of financial statements, suffers from some significant defects that are especially pronounced in times of changing prices. Where the historical cost system proves to be unsatisfactory, any one of a range of alternative systems could be adopted. This chapter examines some of the alternatives.

This chapter covers the following areas: Section 13.2 examines the defects of the historical cost accounting system. Section 13.3 examines accounting for changing price levels using replacement cost accounting, net realisable value accounting, current cost accounting, current purchasing power accounting and the 'real terms' system of accounting. Section 13.4 addresses the problems of financial reporting in hyperinflationary economies, and the requirements of IAS 29 *Financial Reporting in Hyperinflationary Economies.*

13.2 Defects of historical cost accounting

Historical cost accounting is based upon records of transactions. Transactions such as sales and purchases are recorded at the monetary amount at which goods or services change hands. Once recorded at that amount in the books of the entity, the value remains fixed. Because of these fixed values, historical cost accounting is said to be objective, and up to a point that is true. However, accounting is a process by which raw transaction data is translated into useful and informative statements, a process which, as we have seen, involves often substantial judgement-based adjustments like provisions.

Nevertheless, historical cost accounting has some claim to objectivity. However, it also has significant defects, especially in times of changing prices. Some of these defects are explained below.

- In a time of changing prices reported results in the income statement may be distorted as revenues at current values are matched with costs incurred at an earlier date.
- Cost of sales is likely to be understated in a time of price inflation.
- The valuation of assets in the statement of financial position is at cost *less* accumulated depreciation. The resultant net book values may bear no relationship to the current value of the asset.
- The three points listed above are likely to give rise to faulty estimates of return on capital employed (ROCE). Typically, in a time of rising prices, profits are likely to be overstated and assets understated, relative to current values, thus giving rise to unrealistically rosy measurements of ROCE (see Chapter 14 of this *Learning System* for more information about the calculation of ROCE and other accounting ratios).
- The results of comparison of performance and position statements over time will be unreliable, because amounts are not valued in terms of common units. For example, a business reports revenues of $3 million in 20X5. In 20X0 it reported $2.8 million. The apparent increase of $0.2 million may be more than outweighed by inflationary effects. Even if price inflation has been as low as 3 per cent per annum, once that effect is adjusted it can be seen that revenues in 20X5 are actually lower in real terms than revenues reported in 20X0.
- Borrowings are shown in monetary terms, but in a time of rising prices a gain is actually made (or a loss in times of falling prices) at the expense of the lender as, in real terms, the value of the loan has decreased (in a time of rising prices) or increased (in a time of falling prices).
- Conversely, gains arising from holding assets are not recognised.
- Depreciation writes off the historical cost over time, but, where asset values are low (because based on outdated historical costs), depreciation will be correspondingly lower, so that a realistic charge for asset consumption is not matched against revenue in the performance statements.

These defects result in significant inadequacies in financial statements based on historical cost information for both decision-making and assessment of stewardship. The IASB's *Framework* sets out the objective of financial statements:

> To provide information about the financial position, performance and changes in financial position of an entity that is useful to a wide range of users in making economic decisions.

Historical cost accounting produces statements which are unreliable guides for decision-making, and thus fail to achieve the key qualitative characteristic of relevance.

Inflation is an economic factor of varying importance around the world. During much of the latter part of the twentieth century, most countries in South America experienced very high levels of price inflation. For this reason, accounting for changing price levels has been adopted in various forms in several South American countries, including Brazil and Argentina. During the 1970s, relatively high levels of price inflation were experienced in a number of countries where it had not previously been an important issue. The accountancy professions in the UK, Australia and New Zealand, for example, responded to the

problem of inflation by experimenting with the introduction of requirements for price-level adjustments to financial statements. These requirements proved to be almost universally unpopular with business and with accountancy practitioners (although adjustments for changing price levels found favour in some parts of the public sector). The dissent which met attempts by professional bodies in those countries to require reports adjusted for changing price levels was at its height during the early 1980s. This dissent coincided with a reduction in the rate of price-level increases, and by the mid-1980s inflation was no longer the pressing issue that it had been. Mandatory requirements were dropped in favour of, at most, recommended compliance.

The development of international standards on price-level adjustments reflects the pattern of events in the UK, Australia and New Zealand.

The IASC published IAS 6 *Accounting responses to changing prices* in 1977. This standard required entities to present information in their financial statements which described the procedures adopted to reflect the impact of price changes. Where no such procedures were adopted, the entity was required to disclose that fact. The requirements of this standard could not be regarded as onerous, but it was to be replaced by a much more rigorous set of requirements. In 1981, the IASC replaced IAS 6 with IAS 15 *Information reflecting the effects of changing prices*. The standard required a minimum set of disclosures relating to the effects of changing prices for those entities 'whose levels of revenues, profit, assets or employment are significant in the economic environment in which they operate'.

In 1989 the IASC added the following statement to IAS 15:

> The international consensus on the disclosure of information reflecting the effects of changing prices that was anticipated when IAS 15 was issued has not been reached. As a result, the Board of IASC has decided that entities need not disclose the information required by IAS 15 in order that their financial statements conform with International Accounting Standards. However, the Board encourages entities to present such information, and urges those that do to disclose the items required by IAS 15.

IAS 15 was withdrawn in 2003.

The IASB *Framework* document includes a section on 'Concepts of capital and capital maintenance'. It describes two concepts: physical capital maintenance and financial capital maintenance. These are described in detail in the remainder of this chapter.

13.3 Accounting for changing price levels

An important part of the advanced study of accounting and reporting issues is that students should acquire an understanding of the issues and key principles involved in accounting for changing price levels.

In this section we will examine:

- capital and income
- replacement cost (entry value) accounting
- net realisable value (exit value) accounting
- current cost accounting
- current purchasing power accounting
- the 'real terms' system.

13.3.1 Capital and income

The accounting equation represents the relationship between assets, liabilities and capital:

Assets − Liabilities = Capital

The equation simplifies down to three items the constituents of a statement of financial position, which is prepared periodically, in order to disclose the position of the entity to interested parties. Measurement of assets and liabilities may be problematical. Where 'mixed measurement' or historical cost measurement is adopted the statement of financial position total is highly unlikely to represent a market value for capital. Indeed, the users of the financial statements may be understandably confused by the figure shown for capital. However, the various users are likely to be interested in, at a minimum, maintaining the capital at the previous year's level. Investors and potential investors need to know that their investment has not suffered a major diminution in value as represented by the statement of financial position; creditors are interested in ensuring that there is sufficient asset backing to ensure that their repayment will proceed according to plan.

Conventionally, income is calculated via the income statement; costs are set against revenues and a surplus or deficit emerges. After distribution the surplus or deficit is added to/set against capital in the statement of financial position.

So far in this section we have examined the conventional accountant's view of income and capital. Another way of looking at income and capital is from an economist's viewpoint. Hicks, the economist, defined **income** thus in 1946:

> The purpose of income calculations in practical affairs is to give people an indication of the amount they can consume without impoverishing themselves . . . it would seem that we ought to define a man's income as the maximum value which he can consume during a week, and still expect to be as well off at the end of the week as he was at the beginning.

Applying the 'well-offness' idea to business, the maximum income of a business entity in an accounting period is the amount of the maximum distribution which can be made while ensuring that capital at the end of the period is at least what it was at the beginning. Any distribution in excess of that sum would impoverish the business. This seems fair enough, except that in times of price changes it may be very difficult to ensure that 'well-offness' in a business is the same at the end of a period as at the beginning.

An example will illustrate the effects of changing prices on capital maintenance.

Example 13.A

Entity B starts up in business at 1 January 20X2 with capital, in the form of cash, of $5,000. It spends the whole of the cash immediately on stock which it sells on 31 December for $7,000. No other transactions took place and no expenses were incurred. During the year the retail price index moves from 120 to 140. What is the maximum amount that B can distribute for 20X2 and still remain as well off at the end of the year as at the beginning?

In historical cost accounting terms, the calculation is simple: $7,000 of revenue less $5,000 in cost of sales gives a profit of $2,000. If the maximum $2,000 is distributed to the owners of B, the capital at the end of the year will remain at $5,000, that is exactly the same as it was at the beginning. However, this does not take into account the diminishing real value of money. In order to ensure that the business is as well off in real terms at the end of the year as it was at the beginning, some allowance must be made for the diminution in value of money.

In order to retain the same amount of purchasing power B will require:

$$\$5,000 \times \frac{140}{120} = \$5,833$$

Therefore, looked at in real terms, the maximum amount of the distribution becomes: $7,000 – $5,833 = $1,167, a figure which is substantially less than the $2,000 which would have been available for distribution in historical cost accounting terms.

This example illustrates the danger, in times of rising prices, of making distributions, effectively, out of capital. Over time, the capital of the business entity could be diminished in real terms, but that fact would not be evident from the historical cost accounts.

Capital maintenance, as we noted earlier, is important to users, and, as we have seen, may be difficult to achieve using historical cost accounting in times of changing prices. Formal definitions are given for different types of capital maintenance in CIMA's *Management Accounting: Official Terminology.*

Maintenance of physical capital (i.e., of the operating assets of the business) is defined as:

> The concept that profit is earned only if the physical productive capacity (or operating capability) of the entity (or the resources or funds needed to achieve that capacity) at the end of the period exceeds the physical productive capacity at the beginning of the period, after excluding any distributions to, and contributions from, owners during the period.

Maintenance of financial capital is defined as:

> The concept that profit is earned only if the financial (or money) amount of the net assets at the end of the period exceeds the financial (or money) amount of net assets at the beginning of the period, after excluding any distributions to, and contributions from, owners during the period.

Maintenance of financial capital can be further broken down into 'money financial capital maintenance' and 'real financial capital maintenance'. The former relates to maintaining capital at a value related to historical cost and the latter to capital adjusted for the effects of changing price levels (as in the example above).

Maintenance of operating capital involves ensuring that the business is in no worse position in terms of physical productive capacity at the end of an accounting period than it was at the beginning. Again, an example may assist understanding:

Example 13.B

Entity C starts up in business at 1 January 20X3 with 100 units of inventory which have cost $50 each. The opening inventory valuation is therefore $5,000 represented by capital employed of the same amount. The inventory is sold on the last day of the year for $7,000. At this date it will cost $5,600 to buy in a further 100 identical items of inventory because the price has gone up. What is the maximum amount that C can distribute for 20X2 and still remain as well off at the end of the year as at the beginning?

As in Example 13.A, using historical cost accounting the maximum distribution is $2,000. However, if 'well-offness' in C's case were to be defined in terms of operating capital maintenance, then the entity must ensure

that it can operate at the same level. In order to do this it must retain $5,600 to buy 100 units of inventory. The maximum amount of the distribution is therefore $7,000 – $5,600 = $1,400.

13.3.2 Replacement cost (entry value) accounting

We noted earlier that replacement cost may be applied to asset measurement. **Replacement cost** is defined by CIMA's *Official Terminology* as follows:

> The price at which identical goods or capital equipment could be purchased at the date of valuation.

Applied to a full set of accounts, in times of rising prices, replacement cost accounting will tend to result in higher asset values than under the historical cost system, and therefore in revaluation surpluses, also known as holding gains.

Example 13.C

Compare the statement of financial positions of K under the historical cost (HC) and replacement cost (RC) conventions.

	HC 20X2 $	*HC 20X2* $
Non-current assets		
Cost	10,000	14,000
Depreciation	5,000	7,000
	5,000	7,000
Inventories	9,000	10,000
Cash	25,000	25,000
Net assets	39,000	42,000
Opening capital	10,000	10,000
Profit for the period	29,000	32,000
Closing capital	39,000	42,000

It looks at this stage as though profits are higher under the replacement cost method than the historical cost profits. The following reconciliation from historical cost profit to replacement cost profit explains the difference.

	$
Historical cost profit for the period	29,000
Less: extra depreciation required under RC due to the replacement cost of non-current assets	(2,000)
Replacement cost operating profit	27,000
Gain on holding inventories	1,000
Gain on holding non-current assets	4,000
Replacement cost profit for the period	32,000

The gains in value from holding the assets while the replacement cost is increasing (holding gains) must be recognised in the replacement cost profit. The holding gains on inventories are reversed in the next accounting period as the inventories are sold.

Note that the operating profit is lower under the replacement cost convention than under the historical cost convention.

Net current replacement cost

For items of non-current assets the net current replacement cost may be used. It is based on the gross replacement cost, being the replacement cost of the asset as new and the proportion of that asset deemed to be used up.

For example, an asset has a gross current replacement cost, before depreciation, of $40,000 as at 31 December 20X1 and it is assessed to have a 5-year life with nil scrap value. It has been in use for 2 years.

The net current replacement cost will be as follows:

	$
Gross current replacement cost	40,000
Less: accumulated depreciation – 2 years	(16,000)
Net current replacement cost	24,000

Gross replacement cost is usually found using a price index specific to the asset.

Backlog depreciation

The net replacement cost is arrived at after deducting accumulated depreciation on the replacement cost value of the asset. As time passes and replacement cost increases (assuming rising prices) the value of the accumulated depreciation will become out of date and it will also require revaluation to the current replacement value. As Example 13.D shows, where there is an increase in the gross replacement cost of $2,000, to arrive at the correct net replacement cost this increase should be depreciated and netted against the gain.

Example 13.D

An asset with an estimated useful life of 5 years and nil estimated residual value is purchased on 1 January 20X1.

	$
Current cost at 31 December 20X1	10,000
Depreciation for year (5 years, straight line)	2,000
Net replacement cost	8,000
Current cost of same asset at 31 December 20X2	12,000
Depreciation (two years of five, straight line)	4,800
Net replacement cost	7,200
Increase in gross replacement cost: (12,000 – 10,000)	2,000
Less: backlog depreciation: (4,800 – 4,000)	800
Net surplus on revaluation	1,200

An appraisal of replacement cost

Replacement cost accounting, by separating holding gains from operating profits, gives a more meaningful definition of income for the business. The amount that can be distributed or paid in a dividend is clearly identified after providing for the replacement of assets and the continuation of the business, thereby keeping within the true spirit of the prudence concept and maintaining the operating capital of the business.

Furthermore, the statement of financial position gives more relevant information with assets shown at current values.

On the other hand, there can be several drawbacks to using this convention in the preparation of financial statements:

- The values derived for assets can be very subjective. Unlike the historical cost method where the value can be taken directly from the invoice, the replacement cost method will often be based upon estimates by reference to suppliers' lists and government statistics.
- Simply collating the information to prepare replacement cost accounts will be costly. The process may also be time-consuming.
- Assets in the business may not be replaced or a replacement may not be available due to obsolescence or other technological change.

- The basis for the use of replacement cost is to focus on maintaining the operating capital of the business. The investor group, however, is more likely to be interested in maintaining the value of capital in real terms (as affected by the general rate of inflation in the economy at large). The rates of price inflation that affect operating capital may be quite significantly different.

13.3.3 Realisable or exit values

Another way of looking at current values is from the point of view of the realisable values of assets – valuing the statement of financial position on the basis of the selling values of the assets in the business.

This method measures the value of holding the assets by the movement in their selling value from one statement of financial position to the next. Some users of the financial statements may prefer this method as the information is more relevant in that it gives a useful value for the asset – how much it can be sold for, rather than how much it cost. The method of preparing the financial statements is similar to the replacement cost method.

Example 13.E

	HC *20X1* $	*RV* *20X1* $
Non-current assets	160,000	150,000
Inventories	30,000	60,000
Net assets	190,000	210,000
Share capital	100,000	100,000
Retained profit	90,000	110,000
Shareholders' funds	190,000	210,000

If we analyse the realisable value profit more closely it will give the following results:

	$
Historical cost profit	90,000
Less: additional depreciation	10,000
Operating profits	80,000
Gain on holding inventories	30,000
Realisable value profits	110,000

The information on selling values provided by the realisable value accounts equates to market values and the cash that can be raised by the sale of the asset. This in turn can have advantages for the management of the business as the realisable value approach adopts the principles of opportunity cost, highlighting the current sacrifice of funds employed in the business and returns available elsewhere.

Other users of the financial statements, such as lenders, would find the information relevant in terms of the security of the capital they have loaned to the business. The ultimate liquidation values are the maximum amounts they will receive from the business and so they can assess directly whether their capital is maintained.

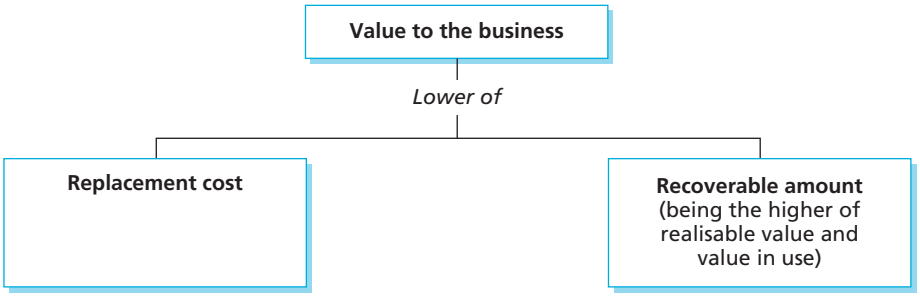
In terms of the financial statements the use of realisable values overcomes the problems of depreciation and inventory valuations. These are directly determined by the market and not by arbitrary calculations.

The realisable value method does have several limitations:

- The whole basis for the method is founded on the break-up value of the business and is contrary to the going-concern basis.
- The determination of realisable values in practice may be very difficult. There may be a high degree of subjectivity, particularly where there is a restricted market for the assets.
- In the case of specialised assets, an oil rig for example, their realisable value will be the scrap value. However, the economic value of such an asset may be substantially higher.

13.3.4 Current cost accounting

In valuing assets, current cost accounting (CCA) adopts the principle of *value to the business.* Value to the business is often expressed diagrammatically, as follows:



For example, suppose we have a machine that cost $10,000. If we wanted to replace the machine it would cost $12,000; alternatively we could get $11,000 by selling it, or if we keep it, it will generate cash returns discounted to net present value of $15,000. What action should be taken?

First, what are the benefits we can obtain from the machine? Selling it will produce $11,000; keeping it would produce $15,000. Therefore the decision would be to keep the machine. To relate to the diagram it is the higher of realisable value and value in use.

Second, we need to decide whether the asset would remain in the business – do we replace it? In this case we are generating $15,000 in income and costs are $12,000 to replace. Therefore we make a 'profit' by doing so of $3,000 and so the asset would be replaced.

The value to the business of the asset in this case is $12,000.

Consider another alternative: realisable value $15,000, replacement value $16,000, and keeping the asset generates $11,000.

In this case, logically, the decision would be to sell the asset. Selling the asset produces more benefits than keeping it and this in turn is lower than the replacement value so we would not replace the asset as we would make a 'loss'.

The preparation of the financial statements based on value to the business would involve identifying each individual asset and deciding what action would be taken, given the three values available: replacement cost, realisable value and economic value.

In practice replacement cost would be the most likely valuation. Most non-current assets are purchased to be kept in the business; therefore their economic value will normally be higher than the realisable value and so the assets would be replaced. Inventories are bought for resale and if we are making profits the inventories are replaced and so replacement values are again the most relevant.

A similar approach can be applied to liabilities, using the concept of 'relief value' (by contrast to 'deprival value'). Relief value is the lowest amount at which the liability could, hypothetically, be settled.

Statement of financial position assets valuations under CCA may, therefore, be a mix of net realisable values, replacement cost and value in use (economic value).

In the income statement CCA requires the disclosure of a set of four adjustments to historical cost profit:

- *The cost of sales adjustment (COSA).* This adjustment shows the value to the business of the inventories consumed during the year by updating the cost of sales; in practice, this

adjustment is usually computed by reference to replacement cost. Usually, entities would use price indices prepared by national statistical services.

- *The depreciation adjustment.* The CCA depreciation charge is the value to the business of the assets consumed during the year. In practice, again, the value is usually computed by reference to replacement cost. The depreciation adjustment is the difference between the CCA depreciation charge and the historical cost depreciation charge.
- *The monetary working capital adjustment (MWCA).* This adjustment takes account of the additional investment required to maintain the monetary working capital of business, recognising that, in a time of rising prices, there may be gains arising from holding trade payables, and losses from holding monetary assets. Monetary working capital comprises trade receivables and trade payables, and the adjustment charges (or credits) the income statement with the increase (or decrease) in the real value of monetary working capital which has arisen between the beginning and the end of the financial year.
- *The gearing adjustment.* Where an entity is financed by a mixture of debt and equity capital, it may be argued that only part of the three adjustments listed above is attributable to equity holders, with the rest attributable to borrowings. The gearing adjustment apportions the total of COSA, depreciation adjustment and MWCA between equity holders and lenders in proportion to their holdings.

As noted earlier, CIMA students will not be required to apply knowledge of any of the systems of accounting for changing price levels to a numerical examination question. However, it is useful to examine some of the features of a set of CCA-adjusted financial statements in order to demonstrate how the concept works out in practice, and how the statements fit together. A simple example is given below.

Example 13.F

Entity E commences trading on 1 January 20X0. Prices are changing rapidly and the chief financial officer decides that he will prepare a set of CCA-adjusted financial statements each year, in order to illustrate the effects of changing price levels for the benefit of other directors. He decides that value to the business can be approximated reasonably well by the use of price indices and he obtains the following indices applicable over the first 2 years of the entity's trading:

	Non-current assets	*Inventories*	*RPI*
1 January 20X0	100	120	100
1 November 20X0	109	131	114
31 December 20X0	110	133	116
Average 20X0	106	127	108
1 November 20X1	122	147	139
31 December 20X1	124	149	142
Average 20X1	116	138	126

Using some of this information he is able to draft a statement of financial position which shows CCA-adjusted values for inventories and non-current assets at 31 December 20X0. This is not a full CCA-adjusted set of accounts, but it establishes an opening position.

Statement of financial positions as at 31 December 20X0

	Historical cost $	*Factor*	*CCA-adjusted* $	*Difference* $
Non-current assets at cost	7,000	110/100	7,700	
Depreciation (at the rate of 10% per annum)	(700)	110/100	(770)	
Net book value	6,300		6,930	630
Inventories (average purchase date: 1 November)	3,000	133/131	3,046	46
Trade receivables	4,200		4,200	
Cash	800		800	
	8,000		8,046	
Total assets	14,300		14,976	
Equity	2,000		2,000	
Accumulated profits	9,500		9,500	
Current cost reserve	–		676	676
	11,500		12,176	
Trade payables	2,800		2,800	
Total equity and liabilities	14,300		14,976	

Note that monetary assets and liabilities are not revalued; they represent amounts receivable, payable or in the bank, and so do not require adjustment.

This set of adjustments establishes a current cost reserve at 31 December 20X0, holding unrealised gains on non-current assets and inventories. In 20X1 it will be possible to prepare a full set of current cost accounts.

At 31 December 20X1, 1 year later, the historical cost statement of financial position of E is as follows:

	Historical cost $
Non-current assets at cost (note)	15,000
Depreciation (at the rate of 10% per annum)	(1,400)
Net book value	13,600
Inventories (average purchase date: 1 November)	3,200
Trade receivables	4,400
Cash	300
	7,900
Total assets	21,500
Equity	2,000
Accumulated profits	15,900
	17,900
Trade payables	3,600
Total equity and liabilities	21,500

The entity's income statement for the year is, in summary, as follows:

	Historical cost $	*Historical cost* $
Revenue		26,700
Cost of sales		
Opening inventories	3,000	
Purchases	18,800	
	21,800	
Less: closing inventories	(3,200)	
		18,600
Gross profit		8,100
Depreciation		(700)
Expenses		(1,000)
Net profit		6,400

Adjustments to current cost income statement

The finance director calculates the following CCA adjustments to HC profit:

- Cost of sales adjustment (COSA) requires a charge of $356 to current cost income,
- The depreciation adjustment requires a charge of $119 to current cost income.
- The monetary working capital adjustment requires a charge of $211 to current cost income.

Note: In this example the value of trade receivables exceeds that of trade payables at both year ends; in a time of rising prices this gives rise to a loss on monetary items and, consequently, a charge to the income statement. However, where trade payables tend to exceed trade receivables in a time of rising prices, there is, effectively, a gain to be made on holding trade payables, and so MWCA would be a credit to current cost income.

E has no borrowings, so there is no gearing adjustment.

Adjustments to current cost statement of financial position

The chief financial officer makes adjustments to the inventories and non-current assets valuations in the statement of financial position, as follows:

- current value of inventories is calculated as $3,244;
- current gross replacement cost of non-current assets is $16,680;
- current value of accumulated depreciation is $1,736.

He uses the indices which are specifically identified for inventories and non-current assets in the table of indices given earlier.

From the above information the chief financial officer prepares the current cost income statement and statement of financial position for E as at 31 December 20X1.

Current cost income statement (extract) for the year ended 31 December 20X1

	$	$
HC operating profit		6,400
Current cost adjustments:		
COSA	356	
Depreciation	119	
MWCA	211	
		686
Current cost operating profit		5,714
Retained profit b/fwd		9,500
Current cost retained profit		15,214

Current cost statement of financial position as at 31 December 20X1

	$	$
Non-current assets		
At gross replacement cost		16,680
Accumulated depreciation		(1,736)
Net replacement cost		14,944
Inventories	3,244	
Trade receivables	4,400	
Cash	300	
		7,944
Total assets		22,888
Equity		2,000
Accumulated profits		15,214
Current cost reserve (bal. figure)		2,074
		19,288
Trade payables		3,600
Total equity and liabilities		22,888

Discussion

CCA calculations are far from straightforward. Examining the results of the calculations we can see that current cost profit is lower than historical cost; this will normally be the case in a time of rising prices. In this example, CC profit is some 11 per cent lower than HC profit. We can perhaps start to appreciate why current cost accounting proved to be so unpopular with preparers. However, it can equally be argued that capital maintenance is important and cannot and should not be ignored by users of financial statements. Current cost accounting provides valuable information about the level of profits which can be distributed while retaining the capital base of the entity. Its restatement of non-monetary assets to current cost has a higher information value than the outdated figures used in historical cost accounting.

Advantages of CCA

- CCA incorporates valuable information into the financial statements which allows users to make informed economic decisions.
- It embodies a concept of capital maintenance which is particularly relevant to industries which are capital intensive in terms of physical assets.
- Appropriate indices are easily obtainable.
- CCA-adjusted statements could provide the basis for a more rational assessment of corporation tax.
- It provides a more prudent statement of profit in times of rising prices than that provided by historical cost accounting.

Disadvantages of CCA

- CCA has been tested in practice and found to be very unpopular with the majority of preparers.
- It is time-consuming and costly to prepare and audit, and it is difficult to assess whether or not these costs are outweighed by the benefits offered by the additional information.
- It is an inappropriate system for service businesses that do not have significant investments in physical capital.
- The selection of appropriate indices introduces an element of subjectivity and judgement.
- It is questionable whether the majority of users would be able to understand CCA statements.
- Essentially CCA is not an inflation accounting system.

13.3.5 Current purchasing power (CPP) accounting

As noted earlier, **CPP accounting** is a system based upon the concept of real capital maintenance. It is defined as follows by CIMA's *Official Terminology*:

A method of accounting for inflation in which the values of the non-monetary items in the historical cost accounts are adjusted using a general price index to show the change in the general purchasing power of money. The CPP statement of financial position shows the effect of financial capital maintenance.

Example 13.G

We will use the data from Example 13.F, except that only the RPI index numbers are required for CPP accounting. The chief financial officer of E wishes to prepare the financial statements for the second year of the entity's trading using the CPP system, in order to provide a means of comparison with CCA and historical cost.

First of all, the opening statement of financial position as at 1 January 20X1 must be adjusted to current values in order to establish a figure for the opening CPP reserve:

	Historical cost	*Factor*	*CPP-adjusted*	*Difference*
	$		$	
Non-current assets at cost	7,000	116/100	8,120	
Depreciation (at the rate of 10% per annum)	(700)	116/100	(812)	
Net book value	6,300		7,308	1,008
Inventories (average purchase date: 1 November)	3,000	116/114	3,053	53
Trade receivables	4,200		4,200	
Cash	800		800	
	8,000		8,053	
Total assets	14,300		15,361	1,061
Equity	2,000	116/100	2,320	320
Accumulated profits	9,500	Bal. fig	10,241	741
	11,500		12,561	
Trade payables	2,800		2,800	
Total equity and liabilities	14,300		15,361	1,061

Adjustments to the statement of financial position as at 31 December 20X1 result in the following:

E: CPP statement of financial position as at 31 December 20X1

	Historical cost	*Factor*	*CPP-adjusted*
	$		$
Non-current assets at cost	7,000	142/100	9,940
Newly acquired	8,000		8,000
Depreciation (at the rate of 10% per annum)	(1,400)	142/100	(1,988)
Net book value	13,600		15,952
Inventories (average purchase date: 1 November)	3,200	142/139	3,269
Trade receivables	4,400		4,400
Cash	300		300
	7,900		7,969
Total assets	21,500		23,921
Equity	2,000	142/100	2,840
Accumulated profits	15,900	Bal. fig	17,481
	17,900		20,321
Trade payables	3,600		3,600
Total equity and liabilities	21,500		23,921

The income statement for year ended 31 December 20X1 can now be adjusted. Note that items that are assumed to accrue evenly during the year, such as revenue, purchases and expenses, are uplifted from average value to closing value. Depreciation is adjusted to closing value using a base point of the date of purchase of the related non-current assets. Opening and closing inventories are adjusted to year end values using a base point of the assumed average date of purchase 2 months before the year-end.

E: CPP profit and loss account for year ended 31 December 20X1

	Historical cost $	*Factor*	*CPP-adjusted* $
Revenue	26,700	142/126	30,090
Cost of sales			
Opening inventories	3,000	142/114	3,737
Purchases	18,800	142/126	21,187
Closing inventories	(3,200)	142/139	(3,269)
	18,600		21,655
Gross profit	8,100		8,435
Depreciation	(700)	142/100	(994)
Other operating expenses	(1,000)	142/126	(1,127)
Operating profit	6,400		6,314
Loss on short-term monetary items (note)	–		(1,369)
Profit for the year	6,400		4,945

Note

Under the CPP system it is necessary to calculate a gain or loss on holding monetary items, as follows:

	Historical cost $	*Factor*	*CPP-adjusted* $
Opening monetary items (receivables + cash − payables) 4,200 + 800 − 2,800	2,200	142/116	2,693
Revenue	26,700	142/126	30,090
Purchases	(18,800)	142/126	(21,187)
Purchases of non-current assets	(8,000)	142/142	(8,000)
Overheads	(1,000)	142/126	(1,127)
			2,469
Closing monetary items: 4,400 + 300 − 3,600	1,100		(1,100)
Loss on holding monetary items			1,369

Reconciliation of CPP accumulated profits in the statement of financial position as at 31 December 20X1

	$
Opening balance adjusted: $10,241 × 142/116	12,536
CPP profit for the year	4,945
CPP accumulated profits at 31 December 20X1	17,481

Discussion

It is considerably easier in practice to prepare CPP rather than CCA statements. The RPI is easily obtainable, and movements in it are applied in a mechanistic way to the income statement and statement of financial position information. We can see from the income statement above that the CPP profit is substantially lower (by some 23 per cent) than the historical cost figure. The CCA profit was only around 11 per cent lower. Often, in practice, there would be a substantial difference between the three figures: HC, CCA and CPP. The principal reason for the large differences in the E example is that RPI has risen much faster than the non-current assets and inventory indices applicable to the entity. The RPI is an average across the economy as a whole. The prices which mainly affect an entity or an industry may not follow the RPI closely.

Advantages of CPP

- Preparation and audit of CPP statements is not especially costly or time-consuming.
- The method has inherent appeal in that it uses easily obtainable and widely recognised measures of inflation.

- The conceptual basis of CPP is probably easier than that of CCA for the non-specialist user of financial statements to understand.
- In times of rising prices the use of CPP allows for a reasonable measure of capital maintenance.
- The use of the RPI is objective; there is no scope for judgement in the selection of indices as in CCA.

Disadvantages of CPP

- The RPI is based upon average price inflation across the economy. It may bear little relationship to the specific price inflation that affects a particular entity or industry.
- The CPP model is particularly weak as a realistic measure of asset valuation, because it values money rather than assets. This is a very significant objection to its use, especially in the case of entities which employ large amounts of physical capital.
- The application of the CPP model for some entities is as unsatisfactory as historical cost accounting.

13.3.6 The 'real terms' system

As we have seen, both CPP and CCA have significant drawbacks both in practice and theory. The 'real terms' system of accounting for changing price levels is a hybrid system which combines the best features of CPP and CCA. One of the key drawbacks to the CPP system is that assets are presented in terms related to general purchasing power and the resultant 'values' may bear little relationship to the real movement in the value of the asset. The 'real terms' system therefore avoids the problem by retaining CCA valuations for assets. The assets side of the statement of financial position, therefore adopts entirely the CCA system.

However, shareholders do not invest in individual assets and liabilities; their investment is in the entity as a whole. Their concept of capital maintenance is likely to hinge upon the value of their investment in purchasing power terms. The 'real terms' system accommodates this need by calculating and disclosing the amounts needed to maintain the purchasing power of shareholders' funds.

The 'real terms' system serves the useful purpose of clearly comparing the effects of general and specific price inflation. Gains calculated using specific price indices (holding gains) can be compared to the general effects of moving prices. A simple example shows this effect in terms of one asset.

Example 13.H

At 1 January 20X3 an item of inventory costs $150. One year later replacement cost is $230. During the year the RPI has moved from 112 to 127.

	$
Holding gain on one unit of inventory: (230 − 150)	80
Equivalent general terms capital maintenance adjustment: (150 × 127/112) − 150	20
'Real' holding gain on the inventory	60

Essentially 'real terms' accounting adopts CCA but also incorporates CPP valuation of shareholders' funds. The question then arises of how the combination of the two methods articulates to produce a set of accounts. It is, of course, not necessary for CIMA students to be able to prepare a 'real terms' statement, but it will aid understanding to look at an example. The example shows the financial statements for E for the year 20X1, prepared on the 'real terms' basis.

Example 13.I

E: 'real terms' income statement (extracts) for the year ended 31 December 20X1

	$	$
Historical cost profit for the year		6,400
CC adjustments: [note (a)]		
COSA	356	
Depreciation	119	
		(475)
CC retained profit		5,925
Unrealised holding gains in year: [note (b)]	1,187	
Realised holding gains in year: [note (c)]	356	
	1,543	
Less: adjustment to shareholders' funds: [note (d)]	(2,729)	
Net loss in respect of changing prices		(1,186)
Retained 'real' profit		4,739

E: 'real terms' statement of financial position as at 31 December 20X1

	$	$
Non-current assets		14,944
Current assets		
Inventories	3,244	
Trade receivables	4,400	
Cash	300	
		7,944
Total assets		22,888
Equity		2,000
Accumulated profit		
Brought forward	9,500	
Retained 'real' profit for the year	4,739	
		14,239
Financial capital maintenance reserve [note (f)]		3,049
		19,288
Trade payables		3,600
Total equity and liabilities		22,888

Notes

(a) The cost of sales and depreciation adjustments are reported here but MWCA is absorbed in the general price level changes adjusted further down.

(b) Unrealised holding gains are the gains on non-current assets and inventories which have not yet been realised.

(c) COSA is a realised holding gain.

(d) The inflation adjustment to shareholders' funds is the point at which CPP principles enter the financial statements. Opening shareholders' funds are restated in current terms by applying the movement in RPI over the year:

$$(\$12,176 \times 142/116) - 12,176 = \$2,729$$

This will be credited to the real capital maintenance reserve in the statement of financial position, and is debited to the income statement. Deducted from holding gains, it determines how much of the holding gain (which is calculated by reference to specific price movements) remains once the effects of general price inflation have been taken into account. In this instance, we can see that there is nothing left: the holding gains have been more than cancelled out by the eroding of values via general inflation.

(e) Note that the figure for total assets is exactly the same as in the CCA statement of financial position.

(f) Financial capital maintenance reserve includes:

	$
Brought forward 1 January 20X1 (based on RPI applied to opening capital)	320
Current year adjustment [see note (d)]	2,729
	3,049

13.4 Financial reporting in hyperinflationary economies

The examples we examined in Section 13.3 used rates of both specific and general price inflation which seem, relative to current circumstances in many countries, to be wildly exaggerated. In some parts of the world, however, very high rates of price inflation are the norm, as noted earlier.

In times of relatively modest price inflation users of financial statements are usually able to make broadbrush assumptions about the effect that inflation is having upon information they are examining. For example, when comparing 2 years' revenue figures they may mentally adjust the earlier figure in order to estimate the effect of inflation. However, where a very high rate of inflation prevails such approximations are no longer possible.

In 1989 the International Accounting Standards Committee issued IAS 29 *Financial reporting in hyperinflationary economies.*

13.4.1 What is hyperinflation?

IAS 29 identifies the following characteristics of the economic environment of a country which would indicate that hyperinflation is a problem:

- The general population prefers to keep its wealth in non-monetary assets or in a relatively stable foreign currency. Amounts of local currency held are immediately invested to maintain purchasing power.
- The general population regards monetary amounts not in terms of the local currency but in terms of a relatively stable foreign currency. Prices may be quoted in that currency.
- Sales and purchases on credit take place at prices that compensate for the expected loss of purchasing power during the credit period, even if the period is short.
- Interest rates, wages and prices are linked to a price index.
- The cumulative inflation rate over 3 years is approaching, or exceeds, 100 per cent.

13.4.2 Dealing with hyperinflation

The IAS requires that the primary accounting statements of entities reporting in the currency of a hyperinflationary economy should be restated in current terms at the year end date. Corresponding figures for previous periods should also be restated so that all reported figures are expressed in common terms.

The restatement required by the IAS involves the application of a general price index to most non-monetary items and all items in the income statement and is very similar to the CPP system explained earlier in the chapter. The IAS specifically notes, however, that where items in the statement of financial position are stated at current cost they do not need to be further adjusted.

13.5 Summary

This chapter has dealt with some complex areas of accounting. The chapter looked at the defects of historical cost accounting and the alternative valuation methods available, including replacement cost accounting, net realisable value accounting and current cost accounting. The chapter also considered the problems of financial reporting in hyperinflationary economies.

Students should ensure that they understand the principles involved in all of the alternative methods discussed in the chapter. Questions could include:

- arguments for and against adjusting accounting figures to take account of changing prices levels;
- pros and cons of the different alternative methods;
- discussion about the need for special accounting measures in hyperinflationary conditions;
- knowledge-based questions about features of the different methods of accounting for changing price levels.

Revision Questions 13

Question 1

Discuss the advantages and disadvantages of using historical cost accounting in preparing financial statements which are presented to shareholders. **(10 marks)**

Question 2

'The recognition and correct treatment of holding gains in entity financial statements are vital for a proper understanding of the position and performance of the business entity.'

Requirements

(a) Explain briefly the significance of the treatment of holding gains for the measurement of business profit. **(4 marks)**

(b) Set out the arguments for and against the recognition of holding gains. **(6 marks)**

(Total marks = 10)

Question 3

DCB is a manufacturing and trading entity with several overseas operations. One of its subsidiaries, GFE, operates in a country which experiences relatively high rates of inflation in its currency, the crown. Most entities operating in that country voluntarily present two versions of their financial statements: one at historical cost, and the other incorporating current cost adjustments. GFE complies with this accepted practice. Extracts from the income cp statement adjusted for current costs for the year ended 30 September 20X5 are as follows:

	Crowns $'000	*Crowns* $'000
Historical cost operating profit		750
Current cost adjustments:		
Cost of sales adjustment	65	
Depreciation adjustment	43	
Loss on net monetary position	16	
		124
Current cost operating profit		626

Requirements

(a) Explain the defects of historical cost accounting in times of increasing prices. **(4 marks)**

(b) Explain how each of the three current cost adjustments in GFE's financial statements contributes to the maintenance of capital. **(6 marks)**

(Total marks = 10)

Question 4

A consolidated historical cost balance sheet gives a realistic valuation for a group. Discuss. **(10 marks)**

Solutions to Revision Questions 13

Solution 1

The advantages of using historical cost accounting in preparing financial statements for presentation to shareholders are as follows:

(a) Historical cost accounts are generally accepted to be understood by users (to a greater or lesser extent). For a reader with no accounting background the concept of cost is one he or she recognises. The use of valuation of certain assets in historical costs (usually properties of some description) does not cause the reader problems as again he or she can relate property values to their everyday experience.

(b) Historical cost accounts are comparatively less expensive to prepare as the information is readily available because the transactions involved have usually already occurred. This reason also makes them easier and cheaper to audit as auditors can verify the information in the accounts.

(c) Despite the criticisms of historical cost accounting, no one has produced a better method that attracts less criticism. The accountancy profession in many countries has made a number of attempts over the last few years to devise an acceptable alternative, but none has met with the approval of preparers and users.

The disadvantages of using historical costs accounting in preparing financial statements for presentation to shareholders are as follows:

(a) In a period of inflation, historical costs are misleading as they do not compare like with like. The following points are relevant:
  (i) Current revenues are matched with costs incurred at an earlier date, so distorting profits and losses for the period.
  (ii) Distributions made out of profits calculated on an historical cost basis may result in a reduction of capital in real terms.
  (iii) The use of historical costs for non-current assets undervalues the actual resources used by the business. Resulting lower depreciation charges in turn distort profit [see (i) above].
  (iv) The result of overstating profits and undervaluing assets is that return on capital employed will be overstated. This will indicate a more efficient use of resources than is actually the case.
  (v) Management's real success or failure in achieving operating results is masked because holding gains or losses attributable to price level changes are not recognised.

(vi) The trend of performance over a period measured by year-to-year comparisons is misleading because no adjustment is made for the changes in the real value of money.

(vii) Historical cost accounts do not recognise the loss that occurs from holding assets of a fixed monetary value (and alternatively the gain that arises from liabilities of the same type).

(b) Historical cost accounts cannot easily be adapted to take account of the effects of rising prices in a period of inflation.

(c) Historical cost accounts which incorporate valuations of assets are often misleading as there is no requirement (except in the case of investment properties), to keep these valuations up to date.

Solution 2

(a) Holding gains are increases in the value of an asset while that asset is owned by a entity. For example, a entity might buy an item of inventory for $100 and then later sell it for $180 when its replacement cost had gone up to $150. The holding gain of $50 is realised at the date of sale; the 'real' profit, or operating gain, on the disposal is $30.

There are several alternative possible accounting treatments for holding gains, both realised and unrealised. Conventional historical cost accounting ignores unrealised holding gains, and includes realised holding gains in the income statement of the period in which the asset is disposed of. Current cost accounting, on the other hand, excludes realised holding gains on the disposals of inventory items by charging a cost of sales adjustment (COSA) against reported profits so that only operating gains are reported as profits.

The significance of the treatment of holding gains is therefore the enormous effect that such treatment will have on reported profits. Although earnings per share is not the only important indicator of financial performance, it is still the most important, and the exclusion of holding gains from earnings will materially depress earnings per share and may thereby reduce the share price.

(b) *Arguments for the recognition of holding gains*

The accruals concept would suggest that gains and losses should be recognised in the period in which they occurred, rather than being deferred. So financial assets would be shown on the statement of financial position at their market value. As a separate issue, prudence might dictate that gains should be credited to reserves rather than to the income statement, but the principle of revaluing investments in the statement of financial position remains valid.

The objective of financial statements is set out in the IASC's *Framework* as being to provide useful information to a wide range of user groups. Surely the current value of assets held is more useful than historical cost.

If holding gains are not recognised year by year, entities experiencing a bad year can flatter their reported profits by deciding to sell assets held for many years which have large unrealised holding gains. Often these assets may be immediately repurchased as a 'bed and breakfast' transaction. The profit generated on this deal does not reflect the genuine

economic performance of the entity in that period but under existing accounting practices may be all reported in the year of disposal.

Asset-stripping hostile acquisitive entities will not be able to make money by breaking up target entities whose share prices do not reflect the real value of their underlying assets.

Arguments against the recognition of holding gains

The prudence concept seeks to prevent profits being included in the income statement unless their realisation is reasonably certain. Unrealised holding gains may not be recognised in the income statement.

Subjectivity and uncertainty exist in trying to determine the current value of an asset at the year end date. An advantage of deferring holding gains until the date of disposal is the avoidance of this uncertainty.

If realised holding gains are included in reported profits and distributed out of the business, the entity will not be able to finance the replacement of its assets without raising new funds externally. Operating capital will not be maintained if a policy of maximum distributions is carried on.

☑ Solution 3

(a) In times of increasing prices, historical cost accounting displays the following defects:

(i) Revenues are stated at current values, but they tend to be matched with costs incurred at an earlier date. Therefore, profit is overstated.

(ii) Where historical cost accounting is applied consistently, asset values are stated at cost less accumulated depreciation. Current values of the assets may be considerably in excess of net book value, with the result that the historical cost depreciation charge does not constitute a realistic estimate of the value of the asset consumed.

(iii) By the time monetary liabilities are repayable, the amount of the outflow in current value terms is less than the original inflow. An entity can therefore gain by holding current liabilities, but historical cost accounting does not recognise these gains. The opposite effect is experienced in respect of monetary assets.

(iv) Typically, in a time of rising prices, profits are likely to be overstated, and capital to be understated, thus giving rise to unrealistic measurements of return on capital employed.

(b) The cost of sales adjustment comprises the additional amount of value, over and above value at historical cost, that is consumed at current cost. It represents an additional charge against profits, thus tending to reduce distributable earnings and ensuring that the business conserves the resources that allow it to continue to trade at current levels.

The depreciation adjustment is the difference between the historical cost accounting and current cost depreciation charges. Current cost depreciation is the value of the non-current asset consumption that has taken place during the year. In a time of rising prices it is a more realistic representation of the asset consumption. It tends to reduce distributable profits thus contributing to capital maintenance.

In the case of GFE, there is a loss on net monetary position. As noted earlier in part (a) holding monetary liabilities in times of rising prices tends to give rise to gains, whereas holding monetary assets produces losses. GFE appears, therefore, to have an excess of monetary assets over monetary liabilities, as the net effect is a loss.

The recognition of this loss produces a more realistic estimation of distributable profit, and thus contributes to capital maintenance.

☑ Solution 4

No balance sheet drafted according to the historical cost convention can give a realistic valuation of a business. Historical costs represent the price level when an asset was originally acquired, and after a period of inflation they significantly understate the value of assets. Unless assets are revalued to reflect their current values, holding gains which have accrued since their purchase will not be disclosed. The balance sheet is not intended as a valuation device for a business since it discloses only the book value, or carrying value, of assets and liabilities. Certain significant assets will be excluded because, under the monetary measurement convention, they cannot be accurately recorded.

Such items as managerial efficiency, good labour relations, know-how, and so on, from which the entity may earn profit, are nevertheless not disclosed on the balance sheet. If individual assets such as machinery, vehicles, stock and cash are added together in a business, the value of the combination will exceed the aggregate value of the individual items. This extra value is sometimes expressed in a balance sheet as the goodwill of the entity. Goodwill is accounted for in consolidated accounts as the surplus of the price paid for a subsidiary above the fair value of the assets acquired. Current moves to include the cost of purchased 'brand names' in the balance sheet bring a further note of inconsistency because group brands built-up over time are not valued and disclosed as assets.

In a consolidated balance sheet the assets of the subsidiary and holding entities are aggregated together but this total of assets may not belong to group shareholders because a non-controlling interest of non-group shareholders in subsidiary entities has an ownership right to a significant proportion of the group assets. This non-controlling interest is calculated and disclosed on the group balance sheet. Under the equity method, the group's interest in an associated entity is shown as the original cost paid for the investment plus the group's share of retained post-acquisition profits. This is a convenient book-keeping method to account for a non-controlling, but significant, interest in another entity, but it cannot show the true value of the investment. Under the acquisition method of accounting, when a subsidiary is purchased by a group the assets of that entity are brought into the group accounts at 'fair value'.

The measurement of a realistic value for a group of entities is dependent upon a number of factors which are in no way connected with the consolidated balance sheet. Value depends on the future profitability to be earned by the group and, since this is an estimate, cannot form part of an audited balance sheet. The value of the group can be expressed as the stock exchange price of the shares multiplied by the number of shares in issue, but even this amount is based on the market price for the purchase of a small holding of the shares and not a controlling interest of the group as a whole. Consequently when a takeover bid is made, the ultimate value of the group thus disclosed may exceed the stock exchange value and bear no relation whatsoever to the amount of net assets as disclosed by the consolidated historical cost balance sheet.