

Chapter 38

Accounting for changing price levels

Learning objectives

After reading this chapter you should be able to:

- 1** explain the meaning of the key terms and concepts listed at the end of the chapter;
- 2** discuss the limitations of historical cost accounting in times of rising prices, including their impact on the income statement and statement of financial position;
- 3** explain the nature of and difference between forms of price level changes, including how they can be measured;
- 4** describe different concepts of capital maintenance;

- 5 explain how assets are valued using historical cost, current cost and current purchasing power accounting;
- 6 describe the main conceptual differences between current cost accounting and current purchasing power accounting;
- 7 prepare simple comprehensive income statements and statements of financial position using current cost accounting and current purchasing accounting.

Recording transactions at historical cost in the measurement of income

The fundamental ideas of profit introduced in Chapter 8 '*The accounting equation and its components*' were based on the accounting definition that profit was the maximum amount that could be withdrawn from a business while leaving the capital intact. This approach as a measure of performance has considerable appeal. As residual beneficiaries, the owners' benefits from the business are entirely dependent on the success of the business. Such success can be readily assessed in terms of what can be taken out of the business while leaving it no worse off than it was at the start of the period. When this is also seen in the more dynamic terms of being the amount by which the revenue earned exceeds the cost of producing those revenues, it is also seen as a measure of operating efficiency—increasing the value of outputs as represented by revenues, while achieving a relative decrease in the inputs measured by the costs matched against that revenue.

It was again in Chapter 8 that the measurement approach utilised by historical cost accounting was described in terms of recording transactions. Subsequent chapters have illustrated this time and again. As an approach to measurement, the transaction basis contributes well to the reliability principle. In the historical cost balance sheet, assets are represented by the capitalised expenditures which have not yet been matched against revenue through depreciation, for example. In the income statement, revenues and costs have all been quantified on the basis of transactions.

However, it would be wrong to deduce that the historical cost basis is entirely objective. Subjectivity has entered into deciding whether an expenditure should be capitalised or not, i.e. whether or not it represented an asset. Choice of methods of depreciation and the determination of provisions both involve substantial judgement. Similar scope exists in the allocation of indirect costs to inventory values.

When considered in relation to other measurement attributes, historical cost may stand up less well, particularly when price changes are prevalent either in general, due to inflation, or for specific items arising as a result of changes in technology, tastes or other factors. The asset values will be dependent upon timing so that the same asset may have a different value depending only upon when it is purchased. This promotes neither consistency nor comparability and the likely result is varying mixtures of ages of expenditures both between businesses and between periods for the same business. If prices are generally rising, then although asset values may be regarded as prudent, matching older expenses based on correspondingly lower prices may understate costs relative to revenues and thus overstate profit. Understating asset values and overstating

profit cannot be considered free from bias, let alone prudent.

The historical cost convention has adopted particular approaches to the three basic dimensions. The unit of measurement is the currency unit, i.e. the pound sterling in the UK. Even if the purchasing power of the pound changes, there is no response in this dimension by the historical cost convention. As implied above, the valuation model used measures asset values at the original transaction price modified by provisions and write downs due to depreciation, etc. The capital maintained is the money value of the owner's contributed capital plus accumulated profits. This is commonly referred to as **money financial capital maintenance**.

Price change considerations and inflation accounting

Current purchasing power accounting

Price change has two broad impacts on the accounting approaches which have been described. First, **general price change** through **inflation** undermines the stability of the value of the currency unit. Reducing the **purchasing power** of the pound through inflation means that comparison of amounts measured in pounds at different times is distorted.

One response to the problems of price change is to restate the financial statements produced on a historical cost basis by adjusting for the change in purchasing power. The procedure is to restate the opening and closing statements of financial position by

indexing all items in the opening statement of financial position and all non-monetary items including owners' capital in the closing statement of financial position using **general price level indices**. Monetary items in the closing statement of financial position would require no adjustments as they are already stated in current terms. The capital increase shown between the restated statements of financial position would be the current purchasing power profit. This approach involves only limited adjustment from historical cost and, since these can be based on publicly available indices such as the **retail price index** (RPI), reliability is not substantially reduced. The unit of measurement that would then be employed would be the pound of current purchasing power at the year end. The purchasing power of the owners' capital would be maintained since it is restated in these terms. This is commonly referred to as **real financial capital maintenance**.

However, the valuation model which adjusts asset values for general changes in prices may result in asset values that are considered to be an entire fiction. Assets do not all change prices in line with inflation. In addition, the increase that is being reported would be a combination of realised and unrealised gains, since the upward revaluation of assets by indexing them would be, increasingly, a value without the external evidence that would meet the needs of prudence and realisation. A version of this approach, known as **current purchasing power accounting** (CPPA) was put forward in the UK but, given the limitation identified and others, it has been largely rejected.

Current cost accounting

The second major aspect of price change is the **specific price changes** in asset values. The historical cost approach, which recognises revenues only when they are realised, will produce periodic profits which represent both the results of the current year's operations and gains made in previous periods which are only realised in the current period (although gains which are unrealised in the current period are excluded).

One response to this problem is to recognise unrealised gains in the period to which they relate but to treat these not as part of operating profit. Instead, they can be regarded as **holding gains**, i.e. gains from continuing to own assets during price rises. Measuring profit in relation to opening and closing capital restated to include holding gains of the period produces a concept of **physical/operating capital maintenance**, i.e. identifying the gains that can be withdrawn while permitting a business to own the same physical assets. Profit would be restated by eliminating holding gains. This is aptly described as operating profit, showing the ability of a business to produce revenues over and above the current cost of producing them through operating activities. Any adjustments necessary to eliminate holding gains from profit would be those necessary to restate historical costs, included in the comprehensive income statement, to current costs.

A version of this approach known as **current cost accounting** (CCA) includes such adjustments in three components. These are a **depreciation adjustment**, modifying depreciation to one based on the current cost of assets rather than the historical cost; a **cost of sales adjustment**, adjusting inventory values and purchases to current costs; and a **monetary working capital adjustment**, adjusting for the price change of purchases during the creditor period and sales during the debt collection period. There has been

much debate about whether there should also be a fourth adjustment, known as a **gearing adjustment**. This is intended to reflect the benefits of having debt capital during periods of increasing prices. The last two adjustments are relatively complicated, and generally regarded as beyond the introductory level.

Considerable subjectivity is involved in identifying suitable **specific price level indices** for each of the possible specific price changes. The resulting reduction in reliability together with the costs of implementing the approach with all its complexities are considered to outweigh the advantages, particularly where the period of holding assets is relatively short and hence the impact of the adjustments is small. Current cost accounting has been widely abandoned as a result.

Realistic examples of accounting for changing price levels are usually very complex and beyond the scope of this book and accounting examinations at this level. However, a relatively simple numerical illustration of CCA and CPPA is shown in Example 38.1

Example 38.1

A. Solent commenced trading on 1 January 20X2 as a ships' chandler. The capital in cash was £15,000. On that date A. Solent purchased a boathouse for £10,000 and a boat for resale at a price of £5,000. The boathouse is leasehold over a period of 50 years and depreciated using the straight line/fixed instalment method. The replacement cost of the boathouse on 31 December 20X2 was estimated to be £13,000.

The boat was sold on 1 July 20X2 for £8,000 and on the same day an identical boat

was purchased for £6,000. This was unsold at 31 December 20X2 and is estimated to have a replacement cost of £7,500.

The RPI at 1 January 20X2 stood at 100, at 1 July 20X2 was 105, and at 31 December 20X2 was 110.

You are required to prepare a comprehensive income statement for the year and statement of financial position at 31 December 20X2 using:

- a** historical cost accounting (HCA);
- b** current cost accounting (CCA; using replacement cost);
- c** current purchasing power accounting (CPPA);
- d** historical cost accounting with adjustments for current costs (CC).

A. Solent

Comprehensive income statement for the year ended 31 December 20X2

	<i>HCA</i>	<i>CCA</i>	<i>CPPA</i>
	£	£	£
Sales revenue	8,000	8,000	8,381
Cost of sales	(5,000)	(6,000)	(5,500)
Gross profit	3,000	2,000	2,881
Depreciation	(200)	(260)	(220)
Profit for the year	2,800	1,740	2,661
Other comprehensive income			
Loss on holding monetary assets	—	—	(95)

Total comprehensive income for the period	2,800	1,740	2,566
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Workings

$$\text{HCA depreciation} = \frac{\pounds 10,000}{50 \text{ years}} = \pounds 200$$

$$\text{CCA depreciation} = \frac{\pounds 13,000}{50 \text{ years}} = \pounds 260$$

$$\text{CPPA sales} = \pounds 8,000 \times \frac{110}{105} = \pounds 8,381$$

$$\text{CPPA cost of sales} = \pounds 5,000 \times \frac{110}{100} = \pounds 5,500$$

$$\text{CPPA depreciation} = \left(\pounds 10,000 \times \frac{110}{100} \right) \div 50 \text{ years} = \pounds 220$$

CPPA loss on holding monetary assets: cash of $\pounds 8,000 - \pounds 6,000 = \pounds 2,000$ from 1 July 20X2 to 31 December 20X2:

$$\frac{110 - 105}{105} \times \pounds 2,000 = \pounds 95$$

A. Solent

Statement of financial position as at 31 December 20X2

ASSETS	HCA	CCA	CPPA
<i>Non-current assets</i>	£	£	£
Boathouse	10,000	13,000	11,000
Depreciation	(200)	(260)	(220)
	<hr/> 9,800	<hr/> 12,740	<hr/> 10,780
<i>Current assets</i>			
Inventory	6,000	7,500	6,286
Cash	2,000	2,000	2,000
	<hr/> 8,000	<hr/> 9,500	<hr/> 8,286

Total assets	17,800	22,240	19,066
EQUITY AND LIABILITIES			
Equity			
Capital	15,000	15,000	15,000
Capital maintenance reserve	—	5,500	1,500
Profit	2,800	1,740	2,566
Total equity and liabilities	17,800	22,240	19,066

Working

CCA capital maintenance:

$$\begin{array}{l} \text{Boathouse} \qquad \qquad \text{Stock} \\ (\pounds 13,000 - \pounds 10,000) + (\pounds 7,500 - \pounds 5,000) = \pounds 5,500 \end{array}$$

$$\text{CPPA stock} = \pounds 6,000 \times \frac{110}{105} = \pounds 6,286$$

$$\text{CPPA capital maintenance} = \pounds 15,000 \times \frac{110 - 100}{100} = \pounds 1,500$$

Please note Stock should be Inventory in the two places it is cited above.

A. Solent

Comprehensive income statement (HC adjusted for CC) for the year ended 31 December 20X2

	£
Sales revenue	8,000
Cost of sales	(5,000)
Historical cost gross profit	<u>3,000</u>
Depreciation	(200)
Historical cost profit for the year	<u>2,800</u>
Other comprehensive income	
Cost of sales adjustment (£6,000 – £5,000)	(1,000)

Depreciation adjustment (£260 – £200)	(60)
<i>Current cost comprehensive income</i>	<u>1,740</u>

The historical cost statement of financial position adjusted for current costs will be as shown for CCA.

Sometimes the values reflected in the current cost income statement are reflected at the average current cost for the period.

Example 38.2

Using the information from example 38.1 you are required to prepare a comprehensive income statement for the year and statement of financial position at 31 December 20X2 using current cost accounting (CCA; using average cost as provided for each of the main elements).

A. Solent

Comprehensive income statement for the year ended 31

December 20X2

	CCA
	£
Sales revenue	8,000
Cost of sales	(5,250)
<i>Gross profit</i>	<u>2,750</u>
Depreciation	(230)

<i>Profit for the year</i>	2,520
Loss on holding monetary assets	—
<i>Profit for the period</i>	2,520
<i>Other comprehensive income</i>	
Holding gain on property	2,970
Holding gain on inventory	1,750
<i>Total comprehensive income for the year</i>	7,240

Workings

Income statement entries

CCA depreciation (average)

$$\text{Average boathouse value in year} = \frac{\pounds 10,000 + \pounds 13,000}{2} = \pounds 11,500$$

$$\text{Depreciation on boat house} = \frac{\pounds 11,500}{50} = \pounds 230$$

CCA cost of sales

$$= \pounds 5,000 \times \frac{105}{100} = \pounds 5,250$$

Other comprehensive income entries – holding gains or losses

Holding gain on property

Current cost outputs		
Closing statement of financial position current value (net)	£12,740	
Depreciation charge in year (current cost)	£230	
Total current cost outputs	<u> </u>	£12,970
<i>Less: inputs</i>		
Opening statement of financial position value (net)		£10,000
<i>Holding gain on property</i>		<u>£2,790</u>
<hr/>		
<i>Holding gain on inventory</i>		
Current cost outputs		
Year end inventory value	£7,500	
Cost of goods sold (from comprehensive income statement)	£5,250	
	<u> </u>	£12,750
<i>Less: inputs</i>		
Purchases	£6,000	
Opening inventories	£5,000	£11,000
		<u> </u>
		1,750
<hr/>		
A. Solent		
<i>Statement of financial position as at 31 December 20X2</i>		
ASSETS	CCA	
<i>Non-current assets</i>	£	
Boathouse	13,000	
Depreciation	(260)	
	<u> </u>	12,740
<i>Current assets</i>	<u> </u>	

Inventory	7,500
Cash	2,000
Total assets	<u>22,240</u>
EQUITY AND LIABILITIES	
Equity	
Capital	15,000
Profit	7,240
Total equity and liabilities	<u>22,240</u>
<hr/>	
A. Solent	
Comprehensive income statement (HC adjusted for CC) for the year ended 31 December 20X2	
	£
Sales revenue	8,000
Cost of sales	(5,000)
Historical cost gross profit	<u>3,000</u>
Depreciation	(200)
Historical cost profit for the period	<u>2,800</u>
Other comprehensive income	
Cost of sales adjustment (£5,250 – £5,000)	(250)
Depreciation adjustment (£230 – £200)	(30)

<i>Current cost comprehensive income</i>	2,520
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The historical cost statement of financial position adjusted for current costs will be as shown for CCA.

Summary

The use of historical cost accounting in times of rising prices is said to overstate the profit because older, lower costs are matched against more recent, higher sales prices. It is also said to distort the values of assets and liabilities in the statement of financial position. The assets will have been bought at various points in time when the prevailing levels of prices were different. In addition, the assets are not shown in their current values.

Profit can be conceptualised as the amount that could be withdrawn from a business while leaving the capital intact. This highlights the need for capital maintenance. There are three main concepts of capital maintenance: money financial capital maintenance, real financial capital maintenance and physical/operating capital maintenance.

Changes in price levels take two forms: general price changes associated with inflation which reduce the purchasing power of money, and are measured in the UK by the retail price index (RPI); and specific price changes which refer to the change in price of a specific category of good or asset (e.g. vehicles).

Assets can be valued at either their historical cost, current/replacement cost, or the purchasing power of the money invested in the asset. Current/replacement cost is commonly measured using a specific price index, and purchasing power is measured by means of a general price index such as the RPI. These three methods of asset valuation give rise to three corresponding methods of accounting, known as historical cost accounting (HCA), current cost accounting (CCA) and current purchasing power accounting (CPPA), respectively.

In HCA assets are valued at their historical cost, and profit is measured while ensuring the maintenance of money financial capital. It is argued that in times of changing price levels, CCA or CPPA is more appropriate. In CCA assets are usually valued at replacement cost, and profit is measured while ensuring the maintenance of physical capital or the operating capability of a business. In CPPA assets are valued in terms of current purchasing power, and profit is measured while ensuring the maintenance of real financial capital.

A variation of CCA involves adjusting the profit computed on a historical cost basis to give the current cost profit. This necessitates a cost of sales adjustment, depreciation adjustment, and monetary working capital adjustment. There has been much debate about whether there should also be a gearing adjustment.

Key terms and concepts

Cost of sales adjustment
current cost accounting
current purchasing power accounting
depreciation adjustment
gearing adjustment
general price change
general price level indices
holding gains
inflation
monetary working capital adjustment
money financial capital maintenance
physical/operating capital maintenance
purchasing power
real financial capital maintenance
retail price index
specific price changes
specific price level indices

Review questions

38.1 Explain the limitations of historical cost accounting in times of rising prices.

- 38.2** Explain fully why there is said to be a need to account for changing prices in final financial statements.
- 38.3** Explain the differences and/or interrelationship between: (a) changes in specific price levels; (b) changes in general price levels; (c) inflation; and (d) the retail price index (RPI).
- 38.4 a** Outline the concept of economic income as defined by Hicks (1946) and explain its relevance in the measurement of profit (see Chapter 8 *'The accounting equation and its components'*).
- b** Describe three different concepts of capital maintenance.
- 38.5** Explain how assets are valued using each of the following measurement methods: (a) historical cost; (b) current cost; and (c) current purchasing power.
- 38.6** Describe the main conceptual differences between current cost accounting and current purchasing power accounting.
- 38.7** Explain why the profit computed using historical cost accounting usually differs from that when calculated using replacement cost accounting and current purchasing power accounting.
- 38.8** Ermine commenced trading on 1 July 20X1 with a capital of £100,000 cash. During the year ended 30 June 20X2, he operated from rented premises and at the end of the year he had sold all his inventory. His statement of financial position at 30 June 20X2 was:

	£	£
Cash at bank		100,000
		<u>100,000</u>
Capital at 1 July 20X1	100,000	<u><u>100,000</u></u>
Profit for year to date	40,000	
	<u>140,000</u>	
<i>Less: drawings</i>	40,000	
	<u>100,000</u>	<u>100,000</u>
		<u><u>100,000</u></u>

During the year there was inflation of 10 per cent in the country in which he operates.

Required

- a** Using this simple example where appropriate, define the terms *financial* capital and *physical* capital, and explain why it may be dangerous for an enterprise if it maintains financial capital but does not maintain physical capital.
- b** List and briefly explain *three* ways in which the use of historical cost accounting may cause financial statements to be misleading.
- c** List *three* advantages of historical cost accounting.

Author's note: the term financial capital is used here to refer to money financial

capital.

(ACCA)

38.9 Discuss:

- a** the arguments for making price-level adjustments (in addition to specific price adjustments), and
- b** the advantages and disadvantages of making a single general price level adjustment to the profit statement for real terms (as opposed to calculations of real holding gains and losses on individual assets).

Exercises

38.10 Level I

Sally Johnson, while holidaying on a remote island, decides to supplement her holiday money by selling slices of water melon on the beach. She purchases 50 melons for a total of 500 francs and during the week sells them all by slicing each melon into four and selling each slice for 5 francs. At the end of the week she returns to the fruit market and discovers that the price of 50 melons has risen to 650

francs. On her way to the market she had purchased a newspaper in which the headline read 'Island inflation rate now 5 per cent per week'.

- a** You are required to compute Sally's income for the first week on:
- I a historical cost basis;
 - ii a replacement cost basis;
 - iii a current purchasing power basis.
- b** Comment upon the usefulness of the three income figures you have calculated (JMB)

38.11 Level II

A. Daley commenced trading on 1 January 20X2 as a second-hand car dealer. His capital in cash was £20,000. On that date Daley acquired a 5-year lease on a lock-up garage at a cost of £5,000.

The following transactions took place during the year, all in cash:

		£
31 Mar 20X2	Purchased a car for resale	10,000
30 Jun 20X2	Sold the car	13,000
30 Sep 20X2	Bought another car for resale	14,000

The relevant indices during the year were:

	<i>RPI</i>	<i>Garage</i>	<i>Vehicles</i>
1 Jan 20X2	100	100	100
31 Mar 20X2	106	108	105
30 Jun 20X2	112	117	110
30 Sep 20X2	118	125	115
31 Dec 20X2	124	130	120

You are required to prepare a comprehensive income statement for the year and a statement of financial position at 31 December 20X2 using:

- a historical cost accounting;
- b current cost accounting;
- c current purchasing power accounting;
- d historical cost accounting with adjustments for current costs.

Make all computations to the nearest £.

38.12 Level III

McKees Ltd. commenced trading on 1 January 20X1, selling a single type of imported DVD player. The company's opening statement of financial position is shown below:

Statement of financial position as at 1 January 20X1

ASSETS

<i>Non-current assets</i>	£
Leasehold buildings	500,000
Plant and equipment	160,000
	<hr/>
	660,000
	<hr/>
<i>Current assets</i>	
Inventories (8,000 DVD players)	800,000
	<hr/>
	800,000
	<hr/>
<i>Total assets</i>	1,460,000
	<hr/> <hr/>
EQUITY AND LIABILITIES	
<i>Equity share capital</i>	1,000,000
<i>Current liabilities</i>	
Bank overdraft	460,000
	<hr/>
<i>Total equity and liabilities</i>	1,460,000
	<hr/> <hr/>

All assets are shown at cost on 1 January 20X1.

At 31 December 20X1

- (a) The company had a bank balance of £20,000
- (b) The company was owed £140,000 by trade customers (none were considered bad or doubtful).
- (c) The company held an inventory of 2,000 DVD players which were valued for historical cost purposes on a FIFO basis at a cost price of £125 each. The current replacement cost of DVD players at 31 December was £130 per unit.

- (d) An independent valuer certified that a 20 year lease on a comparable building would now cost £550,000.
- (e) Plant and equipment, which has an expected useful life of 15 years, with no terminal value, could be replaced new at 20 per cent more than their original cost.

During the year the company's transactions were:

	£
Sales (18,000 DVD players)	2,610,000
Purchases (In addition to opening inventory) 12,000 DVD players at an average price of £120)	1,440,000
General expenses (paid as incurred)	500,000
Dividend paid	50,000
Ignore taxation	

In terms of sales current cost and historical cost are the same.

Required

Prepare a comprehensive income statement in current costs, with comparable historic cost figures (use straight line depreciation for non-current assets). When valuing expense items in the comprehensive income statement (current cost) use the average values for the year.

38.13 Level II

The majority shareholder in McKee Ltd.'s comments: 'Both sets of financial statements give me the same dividend, so what does it matter'. Discuss.

38.14 Level III

Using the information from question 38.12, prepare statements of financial position on current cost and historic cost bases at 31 December 20X1.