Chapter 13

Financial performance measures for strategic business units, and reward systems

LEARNING OBJECTIVES

After completing this chapter, you should be able to:

1. calculate an investment centre's return on investment (ROI), and residual income;
2. describe some advantages and limitations of both ROI and residual income as performance measures;
3. explain how to minimise the negative behavioural incentives associated with using return on investment to evaluate performance;
4. calculate residual income (RI) for an investment centre, and describe some advantages and disadvantages of using RI to evaluate performance;
5. understand the various definitions of invested capital and assets and use these to calculate return on investment and residual income;
6. understand the concept of value-based management;
7. evaluate and calculate economic value added (EVA®) as a measure of investment centre performance;
8. understand market value added (MVA) and shareholder value added (SVA) as measures of investment centre performance;
9. understand how reward systems can be designed and used to enhance motivation and individual performance;
10. understand the different forms of performance-related reward systems used in organisations;
11. understand the advantages and disadvantages associated with group versus individual rewards; and
12. understand the importance of the timing of payment of rewards on motivation.

In Chapter 12, we introduced decentralisation and responsibility accounting, and examined the nature of financial performance reports for responsibility accounting units. In this chapter, we will extend that discussion by looking financial *performance measures* used in investment centres. That is, we will consider the advantages and disadvantages of measuring financial performance using return on investment (ROI), residual income (RI), profit and economic value added (EVA®)[1]. In Australian organisations, linking remuneration to individual or group performance is becoming more widespread. In this chapter, we will also consider the various forms of reward systems that can be used to enhance motivation and goal congruence.

Financial measures in investment centres

As well as relying on detailed reports to communicate the financial performance of various responsibility centres, summary financial performance measures are commonly used to assess the performance of profit centres and investment centres. While some measure of profit is used to measure the performance of profit centres, for investment centres many firms employ measures that are based on profit and invested capital. We will illustrate these measures using the business and management structure of Comalco, Australia's major integrated aluminium producer.

Responsibility accounting at Comalco Ltd

Comalco Ltd is an aluminium company that supplies bauxite, alumina and aluminium to domestic and international markets. Like other companies within the Rio Tinto group, Comalco consists of a series of investment centres, each headed by a managing director.

The philosophy of Comalco is to regard each of its investment centres as a stand-alone business. The managing director of each of these 'business units' is given wide decision-making authority by corporate management. This allows them to manage their business with little day-to-day interference, but in accordance with policies and authorities specified by and delegated from headquarters. The following business units of Comalco form a vertically integrated operation:

- *Bauxite mining* The largest Comalco bauxite mine is at Weipa in Queensland. Bauxite is supplied to the alumina refineries in which Comalco has an interest, as well as to external customers.
- *Alumina refining* Bauxite is processed into aluminium powder (alumina) and sold to smelting operations within Comalco, as well as to external customers.
- *Smelting* Alumina is processed into aluminium for distribution to a variety of customers. The main smelters are at Boyne Island in Queensland, at Bell Bay, in Tasmania, and Tiwai Point in New Zealand.

In Comalco, as in many large, decentralised businesses, corporate management uses a series of performance measures to evaluate the performance of each business unit. An important financial measure is *return on investment*.

In the following sections we will examine return on investment and other financial measures that can be used to evaluate the financial performance of investment centres.[2]

[1] EVA® is a registered trademark of the consulting company Stern Stewart & Co. (which developed the measure) in Australia, the US, and other countries.

[2] We have structured the examples using products and processes from the aluminium industry. We have also used terms likely to be consistent with the investment centre activities of a company such as Comalco; however, the issues and circumstances are illustrative only and bear no resemblance to any of the actual financial data of that company.

Return on investment

LO1
LEARNING OBJECTIVE

Return on investment (ROI) is defined as follows:

$$\text{Return on investment (ROI)} = \frac{\text{profit}}{\text{invested capital}}$$

return on investment (ROI) a financial measure calculated as profit divided by invested capital

Invested capital is the assets that the investment centre has available to generate profit.[3] Let's assume that in the previous year, the Alumina Refining and Smelting businesses generated profits of $32 million and $48 million on investments of $400 million and $800 million respectively. The return on investment for the Refining and Smelting businesses can be calculated as follows:

Invested capital the assets that the investment centre has available to generate profit

$$\text{Refining} = \frac{32}{400} = 0.08 \text{ or } 8\%$$

$$\text{Smelting} = \frac{48}{800} = 0.06 \text{ or } 6\%$$

Notice how the ROI calculation for each investment centre takes into account *both investment centre profit and the capital invested* in that business unit. This is important. Suppose each business was evaluated only on the basis of its profit. Smelting reported a higher profit than Refining; however, this does not necessarily mean that Smelting had the better financial performance, as it used a much larger amount of invested capital to earn that profit. The Smelting business had *double the assets* of the Refining business.

The focus of ROI is not on how much profit each investment centre earned, but rather on how effectively each investment centre used its invested capital to earn a profit.

Focusing on the components of ROI

The ROI formula can be expanded as follows:

$$\text{Return on investment} = \frac{\text{profit}}{\text{invested capital}}$$

$$= \frac{\text{profit}}{\text{sales revenue}} + \frac{\text{sales revenue}}{\text{invested capital}}$$

Expanding the ROI formula highlights the components of return on investment. Profit divided by sales revenue is called the **return on sales**, and is expressed as a percentage. This term measures the percentage of each sales dollar that remains as profit after all expenses are covered. Sales revenue divided by invested capital is called the **investment turnover**, and is expressed as a number of times or the number of sales dollars generated for every dollar of invested capital (assets). The return on sales, investment turnover and ROI for the two business units are calculated below:

return on sales the percentage of each sales dollar that remains as profit after all expenses are covered; calculated as profit divided by sales revenue

investment turnover the number of sales dollars generated by every dollar of invested capital (assets); calculated as sales revenue divided by invested capital

	Return on sales $'000 000s	×	**Investment turnover $'000 000s**	= **ROI**
Refining	$\frac{32}{600}$	×	$\frac{600}{400}$	= 0.08 or 8%
Smelting	$\frac{48}{900}$	×	$\frac{900}{800}$	= 0.06 or 6%

[3] Within the ROI formula, invested capital can also be called total assets or investment.

The Refining business's return on sales is 5.3 per cent ($32 million profit ÷ $600 million sales revenue). Thus, each dollar of sales resulted in about 5 cents profit. The business unit's investment turnover was 1.5 times ($600 million sales revenue ÷ $400 million invested capital). Thus, for Refining, $1.50 of sales revenue was generated by each dollar of capital invested.

Improving ROI

How could the Refining business improve its return on investment? Since ROI is the product of return on sales and the investment turnover, ROI can be improved by increasing either, or both, of these two components. For example, if the return on sales increased to 6 per cent, while the investment turnover remained constant at 1.5 times, the ROI would climb from 8 per cent to 9 per cent:

$$\begin{aligned}\text{New ROI} &= \text{return on sales} \times \text{investment turnover} \\ &= 6\% \times 1.5 \text{ times} \\ &= 9\end{aligned}$$

How might the Refining managers increase the return on sales to 6 per cent? They could increase profit to $36 million on sales of $600 million ($36 million ÷ $600 million = 6% return on sales). This could be achieved in several ways, including increasing selling prices, increasing sales volume, and decreasing expenses. In the Refining business, prices might be set by reference to international pricing mechanisms and not influenced by business unit managers. However, there are several ways that sales volume could be increased. On the expense side, care should be taken in cost efficiency drives to ensure that there are no adverse effects on product quality or customer service. Otherwise, sales may be lost in the future.

An alternative way of increasing the Refining business's ROI would be to increase its investment turnover. If the investment turnover could be increased to 2 times, while the return on sales remained constant at 5.3 per cent, the business unit's ROI would climb from 8 per cent to 10.6 per cent:

$$\begin{aligned}\text{New ROI} &= \text{return on sales} \times \text{investment turnover} \\ &= 5.3\% \times 2 \text{ times} \\ &= 10.6\%\end{aligned}$$

There are two ways to improve investment turnover: increase sales revenue or reduce the business unit's invested capital. There are several ways in which the level of invested capital can be reduced. The business unit manager can reduce inventories, or sell plant or other non-current assets. However, reducing inventories may have adverse effects on prompt deliveries to customers. Disposal of assets may have longer-term consequences of reduced capacity, which may reduce future returns.

While we can isolate ROI into the two components of return on sales and investment turnover, any actions taken with the *sole* purpose of making these ratios more favourable can have adverse effects on performance in future years.

The advantages of ROI

LO2
LEARNING OBJECTIVE

ROI is used by many decentralised businesses in Australia and overseas to evaluate the performance of investment centres. It has some positive features:

- It encourages managers to *focus on both profits and the assets required to generate those profits*. Thus, managers of investment centres must consider the relationships between revenues, costs and invested capital. It discourages excessive investment in assets, which may occur if performance is measured only on absolute profit.

- ROI can be used to *evaluate the relative performance of investment centres*, even when those business units have different scales of operations. Thus, we can compare the ROI of a small business with that of a large business.

The limitations of ROI

Against these advantages, a significant emphasis on achieving ROI can encourage dysfunctional decisions:

- It can encourage managers to focus on *short-term financial performance, at the expense of the long term*. Many ways of increasing ROI can result in reduced performance in the future. Excessive cost-cutting activities can improve short-term ROI, but weaken the business's future competitiveness. For example, research and development, or training expenditure, can be deferred. Reducing employee numbers can increase profit but may affect product quality or the level of customer service.
- ROI can encourage managers to *defer asset replacement*. Asset replacement may be deferred (particularly when those old assets are fully written off), as any new assets would boost the size of the invested capital. Deferring the placement of assets may improve ROI in the short term, but erode the competitiveness and profits of the business in later years. Disposing of productive assets can decrease the investment base, but also reduce the capacity of the business.
- ROI may *discourage managers from investing in projects* that are acceptable from the total organisation's point of view. This will occur where the project decreases the investment centre's ROI. An example of this problem is provided below.

The disincentive to invest in new projects

Let's suppose the manager of the Smelting business is considering investing in modifications to one of the smelters. The modifications will cost $100 million, and will save the business $4.5 million in operating expenses in the first year. The accountant of the Smelting business has calculated that the investment will yield a return of more than 8 per cent over its life, which is greater than the minimum of, say, 4 per cent rate of return that headquarters might expect on investments of this nature. There may also be strong qualitative reasons for making this investment. It might reduce waste emissions, and so would satisfy new, soon-to-be-enacted, environmental standards. If the Smelting business does not invest in the modifications, the continuing emission by the smelter may be viewed adversely by the local community. Viewed from the perspective of the company as a whole, the investment is desirable. However, how will the project affect the ROI of the business unit in the first year of operation?

Smelting Return on Investment (Year 1)

Without investment $'000 000s	With investment $'000 000s
$\frac{\$48}{\$800} = 6\%$	$\frac{\$48 + \$4.5}{\$800 + \$100} = 5.8\%$

If the performance of the manager of the Smelting business is evaluated predominantly based on his business unit's ROI, he would have an economic incentive not to invest in the project. Without the modifications, the business unit ROI is 6 per cent, but if he proceeds with the project, the business unit ROI will fall to 5.8 per cent in the first year. While the modifications may provide a larger ROI in years to come, the manager may be rewarded

on current ROI, rather than future ROI. Many managers are more concerned with the *immediate* financial performance rather than long-term performance.

Even though the investment may satisfy headquarters' economic criteria for new investments, and promote environmental standards, the Smelting manager may be reluctant to acquire the new equipment on economic grounds alone. Thus, when ROI is used as a primary measure of performance evaluation, goal congruence problems can arise.

Minimising the behavioural problems of ROI

LO3 LEARNING OBJECTIVE

The problems associated with ROI can be minimised in the following ways:

- Using ROI as only one of a series of performance measures that focus on both short-term and long-term performance. This approach is taken by many companies. A more balanced set of measures (both financial and non-financial) can counter the dysfunctional incentives associated with ROI. These measures are examined in Chapter 14.
- Considering alternative ways of measuring invested capital, so that the replacement of an asset is less likely to result in a reduction of ROI. Many businesses measure invested capital at its written-down book value, which is often low at the time of asset replacement. If alternative measures of invested capital, such as market value or replacement cost are used, the replacement decision will not cause a major change in the investment base. This is considered in a later section of this chapter.
- Using alternative financial measures, such as residual income or economic value added.

Residual income

LO4 LEARNING OBJECTIVE

One suggested solution for overcoming the problems associated with ROI is to use a measure of residual income to evaluate performance. **Residual income** is defined as follows:

$$\text{Residual income} = \text{profit} - (\text{invested capital} \times \text{imputed interest rate})$$

where the imputed interest rate = the firm's required rate of return.

residual income the amount of profit that remains (as a residual) after subtracting an imputed interest charge

imputed interest charge the required rate of return that the firm expects of its investments, which is based on the organisation's cost of capital

weighted average cost of capital is the weighted average of the cost of funds from all sources of borrowings and equity

Unlike ROI, residual income is a dollar amount, not a ratio. It is the amount of an investment centre's profit that remains (as a residual) after subtracting an *imputed interest charge*. The **imputed interest charge** is based on the required rate of return that the firm expects of its investments, and is usually based on the organisation's *weighted average cost of capital*. The **weighted average cost of capital** is the weighted average of the cost of funds from all sources of borrowings and equity.[4] In some firms, investment centres that have different levels of risk may be assigned different imputed interest rates.

The advantage of residual income

To demonstrate the advantage of residual income over ROI, we will revisit the example of the modification project by the Smelting business. The residual income of the Smelting business is calculated below, both with and without the investment in the new project. We will assume that the imputed interest rate is 4 per cent.

Notice that the Smelting business's residual income will *increase* if the modifications are undertaken. If the managing director were evaluated on the basis of residual income

[4] The calculation of the weighted average cost of capital is beyond the scope of this book, and further information can be found in Peirson et al. (2002).

instead of ROI, there would be an incentive to make the investment. Thus, *goal congruence* may be achieved when residual income is used to measure business unit performance.

Why did residual income facilitate goal congruence whereas ROI did not? The residual income formula incorporates an important piece of data that is excluded from the ROI formula: the organisation's required rate of return on invested capital. Any investment that, in any year, has a return that exceeds the minimum required rate of return will yield a positive residual income.

Smelting Business's Residual Income

	Without investment $'000s		With investment $'000s	
Business unit profit		$48 000		$52 500
Less Imputed charge:				
Invested capital	$800 000		$900 000	
× imputed interest rate	× 0.04		× 0.04	
Imputed interest charge		32 000		36 000
Residual income		$16 000		$16 500

Disadvantages of residual income

Residual income has a serious drawback: it should not be used to compare the performances of different-sized businesses, because as a dollar measure it incorporates a bias in favour of larger businesses. Thus, when evaluating the performance of investment centres of different sizes, ROI is preferred over residual income. However, because of its short-term focus and its ability to be manipulated, ROI should be used as part of a range of measures.

Like ROI, residual income can also encourage a short-term orientation, but it is often considered superior to ROI when evaluating capital expenditure projects.

The term *residual income* is not widely used in Australian companies (Skinner, 1990). However, in recent years, a series of *shareholder value* measures have emerged, one of which (EVA®) is similar to the residual income measure. This will be discussed in a later section of this chapter.

Measuring profit and invested capital

LO5
LEARNING OBJECTIVE

How should profit and invested capital be measured for calculating ROI and residual income? There are several approaches used in practice, and the choice may result in different behavioural incentives. While it can be argued that some definitions are superior to others, an important issue is that a particular measure is clearly defined and is used consistently.

How should we define 'invested capital'?

We will focus on the Smelting business to illustrate several alternative approaches to measuring invested capital. Exhibit 13.1 lists some illustrative assets and liabilities of the Smelting business at the end of the previous year. Notice that there are no non-current liabilities, such as debentures. Although the company as a whole may have long-term debt, it would not be meaningful to assign portions of that corporate debt to the company's individual investment centres, such as the Smelting business; the managers in those businesses do not manage or control these liabilities.

EXHIBIT 13.1 Assets and liabilities of the Smelting business*

		$'000s
Assets		
Current assets (cash, receivables, inventories etc.)		$185 000
Non-current assets (land, buildings, plant, equipment etc.):		
Acquisition cost	$980 000	
Less Accumulated depreciation	280 000	
Net book value		700 000
Plant under construction		15 000
Total assets		$900 000
Liabilities		
Current liabilities (accounts payable, provisions for employee entitlements)		$110 000

* These assets and liabilities are fictional.

Which assets should be included?

Exhibit 13.1 shows that Smelting had balances at the end of the financial year of $185 million in current assets, $700 million in non-current assets such as plant and equipment, and $15 million tied up in a plant under construction. In addition, the balance of current liabilities was $110 million.

There are several ways of defining *invested capital*:

- *Total assets* This measure of invested capital is appropriate if the investment centre manager is responsible for decisions about all the assets of the investment centre, including non-productive assets.
- *Total productive assets* In some companies, investment centre managers may be directed by corporate management to retain non-productive assets, such as vacant land or construction in progress. In such cases, it is appropriate to *exclude* those non-productive assets from the measure of invested capital. Under this alternative, $885 million would have been used in the ROI and residual income calculations (total assets of $900 million less $15 million for the plant under construction).
- *Total assets less current liabilities* In some companies, managers in investment centres manage certain short-term liabilities, including short-term bank loans and employee entitlements such as the provision for long-service leave. In these cases, invested capital can be measured as total assets less current liabilities. This approach encourages the managers to minimise resources tied up in assets and to manage the use of short-term credit to finance operations. If this approach had been used by the Smelting business, the invested capital would have been $790 million (total assets of $900 million less current liabilities of $110 million).

Average or end-of-year balances

ROI and residual income are usually calculated for a period of time such as a year or a quarter, and, during that period, asset balances will change. Therefore, it is more accurate to use *average* balances of assets to calculate ROI and residual income rather than use end-of-year balances. For example, if the Smelting business's invested capital (based on total assets) was $800 million at the start of the year, and $900 million at the end of the year, we would use the average invested capital of $850 million (($800 million + $900 million) ÷ 2) in the ROI and residual income calculations.

Allocating assets to business units

Some companies manage certain assets centrally, although these assets are needed to conduct operations in the investment centres. Common examples are cash and accounts receivable. Investment centres need cash in order to operate, but many companies control cash balances centrally in order to minimise their total cash holdings and maximise returns on invested funds.

When certain assets are controlled centrally, these asset balances may be allocated to investment centres so that they can be reported in their individual statements of financial position. For example, cash may be allocated based on the budgeted cash needs in each investment centre, or on the basis of business units' sales. Accounts receivable may be allocated on the basis of sales. If investment centre managers are able to manage or control these allocated assets, there is an argument for including them as part of invested capital.

Asset measurement: original cost, net book value or market value?

Another decision to make in choosing a measure of invested capital is whether to use original acquisition cost, net book value, or market value when measuring non-current assets.

Using the data in Exhibit 13.1, if net book value is used, the invested capital would be $900 million. However, if gross book value is used, invested capital would be $1180 million. There are advantages and disadvantages associated with using either gross book value or net book value as a measure of invested capital.

Advantages of net book value (disadvantages of gross book value)

- Using net book value maintains consistency with the statement of financial position prepared for external reporting purposes.
- Using net book value to measure invested capital is also consistent with the definition of profit, which is used in the ROI and residual income calculations. In calculating profit, the current period's depreciation on non-current assets is deducted as an expense.

Advantages of gross book value (disadvantages of net book value)

- The usual ways of calculating depreciation, such as straight-line or diminishing value methods, are arbitrary. Hence they should not be allowed to affect ROI or residual income calculations.
- When non-current assets are depreciated, their net book value declines over time. Using net book value as a measure of invested capital may result in a misleading increase in ROI and residual income across time. It may provide a *disincentive to invest in new equipment*. This will be examined in more detail.

Incentives created by using net book value

Exhibit 13.2 provides an example of the ROI that rises steadily across a five-year horizon if invested capital is measured at net book value. However, using gross book value eliminates this problem. Note that if the diminishing value method is used instead of the straight-line method, the increasing trend in ROI would be even more pronounced!

The increasing ROI that results when using the net book value of assets is misleading. Has performance actually improved? Probably not! The increase in ROI is solely the effect of the invested capital reducing due to the accounting method of depreciation. However, this phenomenon can provide incentives for investment centre managers to make dysfunctional decisions. Managers may defer investing in new equipment, which, from a

competitive perspective, may be a desirable investment. An investment centre's assets may become obsolete, making it uncompetitive.

One way of preventing these problems is to use the *market value* of assets. As many Australian companies periodically update the value of their non-current assets, relatively current data are often available.

EXHIBIT 13.2 Increase in ROI over time (using net book value)

Acquisition cost of equipment	$500 000
Useful life	5 years
Salvage value at end of useful life	0
Annual straight-line depreciation	$100 000
Annual profit generated by asset (before deducting depreciation)	$150 000

Year	Profit before depreciation	Annual depreciation	ROI Profit net of depreciation	Average Average net book value*	ROI based on net book value†	gross book value	based on gross book value
1	$150 000	$100 000	$50 000	$450 000	11.1%	10%	$500 000
2	150 000	100 000	50 000	350 000	14.3%	10%	500 000
3	150 000	100 000	50 000	250 000	20.0%	10%	500 000
4	150 000	100 000	50 000	150 000	33.3%	10%	500 000
5	150 000	100 000	50 000	50 000	100.0%	10%	500 000*

* Average net book value is the average of the beginning and ending balances for the year in net book value.

In year 1, for example, the average net book value is:

$$\frac{\$500\,000 + \$400\,000}{2}$$

† ROI rounded to nearest tenth of 1 per cent.

Measuring profit

As described in Chapter 12, there are several different definitions that can be used to measure the profit of investment centres (or profit centres). Exhibit 13.3 illustrates these measures for an investment centre. The *profit margin controllable by the investment centre manager* (line 2) may be considered a suitable profit measure, if the focus is to measure the *performance of the manager* of the investment centre. Remember that the overall objective of the performance measure is to provide incentives for goal-congruent behaviour. Some managers believe that no performance measure can motivate managers to make decisions about costs they cannot control.

Evaluating an investment centre as a viable economic investment is a different matter altogether. For this purpose, the *profit margin attributable to the investment centre* (line 3) should be used to calculate the investment centre ROI or residual income.

Remember, an important reason for considering business and managerial performance separately is to prevent penalising good managers who are asked to manage poorly performing divisions or departments.

Other profit definitions

The other measures of profit shown in Exhibit 13.3 (lines 4, 5 and 6) are also used by some companies. The rationale behind these profit measures is that all corporate costs have to be covered by the operations of the investment centres. Allocating corporate costs, interest and income taxes to the investment centres makes investment (or profit) centre managers aware of these costs.

EXHIBIT 13.3 Various definitions of profit

	Sales revenue	$9 000 000
	Variable expenses	3 800 000
(1)	Divisional contribution margin	5 200 000
	Fixed expenses controllable by investment centre manager	1 600 000
(2)	Profit margin controllable by investment centre manager	3 600 000
	Fixed expenses, attributable to investment centre, but controlled by others	1 200 000
(3)	Profit margin attributable to investment centre	2 400 000
	Common fixed expenses, allocated from corporate headquarters	400 000
(4)	Investment centre profit before interest and taxes	2 000 000
	Interest expense allocated from corporate headquarters	250 000
(5)	Investment centre profit before taxes	1 750 000
	Income taxes allocated from corporate headquarters	700 000
(6)	Investment centre net profit	$1 050 000

Measures of shareholder value

LO6 LEARNING OBJECTIVE

In Chapter 1, *shareholder value* (sometimes called *economic value*) was defined as improving the worth of the business from the shareholders' perspective. Shareholders are interested in increased profitability, increased share price and increased dividends, and management is charged with the responsibility of delivering these outcomes. Similarly, other types of business owners are concerned with profits and a return on their investment. Throughout the various chapters in this book we have considered how management accounting can assist managers in creating shareholder value. However, we have not considered *how value may be measured and used* to manage performance within firms. The rationale behind measuring shareholder value is to determine whether a business is generating value for its shareholders or owners.

When organisations use shareholder value analysis to manage their business, they are said to be practising **value-based management (VBM)**. VBM is a framework for making key business decisions that add economic value to the business. A particular strategy or decision creates shareholder value, where the return on capital is greater than the cost of capital. Thus, managers need to understand how to generate, evaluate and select business strategies, or undertake activities that will increase the value of the firm. This involves being able to measure the value created from decisions, such as whether to acquire a new business or move into new markets. Product lines or segments of a business that are not providing sufficient value may be deleted and the outcomes of a proposed project or asset acquisition can be analysed in terms of value creation.

value-based management (VBM) a framework for making key business decisions that add economic value to the business

There are four aspects of VBM: valuation, strategy, finance and corporate governance (Morin & Jarrell, 2001). We will examine each of these aspects.

Valuation

Value can be measured in several ways. Discounted cash flow (DCF) models are commonly used to measure value. (Chapters 20 and 21 contain details of how to calculate DCF.) The use of DCF to measure shareholder value makes sense, as investors and the capital markets often value a business based on the future cash flows of the business, discounted by the risk associated with those cash flows. (In some cases, it is difficult to measure such cash flows, so surrogates may be used. For example, the market capitalisation of the company, that is, the market price per share multiplied by the number of shares on issue, may be used.)

value drivers activities or actions that create value for a business

To increase the value of firm, managers need to understand the *drivers* of value. **Value drivers** are the activities or actions that create value for a business. These drivers include:

- *Spread*, which is the degree to which a firm can earn a return that is greater than its cost of capital;
- *Growth* in funds available to invest in value-creation activities;
- The *sustainability* of those funds over many years; and
- The *cost of capital*.

The first three drivers maximise cash flow, which interacts with the cost of capital to increase shareholder value.

Strategy, finance and corporate governance

The other three aspects of VBM are strategy, finance and corporate governance. Strategic decisions have a substantial and continuing impact on the value of a business. Valuation techniques can assist managers to compare the value created by alternative differentiation or cost strategies. (The various types of business strategies are discussed in Chapter 1.) Financial policies, such as the adoption of particular financial and capital structures that reduce the cost of capital, will also influence value creation.

Corporate governance involves selecting and implementing systems that contribute to value creation. Performance measures can be developed to measure the value-creating performance of business units and managers. Managerial reward systems can be designed to link managers' compensation to their performance in creating value, as well as to guide managers' value creation activities. The formulation of performance measures under VBM will be discussed below, followed by a discussion of compensation systems. There are several performance measures used by companies in Australia and overseas within the VBM framework. These include economic value added (EVA®), market value added (MVA), and shareholder value added (SVA),

Economic value added (EVA®)

LO7 LEARNING OBJECTIVE

Economic value added (EVA®) [Economic value added (EVA®) a measure of the value created over a single accounting period, measured by the spread between the return generated by business activities and the cost of capital] measures the value created over a single accounting period, measured by the spread between the return generated by business activities and the cost of capital. This can be stated as:

> EVA® = net operating profit after tax − (capital employed × weighted average cost of capital)[5]

Thus, EVA® can be calculated as the company's net operating profit after tax (NOPAT), less a charge based on the book value of the assets of the business (invested capital) multiplied by the firm's weighted average cost of capital (Stewart, 1991).

Let's assume that in 2003, the profit after tax for the Cloncurry Manufacturing Company is $81 600, and the capital employed is $300 000. The company obtains its funds from long-term debt and equity, and the weighted average cost of capital is estimated to be 6 per cent.

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[5] This formula is derived from the following:

EVA® = (rate of return − cost of capital) × capital employed

= (rate of return × capital employed) − (cost of capital × capital employed)

Given that the rate of return on capital employed = $\frac{\text{net profit after tax}}{\text{capital employed}}$

rate of return × capital employed = net profit after tax

∴ EVA® = net operating profit after tax − (capital employed × weighted average cost of capital)

$$\begin{aligned}\text{EVA®} &= \text{net profit after tax (NOPAT)} - (\text{capital employed} \times \text{weighted average cost of capital}) \\ &= 81\,600 - (300\,000 \times 0.06) \\ &= 81\,600 - 18\,000 \\ &= \$63\,600\end{aligned}$$

Thus, the Cloncurry Manufacturing Company has generated $63 600 of value for shareholders during the year.

You may notice that the formula for EVA® resembles that of *residual income*. However, the definition of net profit after tax is not necessarily the same as the accounting measure of profit used in the residual income formula. Adjustments may need to be made to convert accrual accounting data to cash-based figures, and to eliminate the effects of gearing. (There are up to 164 possible adjustments that may be made![6]) It is beyond the scope of this book to outline these adjustments in detail. In the EVA® formula, *capital employed* is often calculated as the company's total assets, less non-interest bearing current liabilities, while the *weighted average cost of capital* is the weighted average of the cost of debt (interest) and equity.

What strategies can management use to maximize EVA®? To improve EVA®, managers can:

- Improve profitability without employing any additional capital;
- Borrow additional funds if the firm can earn profits on those funds which are in excess of the cost of borrowing (i.e., if spread is positive); and
- Pay off debt by selling assets, as long as the savings in reduced interest are greater than profits lost though reducing the asset base (Barbara & Coyte, 1999).

These strategies are similar to those that can be used to improve residual income. However, the adjustments to NOPAT are thought to result in more accurate indications of economic value.

The use of EVA® does have its downside. EVA® suffers from the same limitations as ROI and RI, in that it is a single period measure of performance. Thus, the potential for manipulation and a short-term orientation can still arise. The value of a business is a function of several years of managerial decision making and firm performance. As with ROI, the use of the book value of assets may result in decisions not to invest in assets, due to the unfavourable impact of depreciation in the early years of use. Unlike some of the other VBM measures, EVA® does not take a future-oriented perspective. The 'Real life' below provides some examples of how several Australian companies use EVA®.

Market value added (MVA)

LO8
LEARNING OBJECTIVE

Some organisations prefer to calculate the economic value of their firm *at a point in time*. The value of a company is equal to the difference between the market value of the company and the book value of the company. This measure is called **market value added (MVA)**, and is defined as follows:

$$\text{MVA} = \text{market value of the company} - \text{book value of the company}$$

market value added (MVA) the economic value of a firm at a point in time, calculated as the difference between the market value of the company and the book value of the company

Shareholder Value Added (SVA)

Another measure is economic value is **shareholder value added (SVA)**, which is defined as the corporate value of the company, less the market value of the debt (Rappaport, 1986).

$$\text{Shareholder value} = \text{corporate value} - \text{the market value of debt}$$

shareholder value added (SVA the *corporate value* of the company, less the debt

[6] Stern Stewart & Co., the consulting firm that developed EVA® (Stewart, 1991), state that in practice only a few adjustments are typically undertaken. These include capitalising research and development expenditure and operating lease expenses, and adding back amortisation of goodwill.

corporate value the present value (PV) of both the future cash flows plus the residual value of the business

residual value the value of the firm at the end of the forecast period

The **corporate value** of the company is calculated as the present value (PV) of the future cash flows and the residual value of the business. The PV of cash flows from operations is for a certain forecast period (e.g. ten years). The **residual value** of the business is the value of the firm at the end of the forecast period. The weighted average cost of capital is used to discount these amounts to their present value.[7]

There are other forms of shareholder value measures, including Total Shareholder Returns (TSR) and Total Business Returns (TBR) (promoted by the Boston Consulting group). Further details can be found in Barbara & Coyte (1999), Ehrbar (1998) and Morin & Jarrell (2001).

real life

EVA® and performance

Many Australian companies use EVA®, including James Hardie Industries, National Australia Bank, ANZ and Telstra.

In 1996, James Hardie Industries Ltd introduced EVA® to its operations in Australia, New Zealand, the US and the Philippines. The company had previously followed their own 'managing for value' philosophy, so EVA® was used to link executive reward systems to value creation. According to Keith Barton, the Managing Director of James Hardie, the introduction of EVA® into the company focused people's minds on the short-term and the long-term, in terms of shareholder value creation. It also became the focus for decision making, with EVA® being reported in monthly management reports. A specialised team was created to assist managers in business units to implement management processes that encouraged value-creating behaviour, and to identify the most value-creating products and services. Barton claims that EVA® has led to improved productivity, improved management systems and greater levels of co-ordination and co-operation within and between business units.

Courtesy of the Australian Broadcasting Association

Joe Bloggs meets the operator of the year

Source: Stern Stewart (1999)

LO9
LEARNING OBJECTIVE

reward system processes, practices and systems that are used to provide levels of pay and benefits to employees

Reward systems

To encourage goal congruence, part of an employee's remuneration may be tied to achieving certain levels of performance. A **reward system** consists of processes, practices and systems that are used to provide levels of pay and benefits to employees. At any level of the organisation, employee remuneration may consist of a base salary, performance-related pay, and non-financial rewards (such as a better computer or office, overseas travel, or dinner at a restaurant for the family!).

[7] The calculation of present values is described in Chapter 20.

Tying some part of employee rewards to achieving financial or non-financial performance targets can provide strong positive incentives for managers and employees to maximise their performance. However, if the performance measurement system is not designed correctly, there may be incentives to manipulate results. As we saw earlier in this chapter, an excessive emphasis on achieving a high ROI can lead to dysfunctional decisions.

Designing a reward system that encourages goal-congruent behaviour is complex. It is difficult to reward managers and employees for *past actions and decisions* while at the same time encouraging them to *improve their future performance*. Issues to consider include the composition of the incentive payments (cash, shares or other means), whether rewards are to be tied to individual or group performance achievements, and the timing of payment of rewards (immediate and deferred). Managers also need to understand what types of rewards motivate their employees.

Intrinsic and extrinsic rewards

Rewards often take the form of cash bonuses, or shares in the company, but in some organisations, employees are motivated by intrinsic rewards. **Intrinsic rewards** are intangible and arise from the positive experiences of being satisfied with performing well. These rewards come from *inside the employee*. Thus, an employee can feel rewarded simply by doing a good job, and from knowing that there is opportunity for growth and advancement. Within some organisations, intrinsic rewards may be enough to encourage employees to perform well.

intrinsic rewards intangible rewards that arise from the positive experiences of being satisfied with performing well

How can organisations encourage employees to value intrinsic rewards? Intrinsic rewards cannot be 'given' to employees. Managers can design jobs and career structures to encourage employee satisfaction. However, this may not be successful unless they can also encourage the development of an organisational culture where feelings of personal achievement and the intangible aspects of work are valued. This is no easy task!

Extrinsic rewards are rewards that are given to employees. These include cash bonuses, share options, plaques and promotions.

extrinsic rewards rewards that are given to employees

How do managers choose which form of reward to emphasise? The effectiveness of either form of reward will depend on the nature of the organisation and the preferences of the people who work there. It will also depend on management's view about what motivates employees. Assumptions must be made about the types of rewards that will motivate managers at all levels of the organisation. For example, are all employees motivated by cash bonuses, or do some people prefer non-cash rewards?

Theories of motivation

There are several theories of motivation, which can guide managers' thinking about designing reward systems. We will consider two of these briefly.

Herzberg's theory of work motivation

Herzberg suggested that there are two factors that affect employee behaviour (Herzberg, 1968). **Hygiene factors** are those factors that provide the necessary setting for motivation but do not themselves motivate employees. Examples include working conditions, wage levels, rules and regulations, and relationships with colleagues. Employees need a certain level of these factors to prevent dissatisfaction. **Motivators** are factors that relate to job content and will provide motivation. Examples include achievement, recognition, the nature of the work, responsibility and opportunities for growth.

hygiene factors factors that provide the necessary setting for motivation but do not themselves motivate employees

motivators factors that relate to job content and provide motivation

Thus, employees need a certain level of hygiene factors to prevent dissatisfaction. However, adding more of these factors will not result in motivation. Only the motivators will do this.

While this theory has been criticised, it does highlight the fact that many people are not motivated just by increased pay and conditions—attention needs to be paid to their 'higher-order needs'.

Expectancy theory

expectancy theory a theory that assumes that employee motivation is a result of the relationships between three elements: expectancy, instrumentality and valence

Another interesting theory of motivation is expectancy theory (Vroom, 1964). **Expectancy theory** states that employee motivation is a result of the relationships between three elements. These elements will be explained in the context of performance measurement systems:

- *Expectancy* The individual's perceptions that the effort he or she puts into a task will lead to a particular outcome (as measured by the performance measure);
- *Instrumentality* The likelihood that achieving the performance measure will lead to a reward; and
- *Valence* The preference that the employee has for the particular reward.

Motivational theories and rewards

How can these theories of motivation help managers who design reward systems?

Expectancy theory suggests that individuals will be motivated to perform when they perceive a close linkage between their effort and achieving the performance measure (high level of expectancy), when they have confidence that the reward will be provided (high instrumentality), and when they value the particular reward that is offered (high valence). Thus, the effectiveness of a reward system in motivating employees may depend on whether employees perceive that the performance target is achievable and will result in a reward that is valued. Some employees may value intrinsic rewards, while others may value more explicit extrinsic rewards.

Herzberg's theory suggests that it is not hygiene factors but factors such as achievement, recognition and responsibility that are strong motivators. These are intrinsic rewards. But expectancy theory suggests that employees may be motivated only if they value certain rewards. As noted above, the culture of the organisation must encourage the appreciation of intrinsic rewards for them to be valued and considered motivational by employees. Herzberg also suggests that extrinsic rewards are not motivators but provide only the setting for these intrinsic rewards. However, the proliferation of performance-related pay systems in Australian companies suggests that many managers believe that extrinsic rewards are motivational!

We will now focus on the various ways in which rewards may be distributed as part of employee remuneration schemes.

Performance-related reward systems

LO10 LEARNING OBJECTIVE

performance-related pay systems (or **incentive compensation schemes**) systems that base rewards on achieving or exceeding some performance target

Performance-related pay systems (or **incentive compensation schemes**) base rewards on achieving or exceeding some performance target. Under these systems, employees are paid a base pay, and then additional pay will be awarded based on individual or group performance. Once performance-related pay was considered the domain of middle and senior management. However, from the early 1990s, many Australian companies started to consider the various ways in which they could recognise and reward good performance and encourage future performance at all levels of the organisation. The various types of incentive compensation schemes include employee share plans, profit-sharing plans, gainsharing, and team-based and individual incentive plans.

Employee share plans

Employee share plans (or **share option plans**) provide employees with the *right to purchase* shares in their company, at a specified price at some specified future time. Why is this

regarded as a form of performance-related pay? Let's suppose that on 1 January 2002 a company allows each of its senior managers the right to purchase 10 000 shares at the current market price of $10 per share by 31 December 2003. If the managers intend to purchase the shares, they then have the opportunity to improve the firm's performance over the next two years in order to lift the market price of the shares. The managers can then choose to sell their shares at that higher share price and make a cash profit. Alternatively, they can hold on to their shares and work harder to increase the share price in the future! Some companies do not allow managers to exercise their option until some performance hurdle has been reached. For example, a company may set a hurdle of a 20 per cent increase in share price before senior managers can exercise their options.

employee share plans (or **share option plans**) provide employees with the *right to purchase* shares in their company, at a specified price at some specified future time

Share options are a very common form of incentive scheme for senior managers, and some companies are also now offering them to more junior managers and employees. While senior managers may have some influence on improving the company's share price, for those at more junior levels the impact of their efforts on share prices may not be as direct. Despite this, some companies believe that offering these benefits to lower-level managers and employees is motivational, as it helps employees to identify with the fortunes of the company, encouraging goal congruence and motivating them to achieve high performance.

Profit-sharing plans

Under **profit-sharing plans**, cash bonuses are paid to each employee, based on a specified percentage of the company's profit. Amounts may be distributed to individual employees in equal shares, in proportion to their base pay, or in proportion to their own individual performance achievements. Profit-sharing schemes are designed to encourage employees to identify with the performance of the entire company.

profit-sharing plans where cash bonuses are paid to each employee, based on a specified percentage of the company's profit

Gainsharing

Gainsharing is a system where cash bonuses are distributed to employees when the performance of the company, or of their segment of the company, exceeds some performance target. Performance targets are often based on performance measures that can be directly influenced by employees, for example labour cost, labour usage and material usage. A proportion of the performance gain will accrue to the company and to the employees, based on some formula. The employees' share may go into a pool each quarter and then be distributed to all employees at the end of the year, usually in equal amounts. Gainsharing schemes are based on the belief that employees should share in the gains from any contribution that they make to a firm's performance.

gainsharing a system where cash bonuses are distributed to employees when the performance of the company, or of their segment of the company, exceeds some performance target

Team-based incentive schemes

Team-based incentive schemes may involve individuals being rewarded based on their work team exceeding certain performance targets. These schemes are designed to encourage teamwork and co-operation among employees. Like profit-sharing plans and gainsharing, these schemes do not tie individual effort to rewards. However, where the team is small, this may not be a serious problem. Unfortunately, these schemes may encourage 'freeloaders'—employees who gain rewards through the efforts of their fellow team members.

team-based incentive schemes systems where individuals are rewarded when their work team exceeds certain performance targets

Team-based rewards may be in the form of cash bonuses, or they may be non-cash rewards. These may include a dinner for the team members and their families at a restaurant, or a plaque indicating that the team has attained a certain level of achievement.

Individual incentive plans

Individual incentive plans reward individuals for achieving individual performance targets. The major advantage of these schemes is that individual effort is clearly tied to outcomes and rewards (the essential elements of expectancy theory!). Rewards may be in the form of cash bonuses, or they may be non-cash rewards, including the award of certificates of achievement or gift vouchers. However, at the operational level it may be difficult to design measures that reflect an individual's performance. In these cases, subjective means may be used to evaluate performance and provide rewards.

At the senior level of an organisation, individual incentive plans are very common, and performance-related bonuses can form a large percentage of a salary package, as indicated in the 'Real life' below.

real life

Is senior executive pay linked to performance?

In recent years, the high level of remuneration paid to senior managers, and particularly to chief executive officers, has been criticised by shareholders, the government and the media. Much of the remuneration is due to short-term and long-term incentive payments, which often include share options. In the early 1990s, executives received up to 90 per cent of their pay package in base salary. Ten years later, it is not uncommon for 55 per cent or less of salary to be base pay.

A British survey undertaken in 2000 ranked Australian chief executives as the third highest paid in the world, behind Britain and the US. This survey claimed that the annual pay package of the average Australian CEO, including share options and bonuses, increased by 73 per cent in two years, to total $1.3 million per year. This compared with British CEOs who were paid an average of AUD $1.374 million, and US CEOs who were paid AUD $2.68 million.

Courtesy of the Australian Broadcasting Associtioan

Joe Bloggs meets the operator of the year

In October 2000, the *Australian Financial Review* published even more startling figures. They reported that the average pay package for the CEOs of Australia's top 150 companies had, in the last year, jumped 28.6 per cent to $1.8 million, but with options and other long-term incentive payments, the average gross payout was $8.4 million!

How do companies justify such payment to their shareholders? A common argument put forth by Boards and the CEOs themselves, is that pay packages of senior managers in Australia need to be globally competitive to attract the best management talent. Another argument is that the high levels of remuneration are a result of linking executive pay to corporate performance. Increasingly executive pay packages in Australia consist of a moderate base pay, a yearly bonus to provide short-term incentives and share options to provide long-term incentives. Executives need to achieve certain performance hurdles to achieve the bonuses.

However, there are many reported examples where executive pay packages are not closely linked to performance. The former managing director of Pacific Dunlop earned an extra $2.54 million, including termination payments, in addition to $958 000 he had received in 1999/2000 for running the company, where net profit had decreased by 45 per cent. In 2001, two directors of the Australian telecommunications company One.Tel were paid bonuses of $14 million, just before One.Tel collapsed with debts of more than $600 million.

Sources: Dabowski (2001); Gettler (2001); Maiden (2001); Murrill (2001); Chenoweth (2001)

Group vs individual performance

LO11 LEARNING OBJECTIVE

Some of the reward schemes outlined above are based on group performance—company, division or team—while other rewards are based on individual performance. What are the advantages and disadvantages of these two approaches?

- *Identification with the group* Incentive schemes based on group performance are designed to encourage employees to identify with the company, division or team. They can enhance goal congruence and encourage team work.
- *Equity among employees* Group schemes provide the same rewards to each employee. In some organisations, employees consider this to be important, as differential rewards are seen as divisive. An example of such a situation in the public sector is described in the 'Real life' on page **XXX**.
- *Competitiveness between employees* Individual rewards can encourage excessive competitiveness between employees, and may encourage employees to make dysfunctional decisions to maximise their own performance.
- *Relating individual effort to reward* It is often difficult for employees, particularly at operational levels, to understand how their own performance can directly influence overall company performance. When rewards are based on individual performance, the relationship is clearer.
- *Rewarding only good performers* Group schemes do not discriminate between employees who are good performers and those who are bad performers. Bad performers may still be rewarded. This is not the case when rewards are based on individual performance achievements.

Basing rewards on company-wide performance

real life

BOC Gas Cylinders and Sydney Electricity provide two examples of successful performance-related pay systems that reward employees based on company-wide or group performance.

In 1982, BOC Gas Cylinders, a small manufacturer of aluminium cylinders for products such as scuba equipment and fire-fighting equipment, became one of the first companies in Australia to introduce a gainsharing system. Employees were rewarded for company-wide improvements in labour productivity and material productivity. While initially viewed with a little suspicion by some employees, most employees embraced the scheme enthusiastically. This was mainly due to the participative processes used to introduce the system and the generous rewards received by all employees. The gainsharing system was a success. From 1982 to 1986, the total number of labour hours required to produce a cylinder decreased from 1.2 to 0.88, mainly due to more efficient labour utilisation. There were no strikes from 1982 to 1989, absenteeism decreased and staff turnover dropped. The system continued throughout the 1990s, and the performance measures were adjusted to account for the introduction of new equipment and production processes.

With the introduction of work-based teams in the mid-1990s, a wider range of performance measures were introduced. Employees had become accustomed to using performance measures through the gainsharing program. Customer satisfaction was now measured and used by managers and teams to identify and service customer needs and to focus on quality. An organisational climate measure, based on a regular survey of employees, was used by managers to assess progress in gaining employees' commitment to the company's goals. Productivity and quality measures were used by teams to provide feedback on problem areas and to help identify areas for improvement in production processes.

Sydney Electricity (now known as Energy Australia) implemented a performance-related pay scheme as part of their enterprise agreement. Under this scheme, employees were rewarded when company-wide performance targets were achieved. Targets were set for the following performance measures:

continues …

- systems reliability—the average number of minutes of electricity service per customer per year, discounted for the effect of major storms and uncontrollable electricity failures;
- customer satisfaction—measured by a survey of domestic electricity customers;
- employee absenteeism;
- lost-time accidents; and
- operating cost per customer.

These measures were considered drivers of the key strategies of Sydney Electricity, which focused on market share and customer loyalty, developing the skills and professionalism of staff, profitability, value for shareholders, best practice performance, and utilising and building on core strengths.

The scheme delivered generous rewards to employees each quarter, and served to raise the awareness among employees of the critical performance areas. While there was not a strong link between individual effort and performance outcomes, a company-wide scheme was considered by employees to be appropriate as the culture of the organisation emphasised equity.

Courtesy of the Australian Broadcasting Associtioan

Joe Bloggs meets the operator of the year

Sources: Chenhall & Langfield-Smith (1997); Langfield-Smith & Madden (1998)

real life

Do pay-for-performance schemes deliver?

While performance-related pay schemes are becoming increasingly common in Australian companies, it is not clear that they are leading to improved performance. So what are the problems?

A study of performance-related pay schemes, which were in place in the mid-1990s in the Australian public service, revealed that poor design and implementation ensured they were not a success. The system was intended to develop quantitative performance measures and targets, and an individual manager's performance was to be rated annually on a five-point scale to form the basis for cash rewards. This was not the experience:

- Appraisal of managers tended to be subjective because of the difficulties of assigning quantitative ratings to qualitative performance criteria.
- Many supervisors were reluctant to provide senior officers with negative feedback when their performance was deficient.
- It was difficult to determine who was responsible for successful policy outcomes, which often involved many managers from a number of departments.
- Performance-related pay was regarded by some managers as divisive and alien to the collective nature of the public service.

Source: O'Donnell (1997)

Timing of incentive payments

LO12 LEARNING OBJECTIVE

Some people argue that it is preferable to reward employees frequently to ensure continued motivation. Thus, in some organisations, bonuses may be paid quarterly. This practice also helps employees to see more clearly the relationship between their effort, performance outcomes and rewards (as described in expectancy theory). However, senior managers are often rewarded less frequently, often annually. Annual performance rewards can encourage a short-term focus, particularly when managers are rewarded on achieving a single performance measure, such as ROI or profit. Sometimes, to encourage a long-term focus, senior managers' incentive payments may be deferred for some years.

Under deferred schemes, managers' rewards may accumulate in a fund for some years, with only a percentage of the fund being available for withdrawal. This prevents managers from making decisions that maximise short-term profits at the expense of medium-term and long-term profits. Share option schemes are also designed to encourage a long-term performance orientation.

An important criterion that can influence whether or not a particular incentive scheme encourages a short-term or long-term perspective is whether the performance measures have a short-term or long-term orientation. In an earlier section we saw that measures could be designed to address both perspectives.

Chapter summary

In this chapter we examined the types of summary financial measures that can be used to evaluate performance in investment centres, and the various types of reward systems used in organisations to enhance motivation, improve performance and enhance shareholder value. Key points include:

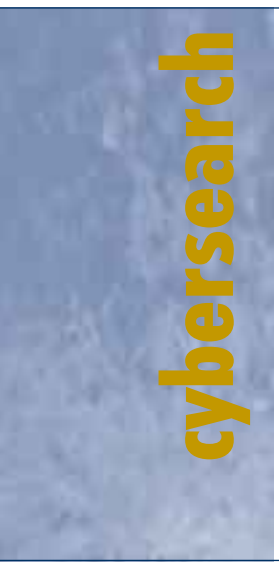
- Return on investment (ROI), which is the profit divided by invested capital, is a summary measure that can be used to evaluate the financial performance of investment centres.
- ROI has several advantages. It can:
  - encourage managers to focus on profit and the assets required to generate those profits; and
  - be used to evaluate the relative performance of investment centres.
- ROI has several limitations, including:
  - encouraging managers to focus on short-term financial performance;
  - encouraging managers to defer asset replacement; and
  - discouraging managers from investing in projects that may be acceptable from the organisation's viewpoint.
- The behavioural problems of ROI can be minimised by using a series of measures to evaluate performance that focus on both the short-term and long-term, using alternative measures of assets and invested capital in the ROI calculation, and using alternative summary financial measures, such as EVA®.
- Residual income (RI) is the amount of profit that remains after subtracting an imputed interest charge.
- RI will partially overcome the disincentives encouraged by ROI, but is not a good comparative measure.
- A question to be considered by corporate management is the appropriate way to define the measures of profit and invested capital, to be used in ROI or RI to minimise any dysfunctional consequences of using either measure.
- Some companies use shareholder value measures, including economic value added (EVA®), market value added (MVA) or shareholder value added (SVA) to assess overall financial performance, to analyse alternative strategies and to reward managers. Each of these measures has its own set of advantages and limitations as a performance measure.

- To encourage goal congruence, employees at all levels of the organisation may be rewarded for improved performance, through extrinsic or intrinsic rewards;
- Knowledge of motivational theories, such as Hertzberg's theory of work motivation and expectancy theory, can help managers design reward systems;
- Various types of performance-related reward systems, such as employee share plans, profit-sharing plans, gainsharing, team-based incentives and individual incentives can be used to encourage motivation and hence improve individual and firm performance.
- The timing of incentive payments can have an impact on the effectiveness of rewards on individual performance.

We continue our focus on performance measures in the following chapters. In Chapter 14, we will consider contemporary approaches to measuring and managing performance throughout the organisation, including the use of non-financial performance measures, benchmarking, and the use of balanced scorecard approaches to performance measurement and management. In Chapters 15 and 16, we consider the use of performance measures to assist in the management of various critical aspects of the business including cost, time, quality, suppliers and customers.

Key terms

economic value added (EVA®)
employee share plan (or share option plan)
expectancy theory
extrinsic reward
gainsharing
hygiene factors
imputed interest charge
intrinsic reward
invested capital
investment turnover
market value added (MVA)
motivators
performance-related pay system (or incentive compensation scheme)
profit-sharing plan
residual income (RI)
return on investment (ROI)
return on sales
reward system
shareholder value added (SVA)
team-based incentive scheme
value-based management (VBM)
weighted average cost of capital (WACC)



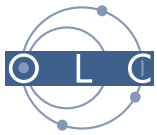
Cybersearch

1 There are several alternative names for return on investment (ROI), including return on capital employed (ROCE) and return on assets. Find the web sites of two Australian companies that use ROI or a similar measure.
   (a) How do the two companies calculate the measure?
   (b) How are 'profit' and 'invested capital' (or their equivalents) defined within the measures?
   (c) How do each of the companies use the measures?

2 Log on to the Stern Stewart website at www.eva.com. From that page you can access a video online, which shows senior managers from a range of companies explaining their use of EVA®.
   (a) Choose two companies from the video, and explain the advantages of EVA® for that company.
   (b) Did any companies mention any problems that they experienced in adopting EVA®? Outline the problems.

continues ...

3 Find a website that contains a report discussing the structure of remuneration packages for managers in a particular company.
   (a) Describe the components of the remuneration package.
   (b) What incentives are in place to provide certain motivational effects for the managers?



For a list of useful web sites to help you with these exercises visit the Online Learning Centre at www.mhhe.com/au/langfield

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e-student

Self-study problem and solution

Financial performance measures for investment centres

Stellar Systems Company manufactures guidance systems for rockets that are used to launch commercial satellites. The company's Software Business Division reported the following results for 2003:

Profit	$300 000
Sales revenue	2 000 000
Invested capital	3 000 000

The company's required rate of return is 9 per cent.

Required:

1 Calculate the Software Business Division's return on sales, investment turnover, return on investment and residual income for 2003.

2 If profit and sales remain the same in 2003, but the investment turnover increases to 80 times, calculate the following for 2004:
   (a) invested capital
   (b) ROI

Solution to Self-study problem

1 $$\text{Return on sales} = \frac{\text{profit}}{\text{sales revenue}} = \frac{\$300\,000}{\$2\,000\,000} = 15\%$$

$$\text{Investment turnover} = \frac{\text{sales revenue}}{\text{invested capital}} = \frac{\$2\,000\,000}{\$3\,000\,000} = 66.6 \text{ times}$$

$$\text{Return on investment} = \frac{\text{profit}}{\text{invested capital}} = \frac{\$300\,000}{\$3\,000\,000} = 10\%$$

Residual income:	
Divisional profit	$300 000
Less Imputed interest charge:	
Invested capital × Imputed interest rate	
$3 000 000 × 0.09	270 000
Residual income	$30 000

2 (a) $$\text{Investment turnover} = \frac{\text{sales revenue}}{\text{invested capital}} = \frac{\$2\,000\,000}{\text{invested capital}} = 80 \text{ times}$$

$$\therefore \text{Invested capital} = \frac{\$2\,000\,000}{0.80} = \$2\,500\,000$$

(b) New ROI = 15% × 80 times = 12%

Questions

13.1 Define *return on investment* and describe how it is calculated.

13.2 How may *return on investment* and *residual income* be used as a part of a responsibility accounting system?

13.3 What are the risks associated with focusing on improving the two components of the return on investment measure?

13.4 Explain how the managers in the Business Studies Textbook Division of a publishing company could improve their division's ROI. (Assume the Division is responsible for acquiring new book titles, preparing books for production, and producing, marketing and selling the books.) Which of these activities would be regarded as desirable to the company as a whole?

13.5 How can managers minimise the negative behavioural effects of ROI?

13.6 If there are so many difficulties associated with using ROI to evaluate the performance of investment centres, why do many businesses continue to use it?

13.7 Prepare an example showing how residual income is calculated. What information used in this calculation is not used in calculating ROI?

13.8 What are the disadvantages of using ROI as a performance measure? Can the residual income measure eliminate these disadvantages?

13.9 Why is there typically a rise in ROI or residual income over time? What dysfunctional decisions may be encouraged by this phenomenon?

13.10 Distinguish between the following measures of invested capital, and briefly explain when each should be used:
(a) total assets (b) total productive assets (c) total assets less current liabilities

13.11 Why do some companies use gross book value instead of net book value to measure invested capital?

13.12 Does it matter how invested capital and profit are defined for the purposes of measuring ROI or residual income?

13.13 'Performance measures based on controllability are impossible. Nobody really controls anything in an organisation!' Do you agree or disagree? Explain your answer.

13.14 Explain the meaning of *value-based management*.

13.15 Describe each of the four aspects of VBM.

13.16 What is meant by *value*? Why is it important to measure it?

13.17 How does the measure of *economic value added* differ from *residual income*?

13.18 In your own words, outline the strategies that managers might use to maximise economic value added.

13.19 What are the advantages of EVA® over ROI and RI as a measure of performance?

13.20 Explain the difference between EVA® and MVA.

13.21 Describe the measure of *shareholder value added* (SVA). How does it differ from EVA® and MVA?

13.22 Distinguish between *Herzberg's theory of motivation* and *expectancy theory*.

13.23 What are the advantages and disadvantages of basing individual rewards on group performance?

13.24 Distinguish between *intrinsic rewards* and *extrinsic rewards*. Provide two examples of each.

13.25 Describe the difference between a *gainsharing system* and a *profit-sharing plan*.

13.26 Use principles of expectancy theory to compare the advantages and disadvantages of awarding individual bonuses based on group performance and on individual performance.

Exercises

E13.27 Return on investment; residual income

Classify each of the following statements as true or false. In each case, provide reasons for your answer.

1. Return on investment can be used to evaluate the return on new projects.
2. Return on investment provides a good measure of customer value.
3. As residual income increases, the balance of assets decreases.
4. Residual income can encourage managers to defer asset replacement.
5. Return on investment can be improved by deferring research and development expenditure and increasing marketing expenditure.oll

E13.28 Value-based management

Classify each of the following statements as true or false. In each case, provide reasons for your answer.

1. Value-based management is a method of increasing return on sales.
2. Economic value added is a multi-period measure.
3. MVA is a measure of market value accounting.
4. The measure of economic value added has similar disadvantages to residual income.
5. Measures of shareholder value can be used to evaluate new business strategies, as well as mergers and acquisitions.

E13.29 Components of ROI; improving ROI; residual income: wholesaler

Stationery Stop is a wholesaler that specialises in stationery supplies. It is a division of a large retail company. The following data relate to 2003:

Profit	$4 000 000
Sales revenue	50 000 000
Average invested capital	20 000 000

Required:

1. Calculate Stationery Stops' return on sales, investment turnover, and return on investment for 2003.
2. Demonstrate two ways in which the manager of Stationery Stop could improve its ROI, increasing it to 25 per cent.
3. Assume that the retail company has a required rate of return of 10 per cent, and calculate the residual income for Stationery Stop for 2003.

E13.30 Improving ROI: manufacturer

The following data pertain to Broken Hill Aggregates Company, a producer of sand, gravel and cement, for 2001:

Sales revenue	$2 000 000
Cost of goods sold	1 100 000
Operating expenses	800 000
Average invested capital	1 000 000

Required:

1 Calculate the company's return on sales, investment turnover, and ROI for 2001.

2 If the sales and average invested capital remain the same in 2002, to what level would total expenses have to be reduced in order to increase the firm's ROI to 15 per cent?

3 Assume expenses are reduced, as calculated in requirement 2. Calculate the firm's return on sales. Show how the new return on sales and the old investment turnover together result in a ROI of 15 per cent in 2002.

E13.31 Comparing the performance of two divisions: retail company

Padstow Fabrics Company has two retail divisions, which reported the following results for 2002:

	Furnishing Division	Dressmaking Division
Profit	$200 000	$900 000
Average invested capital	$1 000 000	$6 000 000
ROI	20%	15%

Required:

1 Which was the more successful division in 2002? Think carefully about this, and explain your answer.

2 Calculate each division's residual income for 2002 under each of the following assumptions about the firm's required rate of return:
(a) 12 per cent (b) 15 per cent (c) 18 per cent

E13.32 ROI and EVA®: service firm

Reliable Rentals Ltd consists of two divisions. The Equipment Rental Division rents machinery, such as cement mixers and scissor lifts, to building contractors. The Truck Rental Division rents forklift trucks and removal trucks. The financial results for the two divisions in 2002 are as follows:

Division	Equipment Rental Division	Truck Rental
Operating profit after tax	$45 000	$110 000
Total assets	750 000	3 000 000
Current liabilities	80 000	250 000

Reliable Rentals obtains its financing from long-term debt and shares, and the weighted cost of capital is estimated to be 8 per cent. To calculate ROI, investment capital is defined as total assets less current liabilities.

Required:

1 Calculate the ROI for the two divisions for 2002.

2 Calculate the EVA® for each division. Note that Reliable Rentals does not make any adjustments to its NOPAT.

3 Which division has performed better in 2002? Explain your answer.

E13.33 Performance measurement and reward systems

Classify each of the following statements as *true* or *false*. In each case give reasons for your answer.

1 According to Herzberg, employees need both hygiene factors and motivators to improve motivation.

2 Performance-related reward systems are most effective when rewards are provided for improved group performance.

3 An important reason for many performance-related pay systems not encouraging improved performance is that they are not linked to an effective performance measurement system.

4 Individual reward systems work better at the senior level of an organisation rather than at the operational level.

E13.34 Reward systems: manufacturer

Grant Lawson has just been appointed as the new financial controller of Safety Chemicals Ltd, which has three separate divisions: Industrial Chemicals, Paints, and Household Chemicals. During his first week on the job, Lawson receives a visit from the managing director, who says:

> 'I'm so glad you have arrived. We can now put into place our new profit-sharing plan. I want all employees across the divisions to share in the rewards of our good financial performance. Starting next quarter, 5 per cent of the company's quarterly profit will go into a pool, and at the end of the financial year, this will be distributed to employees in proportion to their base pay. This will really give our employees increased motivation to strive harder!'

Required:

Write a memo to the managing director, outlining the advantages and disadvantages of the type of reward system that has been suggested.

Problems

P13.35 ROI; residual income: manufacturer

Lawton Industries has manufactured prefabricated houses for over 20 years. The houses are constructed in sections to be assembled on customers' lots. Lawton expanded into the pre-cut housing market in 1999 when it acquired Presser Company, one of its suppliers. In this market, various types of timber are pre-cut into the appropriate lengths, banded into packages, and shipped to customers' lots for assembly. Lawton designated the Presser Division as an investment centre. Lawton uses return on investment (ROI) as a performance measure with investment defined as average assets. Management bonuses are based in part on ROI. All investments are expected to earn a minimum return of 15 per cent before income taxes. Presser's ROI has ranged from 19.3 to 22.1 per cent since it was acquired. Presser had an investment opportunity in 2002 that had an estimated ROI of 18 per cent. Presser's management decided against the investment because it believed the investment would decrease the division's overall ROI. The 2002 statement of financial

performance for Presser Division follows. The division's productive assets were $12 600 000 at the end of 2002, a 5 per cent increase over the 2001 year-end balance.

Presser Division
Profit Statement
for the year ended 31 December 2002
(in $'000s)

Sales revenue		$24 000
Cost of goods sold		15 800
Gross margin		$8 200
Operating costs:		
Administrative	$2 140	
Selling	3 600	5 740
Profit from operations before income taxes		$2 460

Required:

1 Calculate the following performance measures for 2002 for the Presser Division: (a) return on investment (ROI) (b) residual income

2 Would the management of the Presser Division have been more likely to accept the investment opportunity if residual income had been used as a performance measure instead of ROI? Explain your answer.

(CMA, adapted)

P13.36 ROI and residual income; missing data: manufacturer

Echidna Pipe Fittings Corporation has three divisions. The Plumbing Division manufactures copper pipes for tradespersons and home renovators. These areas of the economy are in decline. The Plumbing Division is operating with spare capacity and is using machinery that was acquired many years ago. The Industrial Division produces pipes for heavy manufacturing industries involved in chemical refining and gas exploration. This division is machine-intensive, using advanced computerised equipment to manufacture pipes to precise tolerance levels. The Retail Division operates a hardware store. The following data relate to the three divisions. The company's required rate of return is 8 per cent.

	Plumbing Division	Industrial Division	Retail Division
Sales revenue	$1 000 000	?	?
Profit	$100 000	$6 400 000	?
Average investment	$500 000	?	?
Return on sales	?	30%	11%
Investment turnover	?	1.75 times	?
ROI	?	?	20%
Residual income	?	?	$120 000

Required:

1 Fill in the blanks in the data above.

2 Explain three ways in which the Plumbing Division's manager could improve the division's ROI. Use numbers to illustrate these possibilities.

3 Suppose the Retail Division's return on sales increased to 20 per cent, while its investment turnover remained constant. Calculate the division's new ROI.

4 Does ROI provide a suitable basis for comparing the performance of these three divisions? Explain your answer.

P13.37 ROI; EVA®: manufacturer

Raddington Industries produces tool and die machinery for car manufacturers. The company expanded in 1998 by acquiring one of its suppliers of alloy steel plates, Reigis Steel Company. In order to manage the two separate businesses, the operations of Reigis are reported separately as an investment centre. Raddington monitors its divisions on the basis of both divisional contribution margin and return on investment (ROI). Investment is defined as average total assets. Management bonuses are based on ROI, but the company is considering using EVA® in the future. All investments in operating assets are expected to earn a minimum return of 11 per cent after income taxes.

Reigis's cost of goods sold is considered to be entirely variable, while the division's administrative expenses are not dependent on volume. Selling expenses are a semi-variable cost with 40 per cent attributed to sales volume. Reigis's ROI, after tax, has ranged from 11.8 to 14.7 per cent since 1998. During 2002, Reigis's management considered a project with an estimated ROI of 11.5 per cent. However, division management decided against the investment because it believed that it would decrease Reigis's overall ROI. The 2002 statement of financial performance for Reigis follows. The division's total assets were $15 750 000 on 31 December 2002, a 5 per cent increase over the 2001 year-end balance.

Reigis's funds are obtained from both debt and equity and the weighted average cost of capital is 10 per cent. The income tax rate is 30 per cent.

Reigis Steel Division
Profit Statement
for the year ended 31 December 2002
(in $'000s)

Sales revenue		$25 000
Less costs:		
Cost of goods sold	$16 500	
Administrative costs	3 955	
Selling costs	2 700	23 155
Profit from operations before income taxes		$1 845

Required:

1 Calculate the divisional contribution margin for Reigis Steel Division, for the 1 484 000 units that were produced and sold during 2002.

2 Calculate the following performance measures for 2002 for the Reigis Steel Division:
(a) after-tax return on investment (ROI) (b) economic value added (EVA®)

3 Would the management of the Reigis Steel Division be more likely to accept the project that was considered in 2002 if EVA® rather than ROI was used as a performance measure?

4 The Reigis Steel Division is a separate investment centre within Raddington Industries. Identify several items that Reigis's management should have authorisation to control if it is to be evaluated fairly by either ROI or EVA®.

5 Calculate Reigis Steel Division's contribution margin per unit in 2002. Briefly discuss the pros and cons of using divisional contribution margin versus the contribution margin per unit as a divisional performance measure.

(CMA, adapted)

P13.38 Behavioural implications of ROI: computer-integrated manufacturer

Huon Corporation made a capital investment of $100 000 in new equipment for its Springvale Division two years ago. The analysis at that time indicated that the equipment would save $36 400 in operating expenses per year over a five-year period. Discounted cash flow methods were used to evaluate the proposal. Before the purchase, the division's ROI was 20 per cent.

Timothy Williams, the division manager, believed that the equipment had lived up to its expectations. However, the divisional performance report showed the overall return on investment for the first year in which the equipment was used was less than that in the previous year! Williams asked the Accounting Department to break down the figures related to this investment to find out why it did not contribute to improving the division's ROI.

The Accounting Department was able to identify the equipment's contribution to the division's operations. The report presented to the division manager at the end of the first year is as follows:

Reduced operating costs due to new equipment	$36 400
Less depreciation, 20% of cost	20 000
Contribution	$16 400
Investment, beginning of year	100 000
Investment, end of year	80 000
Average investment for the year	90 000

$$\text{ROI} = \frac{16\,400}{90\,000}$$

$$= 18.2\%$$

Timothy Williams was surprised that the ROI was so low, because the new equipment performed as expected. The staff analyst in the Accounting Department replied that the ROI used for performance evaluation differed from the methods used to evaluate capital investment proposals.

Required:

1 Explain why the new equipment has not resulted in the expected improvement in financial performance.

2 Discuss the behavioural problems that can be associated with using ROI as a divisional performance measure. What might Tim Williams do the next time a new equipment purchase is proposed?

(CMA, adapted)

P13.39 Review of Chapters 12 and 13; divisional performance reporting and evaluation; ethics

Darmen Corporation is a major producer of prefabricated beach houses. The corporation consists of two divisions: the Bell Division, which acquires the raw materials to manufacture the basic house components and assembles them into kits, and the Cornish Division, which takes the kits and constructs the homes for final home buyers. The corporation is decentralised, and the performance of the management of each division is measured by divisional profit and return on investment.

Bell Division assembles seven separate house kits using raw materials purchased at the prevailing market prices. The seven kits are sold to Cornish for prices ranging from $45 000 to $98 000. The prices are set by Darmen's corporate management using prices paid by Cornish when it buys comparable units from outside sources.

The smaller kits with the lower prices have become the larger portion of the units sold, because the final house buyer is faced with prices that are increasing more rapidly than personal income. The kits are manufactured and assembled in a new plant just purchased by Bell this year. The division had been located in a leased plant for the past four years.

All kits are assembled upon receipt of an order from the Cornish Division. When the kit is completely assembled, it is loaded immediately onto a Cornish truck. Thus, Bell Division has no finished goods inventory.

Bell Division's accounts and reports are prepared on an actual cost basis. There is no budget, and standards have not been developed for any product. A manufacturing overhead rate is calculated at the beginning of each year. The rate is designed to charge all overhead to the production each year. Any underapplied or overapplied overhead is closed into the cost of goods sold account.

Bell Division's annual performance report follows. This report forms the basis of the evaluation of the division and its management.

Bell Division
Performance Report
for the year ending 31 December 2002

			Increase (decrease) from 2001	
	2002	2001	Amount	Per cent change
Summary data:				
Net profit (in $'000s)	$34 222	$31 573	$2 649	8.4
Return on investment	37%	43%	(6)%	(14.0)
Production data (units):				
Kits started	2400	1600	800	50.0
Kits shipped	2000	2100	(100)	(4.8)
Kits in process at year-end	700	300	400	133.3
Increase (decrease) in kits in process at year-end	400	(500)	—	—
Financial data (in $'000s):				
Sales revenue	$138 000	$162 800	$(24 800)	(15.2)
Production cost of units sold:				
Direct material	$32 000	$40 000	$(8 000)	(20.0)
Direct labour	41 700	53 000	911 300)	(21.3)
Manufacturing overhead	29 000	37 000	(8 000)	(21.6)
Cost of units sold	$102 700	$130 000	$(27 300)	(21.0)
Other costs:				
Corporate charges for:				
Personnel services	$228	$210	$18	8.6
Accounting services	425	440	(15)	(3.4)
Financing costs	300	525	(225)	(42.9)
Total other costs	$953	$1175	$(222)	(18.9)

continues …

Bell Division
Performance Report
for the year ending 31 December 2002

	2002	2001	Increase (decrease) from 2001 Amount	Per cent change
Adjustment to profit:				
Unreimbursed fire loss	—	$52	$(52)	(100.0)
Raw material losses due to improper storage	125	—	125	—
Total adjustments	$125	$52	$73	140.4
Total deductions	$103 778	$131 227	$(27 449)	(20.9)
Divisional profit	$34 222	$31 573	$2 649	8.4
Divisional investment	$92 000	$73 000	$19 000	26.0
Return on investment	37%	43%	(6)%	(14.0)

Additional information regarding corporate and divisional practices follows.

- The corporation head office does all the personnel and accounting work for each division.
- Corporate personnel costs are allocated to divisions on the basis of the number of employees in each division.
- Accounting costs are allocated to divisions on the basis of total costs, excluding corporate charges.
- Divisional administration costs are included in overhead.
- The financing charges include a corporate imputed interest charge on divisional assets.
- The divisional investment for the ROI calculation includes divisional inventory and plant and equipment at gross book value.

Required:

1 Discuss the value of the annual performance report presented for the Bell Division in evaluating the division and its management in terms of:
   (a) the accounting techniques employed in the measurement of divisional activities;
   (b) the manner of presentation;
   (c) the effectiveness with which it discloses differences and similarities between years.

   Use the information in the problem to illustrate your answer.

2 Present specific recommendations for the management of Darmen Corporation that would improve its accounting and financial reporting system.

3 Suppose Bell Division's chief accountant, Jake Thompson, was approached on 28 December by the divisional general manager with the following request: 'Jake, we've got a firm order for 50 kits that won't be finished and shipped until 8 January. I want you to book the sale before the end of the year. The total sales figure on the order is $850 000. That will bump this year's net profit up over $35 000 000. The division will look better, and we'll all get a bonus.'

   What are Jake Thompson's ethical obligations in this situation?

(CMA, adapted)

Cases

C13.40 Review of Chapters 12 and 13; ROI and EVA®; centralised versus decentralised service units: service company

Port Fairy Fisheries operates a chain of budget seafood restaurants, as well as its own fishing fleet, which operates off the south coast of Australia. Port Fairy is structured into three divisions: the Northern Australian Division and the Southern Australian Division, which manage the restaurants, and the Fishing Fleet Division. Each division operates as a separate stand-alone business, and is designated as an investment centre.

The company uses return on investment to evaluate the performance of each division. For the purposes of calculating divisional ROI, investment capital is defined as total assets less current liabilities, and divisional operating profit after tax is used. Each division is required to achieve an ROI of at least 9 per cent after tax. To calculate divisional EVA®, the weighted average cost of capital of 8 per cent is used. The company income tax rate is 30 per cent.

The following data relates to financial performance for 2003.

	Southern Australian	Northern Australian	Fishing Fleet
Operating profit before tax	$3 600 000	$800 000	$300 000
Total assets	35 000 000	4 000 000	8 400 000
Current liabilities	8 000 000	2 000 000	800 000

In 2001, the Fishing Fleet Division replaced most of its fleet. The Southern Australian Division is the oldest division and owns all of its assets, while the Northern Australian Division leases most of its restaurant sites. The lease payments are treated as an expense.

Required:

1. Calculate the return on investment for each division for 2003.
2. Which division has the best performance in 2003? Is there any other information in the case that needs to be taken into account when interpreting divisional performance using ROI?
3. Calculate the EVA® for each division for 2003.
4. Compare the financial performance of each division using both ROI and EVA®.
5. Would you recommend that any adjustments that can be made to the divisional accounting data, which would provide more comparable figures for ROI and EVA®?
6. Over the past few years, there has been some concern among divisional managers that the quality of service provided by head office service departments is poor. This is particularly the case for the centralised payroll department and the information technology department. Jackson Ghosh and Maria Collins, the managing directors of the Southern Australian and the Northern Australian Divisions have arranged to meet with Roger Rowe, who is the Financial Controller of the company. Here are some excerpts from the meeting.

   Ghosh: Maria and I have been experiencing problems with staff in the payroll department. They continually make errors in employee pay, and can take several

weeks to make corrections. This creates a high level of stress for those employees affected, as well as for our staff who try to sort out the problems. This is not good for morale—the restaurant business already has a high employee turnover rate, and we don't need any internal management problems to make this worse.

Collins: There are even greater problems when it comes to the information technology people. Every month we both receive 12 centimetres deep of reports, listing sales revenue and costs for each of our restaurants. These reports arrive two weeks after the end of the month. I have talked to Ramsey Farrell, in IT, and asked that the reports arrive closer to the end of each month, but he says this is not possible, as it is far too expensive to provide such information. Also, neither of us wants the type of information that he is providing. I would like to receive information on the profitability of restaurants, by region. I would like to know the profitability of the various promotions that we run in certain restaurants, and I need information about our market share, and competitors' activities. As it currently stands, the reports are of little use to me—I receive more up-to-date and relevant information from restaurant managers each week.

Ghosh: If personnel and IT cannot provide us with the services that we need to run our businesses, then we will be forced to seek those same services from outside contractors.

Rowe: Now, don't make any rash decisions, your problems will soon be over. I am considering adopting a shared services approach for personnel and IT. This will improve service—no question.

Ghosh: But how will this change anything? The departments will still be reporting to you at Head Office, and dealing with us in the same negligent fashion. If we cannot use third-party providers for our personnel and IT needs, then the next best alternative is to decentralise these functions to each division.

(a) Provide an analysis of the costs and benefits of the three options for the two service areas: centralisation, decentralisation, create shared services unit.
(b) If the company decides to move to a shared services unit for personnel and IT, what procedures and systems can be put in place to help ensure that service to the divisions is improved?

C13.41 Performance measures and reward systems; behavioural issues: manufacturer

ABC Tubes Ltd manufactures aluminium cylinders that are used in a variety of products, such as scuba diving equipment and fire extinguishers. The company has just introduced a performance-related pay system in their smallest manufacturing plant. Employees will receive bonuses, based on their work team exceeding team performance targets. At this stage only three of the four work teams will participate in the scheme. If this system works well, it will be introduced into all of the company's plants.

There are four teams in the plant, and each team has been given monthly performance targets for cycle time, material usage and production output. Two of the work teams are organised sequentially, that is, the output of Team A becomes the input for Team B. Teams C and D both manufacture their product independently of the other teams; however, teams C and D do share some equipment with Team B. Team D is not participating in the new performance-related pay scheme, as this team has just introduced some new production technology, which would make it difficult to achieve any performance targets at this stage. A bonus pool of $10 000 has been set aside, each quarter, to be shared among the members of the three participating teams if they each achieve their targets.

The employees are excited by the new scheme. They can only gain by such a system. However, at the end of the second month, tempers start to fray. Frank Smart, a member of Team B, takes his complaints to the production manager, Amos Bennett:

Frank: This new system is just not working. Team A is sabotaging our performance. How can we meet our performance targets when Team A gives us faulty product to process? They have skimped on material, so it takes us much longer to complete our part of the manufacturing process. This is made worse when the purchasing department orders our material far too late, so we have to wait around for deliveries. And someone has been leaving the calibrator machine in such a mess, so we waste valuable time resetting the gauges before we can use it. I am sure it is a member of Team C. The system is not fair. The other two teams are making their targets and we are not—and it is not our fault! Also, Jack Scratt, a member of our team, is clearly not working to capacity—and his rewards will be the same as ours!

Bennett was not sympathetic. He has just had to deal with a delegation from Team D, who are upset because they cannot share in the performance bonuses.

Bennett: Calm down Frank. I am sure that you are exaggerating. These problems will iron themselves out over the next few months. It is up to each team to manage its performance. Go away and deal with these problems.

Required:

1 What features of the performance-related pay system are causing problems?

2 Are the three performance measures appropriate for assessing performance and awarding bonuses? Explain your answer.

3 Can you suggest some changes that could be made to improve the system? Consider other forms of incentive schemes that may be suitable for the company.

C13.42 Financial performance measures and reward systems; behavioural issues: manufacturer

Marlin Ltd is a large and successful manufacturer of engines. The company consists of two divisions: the Automotive Engine Division and the Outboard Motor Division. Marlin has recently acquired a new company which will become a third division. The new Blue Grass Division is a small manufacturer of lawn-mower motors. It has been owned and managed by the one person for 40 years. The prior owner treated all employees as part of his family. The company was noted for the lack of a 'them and us' attitude between employees and management, and there was free and open communication between all staff. Unfortunately, Blue Grass is not a strong performer; the lawn-mower market is in decline and profits have slipped.

Marlin is known for its modern management systems and would like all managers at Blue Grass to participate in the performance-related pay system that is used in the other two divisions. The profit-sharing plan applies to senior divisional managers only. It is based on placing 10 per cent of Marlin's profits before interest and income tax into a pool, which is then shared by the senior divisional managers in direct proportion to their base salaries. The senior managers in the two original divisions received bonuses of 11 per cent and 12 per cent of their salaries in 2001 and 2002 respectively.

The profit results for 2003, the first financial year following the acquisition of the Blue Grass Division, are as follows:

	Outboard	Automotive	Blue Grass
Sales revenue	$4 000 000	$10 000 000	$2 000 000
Cost of goods sold	2 000 000	6 000 000	1 500 000
Gross margin	2 000 000	4 000 000	500 000
Administrative costs	600 000	900 000	300 000
Marketing and selling costs	800 000	900 000	100 000
Total costs	1 400 000	1 800 000	400 000
Profit before interest and taxes	600 000	2 200 000	100 000

Senior management salaries included in the above costs, and divisional assets at the end of 2003, are as follows:

	Outboard	Automotive	Blue Grass
Senior management salaries	$1 000 000	$1 400 000	$700 000
Divisional assets	2 000 000	4 000 000	800 000

Prior to the acquisition by Marlin, all Blue Grass employees, including the senior managers, participated in a gainsharing program. Under this program, the financial impact of improvements in labour productivity and delivery performance were quantified each quarter, and 50 per cent of this amount was accumulated in a pool. At the end of each year, each employee received an equal share of the pool. The scheme was discontinued when Marlin purchased Blue Grass.

Required:

1. Which division has the best performance in 2003?
2. Determine the bonus pool available for 2003, and calculate the percentage bonus that each senior manager would receive.
3. Discuss the behavioural problems that could arise among the senior managers of the Outboard and Automotive divisions as a result of the 2003 bonuses.
4. Discuss the behavioural problems that may arise within the Blue Grass Division from the changes in the performance-related pay system.
5. Suggest some changes that could be made to improve Marlin's performance-related pay system and alleviate some of the problems identified in requirements 3 and 4.