Chapter 17

Divisional performance

Real world case 17.1

This case study shows a typical situation in which management accounting can be helpful. Read the case study now but only attempt the discussion points after you have finished studying the chapter.

This extract describes Kerry Foods, an Irish company producing a range of foodstuffs.

The best performance came from the food ingredients division, which made a profit of A257m, up 17.5 per cent, with acquired businesses contributing A23m. The chilled convenience foods division raised profit 2 per cent from A113.9m to A116m. However, the company, which for the first time disclosed operating margins for its divisions, said the consumer foods business, which includes the Wall's sausage brand and Cheestrings snacks, achieved margins of 7 per cent, which it said would have been better but for adverse currency effects.

Source: *Financial Times*, 2 March 2005, p. 25, 'Kerry Foods hit by Quest charges'.

Discussion points

1 How does a company identify divisions for its business?

2 What are the measures used in the newspaper article to compare divisional performance?

Contents

Learning outcomes

After studying this chapter you should be able to:

- Explain what is meant by divisionalisation of a business.
- Define and explain return on investment as a measure of divisional performance.
- Define and explain residual income as a measure of divisional performance.
- Evaluate the relative merits of return on investment and residual income.
- Explain how transfer pricing between divisions can affect performance evaluation.
- Explain the meaning and application of ‘economic value added’.
- Describe and discuss examples of research into divisional performance and transfer pricing.

17.1 Introduction

Large organisations have a variety of activities which they carry out in different locations. In order to manage it effectively, such an organisation may be subdivided into separate units, each of which is responsible for planning and control of its own activities and for some aspects of decision making. Each of the separate units is called a **division** of the company. This chapter explains ways in which divisional performance can be measured and compared.

17.2 Divisionalised companies

The benefit of creating a divisional structure is that those managing and working in each division have a sense of responsibility for their own area of operations, but the risk lies in the divisional management taking actions which may appear to be beneficial to the division but which are not good for the organisation as a whole.

Definition

A **division** is a part of the organisation where the manager has responsibility for generating revenues, controlling costs and producing a satisfactory return on capital invested in the division.

It was explained in Chapter 1 that the management accounting approach to any situation will depend on the nature of the organisation. The size of a department may vary from one organisation to the next and the nature of a department will merge with that of a division as the department becomes larger. In some cases the words may be used interchangeably. For the purposes of this text, a division will have responsibility for its costs, profits and return on investment in assets, whereas a department would be responsible only for its costs, or possibly for costs and profits.

17.2.1 Advantages of divisionalisation

Where divisions exist and managers have decision-making power, their decisions about the business may be made more readily and with greater regard for the nature of the division. If all decisions are taken at a remote head office, the process may be delayed and may not have sufficient regard for any special circumstances of the division.

The freedom to make decisions also creates a challenge for those who manage the division and may make them feel more highly motivated towards achieving success for it. They will have responsibility for investment in assets and investment in employees, which gives a sense of controlling an entire business operation rather than being sandwiched between those who make the decisions and those who are required to implement them.

The existence of the division may also give employees a greater sense of identity with the operation of the division, particularly if it is in a separate geographical area or carries out a different operation from the rest of the organisation.

17.2.2 Disadvantages of divisionalisation

Managers of divisions may forget that they also have a responsibility towards the organisation as a whole and may make decisions which have adverse consequences

elsewhere in the organisation. Take the case of a company where one division was producing flour in a flour mill and selling it to another division which was a bakery. The manager of the flour mill decided to attempt to increase profit by increasing the price charged for the flour, whereupon the manager of the bakery decided it was cheaper to buy flour from a rival organisation and did so. The result was that, although the bakery kept its costs under control, the flour mill went out of business and there was a substantial loss to the organisation as a whole. That loss could have been avoided if there had been a mechanism within the organisation to reconcile the separate objectives of the managers of the flour mill and the bakery.

Divisional organisation may also mean that some of the economies of central organisation are lost. Purchasing goods for all divisions from a central location may allow quantity discounts to be negotiated which would not be available to the separate divisions.

Placing too much emphasis on the divisional structure may cause those in each division to fail to identify with the organisation as a whole and may cause the senior management of the organisation as a whole to be remote from the day-to-day activities of the separate parts of the overall business. Communication and motivation may become more significant in achieving effective management in such circumstances.

Activity 17.1

A road repair company has set up two divisions: one is motorway repairs and the other is town street repairs. Write down the advantages and disadvantages of establishing these divisions.

17.2.3 Management accounting approach

Management accounting techniques required in dealing with a division need to cover the entire range of directing attention, keeping the score and solving problems. In relation to the classification of costs, the division may be regarded as an investment centre. In Chapter 2, an investment centre was defined as a unit of the organisation in respect of which a manager is responsible for capital investment decisions as well as revenue and costs. One very important aspect of management accounting is to measure the performance of the divisional manager in relation to capital investment, revenue and costs.

The statement of profit for a division will contain many of the management accounting features explained in earlier chapters. Table 17.1 shows the main components of divisional profit and uses italics to highlight three possible measures of profit performance.

Table 17.1
Statement of divisional profit

	£
Sales to external customers	xx
Transfers to other divisions	xx
Total revenue	xx
Variable costs of operations	xx
Contribution	xx
Fixed costs controllable by the division	xx
Profit controllable by the division	xx
Fixed costs not controllable by the division	xx
Total divisional profit	xx

Of the three profit measures highlighted, contribution may be useful to the management of the division in taking short-term decisions on production and pricing but is inappropriate as a measure of performance because it does not take into account the fixed costs which are controllable by the division. The management of the division may accept that performance is best measured by profit controllable by the division but the management of the organisation as a whole may be reluctant to accept this figure on the grounds that, at the end of the day, all costs must be covered, including the fixed costs incurred centrally which are beyond divisional control. (The term contribution is applied to the difference between revenue and variable cost of sales. It is a term which is dealt with in greater detail in Chapter 9.)

There may be some energetic debate as to which are controllable and which are non-controllable fixed costs so far as the division is concerned. Depreciation of fixed assets is a controllable cost for the division because the division has control of the investment in fixed assets. The division will take a share of head office service costs, such as personnel, accounting and legal services. To the extent that the divisional manager has a choice as to the extent to which such service costs are taken on, there should be a controllable fixed cost in respect of these items.

Because of the various conflicts that may arise in deciding on the best profit measure to use in performance measurement, the view is taken that divisional profit is not a satisfactory means of measuring the performance of management. It is also regarded as unsatisfactory because profit is an absolute measure and if managers think they are successful in making higher and higher profits, they may have no regard for the investment in fixed assets used in earning those profits. In a situation where it was discovered that stolen money had been used to finance the purchase and refurbishment of a hotel, the disgruntled manager of a rival hotel commented: *'It's not surprising that they could undercut our prices and take all our customers – they never had to worry about earning a return on their investment.'*

17.3 Return on investment

17.3.1 Method of calculation

A better measure of divisional performance is to relate the profit earned by a division to the investment in assets which produced that profit. This is referred to as the *profitability* of the division (where 'profitability' means the rate of profit per unit of investment).

Definition

Return on investment (ROI) is calculated by taking profit controllable by the division as a percentage of the investment in assets which produces that profit.

Table 17.2 compares the ROI for new projects with the existing ROI for each division.

Table 17.2
Return on investment for each division

	Division A	*Division B*
Investment funding available for each project	£2m	£2m
Profit controllable by the division, to be generated by each project	£400,000	£260,000
ROI of each project	20%	13%
ROI of division at present	22%	12%

The calculation in Table 17.2 shows that the **return on investment** is higher for division A. However, it is possible that the manager of division A will decide not to take up the new project because it has a lower ROI than the division's existing performance. The manager of division B will be pleased that the new project has a higher ROI than the existing average.

There may be technical problems in deciding on the division's investment in assets because the assets are owned by the organisation as a whole, rather than the division. It will usually require assets to be traced to a division, either on the basis that they are physically located there or on the basis that they are used by the division. It may be that use of assets is shared by more than one division, so that a portion of asset value is assigned to each division. The investment in assets may include an element of investment in working capital.

There may also be problems in deciding how to value the assets. Historical cost could be used, taking the net book value as applied for financial accounting purposes, but in times of rising prices that could allow the highest return on capital employed to arise in the division having the oldest assets, because these would have a low value. It could discourage a division from investing in new assets. If all divisions have to use the current value of the assets used, then the valuation base is comparable across all divisions.

There could be more than one view of which measure of profit to apply. There are no specific rules as to the choice to be made but there should be regard for the general principle that performance measurement should take account of relevant costs. If the focus of the ROI calculation is the motivation of divisional managers then allocation of non-controllable costs may have a negative effect. If the focus is economic performance of divisions within the organisation as a whole, then it may be important to include the impact of apportioned costs.

17.3.2 Advantages of ROI

ROI is the most widely used measure of divisional performance. Its first advantage, therefore, is its general acceptance. It is widely understood and it encourages managers to concentrate on projects which make best use of resources.

17.3.3 Disadvantages of ROI

There are practical difficulties in deciding on the data to be used in the formula. Both the numerator and denominator have more than one possible source. It could distort performance where a manager of one division avoids a project which lowers the average ROI for that division but would nevertheless be of benefit to the organisation as a whole. It is undesirable to have the entire performance of a division taken down to a single measure. It is always valuable to look at a situation from more than one angle.

17.4 Residual income

17.4.1 Method of calculation

Residual income is another method of measuring divisional performance. It is calculated by deducting from the operating profit an interest charge based on the assets used and controlled by the division. The view taken is that the assets are owned by the company and therefore are financed from the company's resources. If the division were an independent entity, it would have to borrow money to acquire equivalent

assets, so it is reasonable to charge the division with an amount representing interest on borrowed funds. There is no actual interest payment within the company, so the figure has to be created using interest rates which might apply to borrowed funds. This created figure is called *imputed* interest. ('Imputed' used in this sense means 'thought to belong to'.)

Definition

Residual income (RI) is defined as operating profit less an interest charge based on the assets used and controlled by the division.

Table 17.3 continues with the new project proposed in Table 17.2.

Table 17.3
Residual income for each division

	Division A	*Division B*
Investment funding available for each project	£2m	£2m
Profit controllable by the division, to be generated by each project	£400,000	£260,000
Interest charge applied to projects:		
9% of investment	£180,000	£180,000
Residual income	£220,000	£80,000

The calculation in Table 17.3 shows that the residual income of both divisions would increase if the investment of £2m was made. Division A has the higher residual income and might therefore be preferred if there were a limited amount of funding so that only one division could receive investment funding.

17.4.2 Advantages of residual income

The main advantage of using residual income is that managers will be more readily encouraged to act in the best interests of the organisation because this will match their own best interests in terms of performance measurement. If a new project is undertaken, the residual income is affected only by the additional profit as compared with interest on the additional investment. It does not average out the new project with the existing projects as happens with the return on investment calculation.

A second advantage is that the interest charge may be varied according to the risk of the investment project. The return on investment calculation allows only one overall percentage to be calculated.

17.4.3 Disadvantage of residual income

A disadvantage of residual income is that it provides an absolute measure rather than a relative measure. A large division produces more residual income in total than does a small division. To avoid any problems of relative size, the target residual income for a division needs to match, in order of magnitude, the investment in assets.

Activity 17.2

Look back at the calculations of ROI and RI and make sure that you understand and can explain each of them.

Real world case 17.2

This extract describes changes in the UK company Bunzl, which announced at the start of 2005 that it would sell Filtrona, a business making cigarette filters, and concentrate on its outsourcing business.

The group generated almost £3bn in sales and £200m in pre-tax profits in 2004. Earnings per share increase year on year and its shares have risen three fold in the past 10 years. But getting there involved flexing some muscle and when he took up the reins Mr Habgood had to separate the wheat from the chaff. The only two businesses consistently growing were Filtrona and outsourcing. He set about simplifying the group's structure by selling the businesses with weaker returns and poor positions. The companies earmarked for disposal represented more than half of group sales and the proceeds were reinvested in the superior businesses . . . Mr Habgood said 'We have sold 60 per cent of the businesses and more than quintupled the size of the remaining group.' Konrad Zomer, analyst at Chevreux, said 'Habgood has done a great job in moving away from capital intensive areas. The sale of the plastics business marked an important step in that respect.' The outsourcing business is now purely value-added – finished goods are bought from suppliers and sold on to customers. For example, Bunzl supplies supermarkets and caterers with disposable goods. This process does not require much capital.

Source: *Financial Times*, 1 March 2005, p. 24, 'Chief who turned a ragbag into a silk purse'.

Discussion points

1 What strategy was used by Mr Habgood in selecting divisions for development?

2 Compare the relative merits of return on investment and residual income as suitable measures of performance for deciding on which divisions to develop in this case.

17.5 Which to use – ROI or RI?

Both return on investment and residual income could be criticised as placing too much emphasis on the short term. They both emphasise profit when it may be that other factors of a more qualitative nature are important. They both have the problem of identifying the asset base used and controlled by the division. As a result, either of them could lead to inappropriate comparisons across divisions.

It has been suggested that residual income is more appropriate where the divisional manager has considerable freedom to determine the investment in assets. The return on investment may be more appropriate where the divisional manager has little or no control over the level of investment in the division. If return on investment is calculated, it is important that an imputed interest charge is *not* deducted from the operating profit, since to do so would involve double-counting. Between these two extremes it may be appropriate to use both techniques and compare the outcome.

Evidence from research shows that the dominant measure used in practice is return on investment, but it is also common to find return on investment and residual income used together. Residual income is rarely used alone, but this may be a reflection of the dominance of central control, rather than divisional control, of asset investment.

17.5.1 Case study: ROI and residual income

Here is Fiona McTaggart to explain a situation where she compared the impact of return on investment with that of residual income as a measure of performance.

FIONA: *I was called in to discuss performance measurement with the washing powder division and the toothpaste division of a large chemical company. They provided the following data:*

	Washing powder £	*Toothpaste* £
Investment in assets	5,000,000	15,000,000
Profit controllable by the division	1,000,000	5,000,000
Return on investment	20%	33.3%

Their problem was that they had done what the textbooks recommend in calculating the return on investment but the management team in the washing powder division was now feeling aggrieved about being shown as underperforming in comparison with the toothpaste division. To improve the return on capital employed, the washing powder division proposed closing down an operation at a remote branch where there was an investment of £500,000 in assets, earning a return of 15 per cent to yield a profit of £75,000. If that disappeared then they would have a divisional profit of £925,000 on assets of £4,500,000, improving the ROI to 23.1 per cent. Although they could see the potential for improving ROI, they were of the view that closing down did not seem logical or sensible.

My reply was that of course it was not a logical action. The branch operation was yielding 15 per cent at a time when the company's cost of capital was 13 per cent. If the company pulled out of that area, a competitor would jump in with a replacement. Where the divisional managers have discretion over levels of investment, then residual income may be preferred as giving a relative measure of performance which will not lead to actions against the company's interest. I recalculated the performance measures using residual income as follows:

	Washing powder £	*Toothpaste* £
Investment in assets	5,000,000	15,000,000
Profit controllable by the division	1,000,000	5,000,000
Charge for cost of capital at 13%	650,000	1,950,000
Residual income	350,000	3,050,000

If the washing powder division were to dispose of its branch as tentatively suggested, then the residual income would fall:

Washing powder division	*Before disposal* £	*After disposal* £
Investment in assets	5,000,000	4,500,000
Profit controllable by the division	1,000,000	925,000
Charge for cost of capital at 13%	650,000	585,000
Residual income	350,000	340,000

On this comparison the performance measure would worsen because the division's total residual income would fall and it would be seen to be contributing less to the overall well-being of the company.

I explained that where the managers of a profit centre have discretion to acquire and dispose of substantial amounts of assets, the residual income is a preferable method of performance measurement. It is an absolute measure and leads to the conclusion that the higher the residual income, the better for the organisation as a whole. The only condition

on expanding into new assets or retaining existing ones is that these should earn a profit which exceeds the cost of capital. If the profit earned is less than the cost of capital then the activity should cease.

I also pointed out the dangers of relying on one performance measure only. I recommended that in future the divisional performance should be assessed by reference to all the following criteria, as a starting point:

- *Is the target cash flow being achieved?*
- *Is the target ROI being met?*
- *Is the actual profit within the budget?*
- *Is the residual income maximised, subject to any organisational constraints?*

I explained that I was emphasising meeting targets rather than making comparisons between divisions. There could be good reasons for the different ROI in the two divisions, the most likely of which is relative competition in the industry. Targets should be set in advance having regard to the economic conditions so that the division is measured against its own statement of achievable performance rather than against a comparison which may not be valid.

Real world case 17.3

The following information is extracted from the annual report of Wolseley plc.

Finance objectives (extract)

To deliver an incremental return on gross capital employed at least 4 per cent in excess of the pre-tax weighted average cost of capital. In 2005 the Group's return on capital was 19.1 per cent, 7.2 per cent ahead of our estimated pre-tax weighted average cost of capital of 11.9 per cent.

Segmental analysis (extract)

	Turnover		*Operating profit*		*Net assets*	
By class of business	***2005*** **£m**	*2004* £m	***2005*** **£m**	*2004* £m	***2005*** **£m**	*2004* £m
European Distribution	**4,638.4**	4,248.0	**270.4**	242.9	**1,429.9**	1,190.2
North American Plumbing and Heating Distribution	**4,370.4**	3,836.4	**283.9**	240.1	**1,419.0**	1,147.0
US Building Materials Distribution	**2,248.9**	2,043.7	**123.1**	97.2	**754.4**	591.3
Parent and others	**–**	–			**(52.5)**	6.3
	11,257.7	10,128.1	**677.4**	580.2	**3,550.8**	2,934.8

Source: Wolseley plc, Annual Report and Accounts 2005, pages 27 and 67, www.wolseley.com.

Discussion points

1 What is the relative performance of the three divisions, in profitability and return on capital employed?

2 Using the company's stated cost of capital, what is the relative performance based on residual income?

17.5.2 Comment

Return on investment and residual income are competing as alternative methods of performance evaluation for divisions of a business but the usefulness of each should be considered in the light of all the circumstances. It is more important to think carefully about the interpretation of results from calculations and to cross-check by more than one evaluation, as Fiona did for the washing powder division.

17.6 Transfer pricing between divisions

When goods and services are transferred between divisions of an organisation, a price is needed to reflect the value transferred. The price is called the **transfer price** and it is used to record a sale for one division and a cost for the other division. The transfer price affects the profit of each division but has no effect on the profit of the organisation as a whole because the internal sale and purchase have no effect on the total result.

The transfer price is important to each division because their profit is used to measure performance, as explained in section 17.5. If the price charged is too high, the buying department will reject the transaction and will want to look outside for a cheaper supplier. If the price charged is too low, the supplying department will reject the transaction and will look outside for a customer who will pay a better price.

The managers of the organisation as a whole need to find a transfer pricing system that will encourage divisions to trade with each other willingly. The important aim is to maximise the profit of the organisation as a whole. This is most likely to be achieved if divisions perceive a fair division of the total profit and a fair evaluation of divisional performance.

Transfer pricing becomes particularly problematic when the divisions are located in different countries. The transfer price will affect the taxable profit of each division. Governments are aware of ways in which a multinational company might try to use transfer prices to create profits in low-tax regimes and losses in high-tax regimes. Some countries (called 'tax havens') want to attract economic activity and so provide generous tax treatments. Other countries resent losing potential tax and impose rules to cancel out any attempt to reduce profits by a transfer pricing scheme.

There are three possible methods for setting transfer prices:

- cost-based transfer price;
- market-based transfer price;
- negotiated transfer price.

Activity 17.3

Think again about the road repair company described in Activity 17.1 It has set up two divisions: one being motorway repairs and the other being town street repairs. The division carrying out town street repairs has started processing its own asphalt surfacing using specialist equipment. From time to time the motorway division buys asphalt surfacing from the town repairs division. Explain the potential problems faced in deciding on a transfer price for this service.

17.6.1 Cost-based transfer price

If cost is the basis of transfer pricing, then the selling department will earn no profit and the buying department will have a cost that is lower than it would pay in an external market. In general, a cost-based transfer price will not be effective because it will not give a fair evaluation of the performance of each division.

If, however, the selling department has spare capacity and cannot sell any more output externally then a cost-based transfer price would be justified. The internal demand is keeping the division operating and there will eventually be a benefit to the organisation when the finished output is sold.

17.6.2 Market-based transfer price

Ideally the market price of goods or services will make both the selling division and the buying division indifferent between an internal transfer and external transactions. However, in many cases there will not be a precisely comparable market price available. Perhaps the goods or services are only partly completed. In that case the external market price of the finished product or service will have to be adjusted to calculate an equivalent market price at the point of transfer.

17.6.3 Negotiated transfer price

A negotiation between managers could be based on the economic model where the price is the point on the demand and supply curves where the marginal cost equals the marginal benefit. If the managers involved cannot agree, then head office may have to direct the negotiations or impose a solution. There is also danger that giving managers the discretion to negotiate may take up too much of their time and also cause problems in a power struggle between them.

17.6.4 Resolving differences

If there is an external market for the goods or services being transferred, then it may be relatively straightforward to persuade the buying and the selling division to accept a market-based transfer price. If there is no internal market and negotiations between the divisions fail then senior managers in the organisation may have to impose a price that reflects cost but also provides an incentive to trade internally. If the selling division is required to charge marginal cost only, there will be no internal profit and no incentive. If the buying department is required to pay a price that covers marginal cost and a profit there may be reluctance to pay the profit element. So the imposed solution may be based on marginal cost with a fee added that provides some reward to the selling division without discouraging the buying division. What matters is that both divisions take decisions that are in the best interests of the organisation overall.

17.6.5 Case study

The IT Training Company provides training support to business for secretarial employees. The publishing division of the IT Training Company supplies manuals to the training division. The training division sells a support package which is based on the manual plus internet communication. Table 17.4 sets out an the estimate of how many support packages could be sold each year at various levels of demand.

Table 17.4
Estimates of selling prices for different levels of demand

Selling price per support package	*Number of support packages sold per month*
£	
12	150
11	300
10	450
9	600
8	750
7	900

The variable costs and fixed costs of each division are shown in Exhibit 17.1.

Exhibit 17.1
Variable costs and fixed costs of divisions

Variable cost
Publishing division: £3 per manual
Training division: variable cost of internet communication is £2 per support package

Fixed cost
Fixed cost per month for publishing division is £600
Fixed cost per month for training division is £500

The manager of the publishing division has offered the training division a transfer price of £5 per manual to cover variable cost of £3 plus £2 for profit.

Profit calculations

The manager of the publishing division calculates profit or loss for each level of demand (Table 17.5).

Table 17.5
Estimate of profit for publishing division

Number of manuals	*Revenue from transfer @ £5* £	*Variable cost @ £3* £	*Fixed cost* £	*Profit/loss* £
150	750	450	600	(300)
300	1500	900	600	0
450	2250	1350	600	300
600	3000	1800	600	600
750	3750	2250	600	900
900	**4500**	**2700**	**600**	**1200**

Based on Table 17.5, the manager of the publishing division says: 'I don't mind how many manuals I transfer to the training division. The more I transfer the better my divisional performance.'

The manager of the training division calculates profit using the transfer price offered by the manager of the publishing division (Table 17.6).

Table 17.6
Estimate of profit for training division

Number of support packages	*Revenue from sale (Table 17.4)* £	*Variable cost @ £2* £	*Transfer price of manuals @ £5* £	*Fixed cost* £	*Profit/loss* £
150	1800	300	750	500	250
300	3300	600	1500	500	700
450	**4500**	**900**	**2250**	**500**	**850**
600	5400	1200	3000	500	700
750	6000	1500	3750	500	250
900	6300	1800	4500	500	(500)

Based on Table 17.6, the manager of the training division says: 'I will buy 450 manuals per month from publishing. If I take more or less than 450 my divisional performance will be worse.'

The finance director calculates the profit for the business as a whole (Table 17.7).

Table 17.7
Estimate of profit for total business

Number of support packages	*Revenue from sale* £	*Variable cost @ £5* £	*Fixed cost* £	*Profit/loss* £
150	1800	750	1100	(50)
300	3300	1500	1100	700
450	4500	2250	1100	1150
600	**5400**	**3000**	**1100**	**1300**
750	6000	3750	1100	1150
900	6300	4500	1100	700

Based on Table 17.7, the finance director says: 'The best results for the business will be obtained by selling 600 support packages per month.'

At this stage, there is no agreement on the level of output that pleases all parties. The manager of the training division is looking to make a decision that is not in the best interests of the company as a whole. The next section shows how the manager of the training division can be persuaded to make a decision that is in the best interests of the company as a whole.

Decision based on marginal cost of supplying division

This section shows that the manager of the training division will make the best decision for the company as a whole if the transfer price is set at the marginal cost (cost of one extra unit) of the publishing division. The marginal cost is the variable cost per unit which is £3 per manual. If the profit for each division is calculated using a transfer price of £3 per manual, the manager of the training division finds that a monthly purchase of 600 manuals gives the best divisional performance. This is the amount that also gives the best performance for the company as a whole (Table 17.8).

Table 17.8
Estimate of profit for training division

Number of support packages	*Revenue from sale* £	*Variable cost @ £2* £	*Transfer price of manuals @ £3* £	*Fixed cost* £	*Profit/loss* £
150	1800	300	450	500	550
300	3300	600	900	500	1300
450	4500	900	1350	500	1750
600	**5400**	**1200**	**1800**	**500**	**1900**
750	6000	1500	2250	500	1750
900	6300	1800	2700	500	1300

The manager of the publishing division is less happy because the selling price only covers variable cost. There is a loss equal to the amount of fixed cost (Table 17.9).

Table 17.9
Estimate of profit for publishing division

Number of manuals	*Revenue from transfer* £	*Variable cost @ £3* £	*Fixed cost* £	*Profit/loss* £
150	450	450	600	(600)
300	900	900	600	(600)
450	1350	1350	600	(600)
600	1800	1800	600	(600)
750	2250	2250	600	(600)
900	2700	2700	600	(600)

If the marginal cost pricing policy is to be applied, the organisation as a whole must not judge the performance of the publishing division on the basis of profit. Alternatively, the price charged to the training division could be based on publishing's variable cost of £5 plus a fixed fee of £600 per month. That would leave the publishing division with a zero profit and would still encourage the training division to choose 600 packages as the best level of output, although with £600 less of divisional profit.

17.7 Economic value added

Economic value added is the name given to an idea developed by the Stern Stewart consulting organisation, based in the USA. They have registered the abbreviation EVA™ as their trade mark. Economic value added is based on the idea of residual income. For each division the EVA™ is calculated by deducting from divisional profit a cost of capital charge based on the assets of the division. The Stern Stewart method makes accounting adjustments to divisional profit in order to arrive at a result that reflects economic profit, rather than relying on the financial accounting rules within historical cost accounting. As an example, if the company treats all development expenditure as an expense in the year in which it is incurred, for financial accounting purposes, then the EVA™ adjustment might treat it as an asset to be amortised over the period of its useful life, giving a smoother divisional profit.

Some companies mention in their annual reports that they are using EVA™ as a performance measure. Exhibit 17.2 is taken from the annual report of The Metro Group, an international trading and retailing company. It shows that EVA™ is used for assessing strategic and operational activities and also for calculating part of the remuneration of executives. The extract refers to 'delta EVA' which means the change in EVA from one period to the next.

Exhibit 17.2
Use of EVA™

EVA-instrument of corporate management: value-oriented corporate management is the cornerstone of sustainable profitable growth

The METRO Group is dedicated to a corporate management geared to boosting company value on a sustainable basis. The central benchmark by which to measure economic success is Economic Value Added (EVA). EVA is an internationally proven control and management system which enables all strategic and operating activities at the group to be analyzed and assessed on the basis of their contribution to the enhancement of the company value. That is why EVA is the touchstone for all strategic and capital allocation decisions at the METRO Group. Moreover, the development of EVA is the essential element in the variable

Exhibit 17.2 continued

remuneration system of METRO Group executives. All the way from the Management Board members of METRO AG through to the store managers of the sales divisions, the major portion of their variable income is linked to the delta EVA, i.e. the positive development of EVA, of their respective business units.

EVA established group-wide as the central benchmark for value growth
The ability of METRO Group to continuously increase the economic value of the company bears evidence to the performance potential of the group. It demonstrates that the METRO Group employs its capital successfully. The increase in company value is reflected in a positive EVA. It is achieved when the net operating profit exceeds the necessary cost of the capital to be used for financing the capital employed.

The net operating profit is defined as the operating profit before financing cost but after deduction of taxes on income (NOPAT). The capital cost is the compensation expected by investors for the capital they make available and for their investment risk. To determine the cost of capital, the capital employed is multiplied by the weighted average cost of capital (WACC) i.e. the weighted average of the cost of equity capital and borrowed capital, being calculated by applying the capital asset pricing model (CAPM). The WACC dropped in 2003 to 6.5% as against 7.3% a year earlier. This mainly reflects the improved risk profile of the METRO Group, for example thanks to the continued internationalization and the resulting restriction of dependency on individual markets as well as the lower level of interest at the capital markets. This calculation makes allowance for an equity capital cost rate of 10.0% (previous year 10.8%) and a borrowed-capital cost rate before taxes of 6.0% (previous year 6.3%). The capital employed is made up of the sum total of fixed assets tied up over the period under review of one year and the net current assets including all rent obligations. Hence the following formulae are applicable to calculate EVA:

$$\text{EVA} = \text{NOPAT} - \text{capital cost}$$

or

$$\text{EVA} = \text{NOPAT} - (\text{capital employed} \times \text{weighted average cost of capital rate})$$

EVA is calculated by deducting the cost of capital from the NOPAT of the group and of the sales divisions, respectively. The crucial value for the assessment of the entrepreneurial success is delta EVA, i.e. the difference between the current EVA and that of the previous year.

Consistently applied as a control instrument in corporate practice, EVA will always channel capital into those business units which promise to achieve the highest value added. EVA exercises a resource-allocating function.

EVA and delta EVA at METRO Group in fiscal 2003
In the 2003 fiscal year, the METRO Group achieved a positive EVA of 203.7 million for the first time since the introduction of this control and management tool. The total improvement of 213.2 compared to the prior-year mark results in an amount of 88.3 million from operational business developments and an amount of 124.9 million from structural effects. This means that METRO Group was in a position to employ its working capital so successfully that economic value was added. As in the previous year, the return on capital employed (RoCE) reached the mark of 7.5%. Consequently, it distinctly exceeded the capital cost rate of 6.5% in fiscal 2003. With this development, METRO Group again proved successful in its corporate strategy geared to profitable growth.

The NOPAT of the METRO Group climbed by 114.6 million to 1,541.1 million. At the same time, the capital employed rose by 405.4 million to 20.575.7 million. Aside from the expansive strategy of the METRO Group, the increase in capital is attributable to the lower borrowed-capital cost rate before taxes which causes a theoretical increase in cash values from rental obligations. The cost of capital only rose slightly by 26.4 million to 1,337.4 million due to the lower WACC compared to the previous year's mark. The return on sales referred to the capital employed rose slightly above the comparable prior-year value of 2.8%, at 2.9%. The capital turnover remained constant at 2.6%.

Source: Annual Report Metro (2003), p. 37.

17.8 What the researchers have found

17.8.1 Who uses EVA?

Lovata and Costigan (2002) identified 115 companies in the USA that used EVA as a performance measure for determining management bonuses. They found the information by searching the proxy statements that are published by US companies ahead of the annual general meeting. The proxy statements provide detailed information on directors' remuneration. The researchers then compared these companies with similar companies, in matching industries, which did not use EVA. They found that companies with less insider ownership and a higher proportion of institutional investors tended to employ EVA. The use of EVA was also higher in companies with a lower ratio of research and development to sales. The researchers suggested that this is relevant because Stern Stewart criticise the expensing of research and development expenditure and prefer to regard it as an asset. This adjustment to reported profit is therefore less important where the research and development expenditure is relatively low.

The researchers conclude that EVA is used in a manner that is consistent with agency theory because it is more evident in companies that need ways in which shareholders can monitor the performance of directors.

17.8.2 EVA bonus schemes

Riceman *et al.* (2002) were given access to a company focused on EVA which had some managers on EVA-based bonus schemes and other managers on traditional bonus schemes. Their results indicated that, provided the managers understand the EVA concept, those on the EVA bonus schemes out-perform those on traditional bonus schemes. They found a relatively low understanding of the EVA system, which did not surprise them in the light of the complexities of the EVA adjustment processes.

The measure of management performance was based on a commonly used self-rating performance measure containing nine items. The EVA measure itself focuses on use of capital employed, but it is important that managers also have the general skills to manage people which are measured in the self-rating performance score.

One explanation could be that the kind of managers who have good managerial skills are the kind of managers who will choose a new bonus incentive scheme rather than stick with the traditional version. The researchers defended their work against this potential limitation by focusing on the extent to which the managers understood the reward system, rather than the specific choice of a bonus scheme.

17.8.3 Transfer pricing

Perera *et al.* (2003) reported a study of transfer pricing in a electricity supply company in Australia in the period 1991–2000. Initially, transfer pricing was used within the organisation on a cost-plus basis to encourage changes in behaviour. It was abandoned after five years but reintroduced three years later. The authors found that they could not explain the abandonment and reintroduction in terms of models of transfer pricing. The explanation required an understanding of attitudes to innovation. The abandonment of transfer pricing in 1995 matched the departure of the chief executive officer. Its reintroduction in 1998 used a negotiated market basis to overcome the 'performance gap' perceived in the original 'cost plus' model. The use of a negotiated market price made transactions more transparent and more competitive with outside suppliers and customers.

Oyelere and Turner (2000) carried out a survey of transfer pricing practices in UK banks and building societies. They surveyed 25 large deposit-taking institutions. They received 16 usable replies, of which 14 explained their transfer pricing policies. Branch managers were encouraged to take responsibility for their branch activities by giving notional interest on cash surpluses held and charging notional interest on surplus lending by the branch. Market price was used in transfer pricing by eight respondents, a cost-based method by five and negotiation by one. The sample is relatively small but gives an indication of the range of answers that is possible within one industry.

17.9 Summary

Key themes in this chapter are:

- A **division** is a part of the organisation where the manager has responsibility for generating revenues, controlling costs and producing a satisfactory return on capital invested in the division.
- Performance of divisionalised companies may be measured either by the **return on investment (ROI)** or by the **residual income (RI)**.
- Return on investment is calculated by taking profit controllable by the division as a percentage of the investment in assets which produces that profit.
- Residual income is defined as operating profit less an interest charge based on the assets used and controlled by the division.
- While ROI is more frequently encountered in practice, it may discourage investment projects which would be in the best interests of the organisation as a whole. In situations where the divisional manager has discretion to decide long-term investment in assets, RI may lead to a more useful and relevant measure of performance.
- **Transfer pricing** is used for transactions between departments or divisions within an organisation. Three possible methods of transfer pricing are: cost-based; market based; and negotiated prices.
- **Economic value added** is based on the idea of residual income. For each division the EVA™ is calculated by deducting from divisional profit a cost of capital charge based on the assets of the division.

References and further reading

Lovata, L. and Costigan, M.L. (2002) 'Empirical analysis of adopters of economic value added', *Management Accounting Research*, 13: 215–28.

Oyelere, P.B. and Turner, J.D. (2000) 'A survey of transfer pricing practices in UK banks and building societies', *European Business Review*, 12(2): 93–9.

Perera, S., McKinnon, J.L. and Harrison, G. (2003) 'Diffusion of transfer pricing innovation in the context of commercialisation: a longitudinal case study of a government trading enterprise', *Management Accounting Research*, 14: 140–64.

Riceman, S.S., Cahan, S.F. and Lal, M. (2002) 'Do managers perform better under EVA bonus schemes?', *The European Accounting Review*, 11(3): 537–72.

QUESTIONS

The Questions section of each chapter has three types of question. '**Test your understanding**' questions to help you review your reading are in the 'A' series of questions. You will find the answer to these by reading and thinking about the material in the textbook. '**Application**' questions to test your ability to apply technical skills are in the 'B' series of questions. Questions requiring you to show skills in **'Problem solving and evaluation'** are in the 'C' series of questions. The symbol **[S]** indicates that a solution is available at the end of the book.

A Test your understanding

A17.1 What is a division (section 17.2)?

A17.2 What are the advantages of divisionalisation (section 17.2.1)?

A17.3 What are the disadvantages of divisionalisation (section 17.2.2)?

A17.4 Why is profit not a suitable measure of divisional performance (section 17.2.3)?

A17.5 Explain, in terms of divisional performance evaluation, the difference between using 'profit' and 'profitability' (section 17.3).

A17.6 Define, and explain the use of, return on investment as a measure of divisional performance (section 17.3).

A17.7 Define, and explain the use of, residual income as a measure of divisional performance (section 17.4).

A17.8 Explain the circumstances in which return on investment is preferable as a measure of divisional performance (section 17.5).

A17.9 Explain the circumstances in which residual income is preferable as a measure of divisional performance (section 17.5).

A17.10 Explain what is meant by a 'transfer price' (section 17.6).

A17.11 Explain the methods of transfer pricing (section 17.6.1).

A17.12 Explain what is meant by 'economic value added' (section 17.7).

A17.13 Explain why companies regard economic value added as a useful tool for assessing managerial performance (section 17.7).

A17.14 What have researchers found about the use of EVA (section 17.8.1)?

A17.17 What have researchers found about the use of EVA bonus schemes (section 17.8.2)?

B Application

B17.1 [S]
The following table sets out information in respect of Division X and Division Y.

	Division X	*Division Y*
Amount to be invested in new project	£4m	£4m
Sales	£2m	£2m
Net profit	£1.2m	£0.8m
ROI of existing investment	33%	4%

The cost of borrowing new finance is 10% per annum.

Required
Explain what view the managers of each division might take, depending on the method of performance evaluation applied.

B17.2 [S]
Comfy Chairs Co manufactures a standard office chair in Division A. The standard chair is improved in Division B with extra cushioning and easy-run castors. The manager of Division A has offered Division B a transfer price of £10 per chair to cover variable cost of £8 plus £2 for profit.

The estimated selling prices for a range of weekly output from Division B are as follows:

Estimates of selling prices for different levels of demand

Selling price per chair	*Weekly output of chairs*
£	
24	30
23	40
22	50
21	60
20	70
19	80

The variable costs and fixed costs of each division are as follows:

Variable cost
Division A: £8 per chair
Division B: £7 per chair for additional upholstery and castors
Fixed cost
Division A: £200 per month
Division B: £60 per month

Required
(a) Show that on the basis of a transfer price of £10 per chair the manager of Division B will prefer a level of activity that is not the best solution for the company as a whole.
(b) Show that if the transfer price is equal to the marginal cost (variable cost) of Division A then the manager of Division B will make a choice that is the best solution for the company as a whole.
(c) Discuss the view of the manager of Division A regarding a marginal cost transfer price.

B17.3
Write a short essay (250 words) on the similarities and differences between Economic Value Added and Residual Income.

B17.4
Department A is required to transfer 50% of its output to Department B at cost. Department B adds value to the product and then sells to outside customers. Manager A complains that the performance of Department B is overstated while that of Department A is understated. Manager B says that if a higher transfer price is charged, Department B will reject the output of Department A and seek an external supplier. As an independent expert, you have been asked to recommend a solution to the dispute. Write a short essay (250 words) recommending, with reasons, a fair system of transfer pricing.

B17.5 [S] [CIMA question]
Which of the following would be the most appropriate measure to monitor the performance of the manager of a profit centre?

A Gross profit margin.
B Revenue minus all costs.
C Revenue minus controllable costs.
D Return on capital employed.

CIMA Paper P1 – Management Accounting – Performance Evaluation November 2008, Question 1.6

C Problem solving and evaluation

C17.1 [S]

Musical Productions Ltd, a client of your firm, has two divisions. The Compact Disc division ('CD') assembles and markets portable compact disc players. The Portable Stereo division ('PS') assembles and markets portable tape players.

Budgets for the coming year have been prepared by the managers of each division and agreed by the head office, as follows:

	CD £000s	*PS* £000s
Investment in fixed assets	840	700
Revenue	420	210
Operating expenses	210	140
Profit	210	70

A new investment opportunity has arisen. It could be adopted by either division. The initial investment in fixed assets will be £140,000 and the expected annual operating profits from this investment are £28,000.

Musical Productions Ltd presently uses Return on Investment (ROI) as a criterion for evaluating divisional performance, but the finance director is aware that a close competitor applies the Residual Income (RI) method, using a required rate of return of 18% per annum.

Required

Write a report to the finance director explaining:

(a) the relative merits and limitations of ROI, as compared with RI, as a criterion for evaluation of divisional performance; and

(b) the acceptability of the new investment opportunity from the viewpoint of each divisional manager and of Musical Productions Ltd as an entity, using both ROI and RI methods.

C17.2

You are the accountant of Hill Ltd ('Hill'), an electrical retailer having a chain of shops. Hill has recently acquired two other similar businesses. The sales director has come to you with a problem regarding one particular street which now has three shops owned by Hill, each displaying and selling the same product range. The sales director has approached a local property agent who has given an indication of the likely rental income from each shop, should Hill decide to let any or all of them.

	Shop 1 *10 West Street* 1,000 sq ft £000s	*Shop 2* *25 West Street* 2,500 sq ft £000s	*Shop 3* *54 West Street* 1,500 sq ft £000s
Floor space			
Market value of property	150	500	200
Turnover	300	800	1,000
Variable costs	240	640	800
Property costs (fixed)	5	10	6
Net profit of shop	55	150	194
Expected annual rental income	30	75	45

Further information

1 The average level of working capital for a shop is expected to be 15% of turnover.

2 If all sales were concentrated on shop 2 then the turnover could be as high as £2.1m or as low as £1.6m. In either case, the ratio of variable costs to sales and the amount of fixed property costs would be the same as they are for shop 2 alone.

The sales director has heard that calculating return on investment is the best way of deciding divisional performance but has accepted your offer to compare the return on investment with the residual income, calculated on the basis of an interest rate of 10% per annum. He has asked you to consider whether performance would improve if all sales were concentrated on shop 2 for continued retail use, leaving shops 1 and 3 available for rental.

Required

Prepare a memorandum to the sales director of Hill containing:

(1) Appropriate calculations of return on investment and residual income.
(2) Brief comments explaining the usefulness of the residual income approach in the context of the particular situation faced by Hill.

C17.3 [S] [CIMA question]

This question has 54 minutes available for writing the answer. The Required sections have marks indicated for each sub-section, which is helpful in deciding how much to write and how much time to spend on each part.

The G Group has a divisionalised structure. One of the divisions manufactures engines and one of the other divisions assembles motor cycles. The performance of the Divisional Managers, and consequently their bonuses, is based on the return on capital employed (ROCE) of their individual divisions. Both of these divisions operate in highly competitive markets.

Motor Cycle Division

A key component in a motor cycle is the engine. Engines are readily available on the open market but the division currently buys 3,600 engines each year internally from the Engines Division for £1,375 per engine. The Manager has just received the following message from the Manager of the Engines Division.

Engine Prices: due to recent cost increases the price per engine will now be £1,600.

On receiving the message, the Manager of the Motor Cycle Division contacted several external manufacturers and found one that would supply the required engines at £1,375 per engine. However, she has since received a directive from the Managing Director of the Group that states that she must buy the engines internally.

Engines Division

Following the recent cost increases, the full absorption cost of a motor cycle engine is £1,450. This includes £400 for fixed production overheads. This type of motor cycle engine is one of many different engines produced by the division. The Manager of the Engines Division is aware of the competitive external market that he faces and knows that it will be difficult for him to charge external customers more than £1,375 per engine. However, he is also aware that the rising costs will have an impact on his bonus. He is trying to protect his bonus by passing these costs on to the Motor Cycle Division. He is keen to make as much profit as he can from these internal sales because the division is currently working below capacity.

Required:

(a) Calculate the impact on the annual profits of each of the two divisions and the G Group as a whole, of the directive that the engines must be purchased internally for £1,600 per engine instead of from the external supplier.

(6 marks)

(b) Write a report to the Managing Director of the Group that explains the disadvantages and behavioural implications of using ROCE as a divisional performance measure. Your answer must be based on the above scenario and include an explanation of 'responsibility accounting'.

(12 marks)

(c) The Engines Division has now developed a new 'lean burn' car engine that is sold exclusively to external customers. The production of this engine will utilise the spare capacity of the division and will earn the division a contribution of £40 per machine hour. The demand is so high for the car engines that their production could also use 9,000 machine hours that are currently used to make 1,000 of the motor cycle engines that are transferred to the Motor Cycle Division.

Required:
Explain, with supporting calculations, the minimum and maximum transfer prices that could now be charged for the motor cycle engines.

(7 marks)

(d) Briefly explain three aims of a transfer pricing system.

(5 marks)

(Total for Question Three = 30 marks)

CIMA Paper P1 – Management Accounting – Performance Evaluation November 2008, Question Three

Case studies

Real world cases

Prepare short answers to Case studies **17.1**, **17.2** and **17.3**.

Case 17.4

Obtain the annual report of a large listed company. Look throughout the report for mention of divisions. Then look for any reference to relative performance of divisions, including non-financial performance indicators. Having read the report, prepare a list of financial and non-financial performance indicators which you think would be useful to readers in understanding more about the division within the company.