

## CHAPTER 2

# WEAKNESSES OF ACCOUNTING INDICATORS AND ECONOMIC METHODS OF VALUE DETERMINATION

### 2.1 INTRODUCTION

One of the greatest challenges to be met in business is determining what drives share prices, and hence, shareholder value. In the pursuit of optimal business performance, it is vital to know what the drivers of wealth creation are and to manage them well. Business managers have always been on a quest for value, but views regarding the validity of certain indicators of value have changed dramatically over the last few years.

The usefulness of traditional accounting indicators as measures of performance is increasingly being questioned and criticized by investment analysts, academics and business leaders. This shift has resulted in vigorous efforts to determine the real drivers of shareholder value. Even in the early 1980's, traditional accounting measures as drivers or indicators of value were criticized by Johnson, Natarajan and Rappaport (1985:61) who commented: "...judgments about corporate excellence based solely on financial (accounting) performance criteria are occasionally misleading because commonly used measures of financial performance are often poor surrogates of economic performance."

Rappaport (1986:19) has explained the shortcomings of accounting measures, particularly earnings per share (EPS) and earnings per share growth, as well as return on investment (ROI) and return on equity (ROE). The earnings of a

company were a very popular indicator of performance for a long time, and remain so today, but Rappaport (1986:48) comments: “Undue focus on reported earnings can lead to [the] acceptance of strategies that reduce value and rejection of strategies that increase value.”

Stern’s (1993:36) research has shown that popular accounting measures such as earnings, earnings growth, dividends, dividend growth, return on equity, and even cash flow cannot be regarded as appropriate measures of performance, because none of them correlate well with changes in the market values of the companies selected. Stern (1993:36) used the coefficient of determination,  $r^2$ , to measure the strength of the correlation between market value and several different independent variables. The measure  $r^2$  indicates the percentage of changes in the dependent variable (y) that is explained by changes in the independent variable (x). His research, based on a sample of American companies, revealed that the  $r^2$  between market value and turnover growth was 9% for turnover growth (lowest) and 25% for ROE rates (highest). (The full table of the accounting measures relative to changes in shareholder value for this sample is set out in Chapter 3 of this study.)

## **2.2 THE ACCOUNTING MODEL OF VALUATION**

The accounting model of valuation has been used for a long time. It dictates that the value of a company’s shares is determined by a multiple of its earnings. The earnings attributable to ordinary shareholders are the net income after tax and after deducting preference dividends (if any). The multiple, or price/earnings ratio (P/E ratio), is calculated by using the market price per share and dividing it by the EPS. For valuation purposes, the multiple is assumed to remain constant.

A valuation of ordinary shares is therefore a “capitalization” of earnings and it is assumed that a change in earnings has a direct impact on the share price. For example, if the current ordinary share price of Company A is R20 and the EPS is R2, and then the P/E ratio is 10. If the earnings can be increased to R2,20, the

share price is expected to rise to R22. Stewart (1991:22) claims that the appeal of this accounting model lies in its simplicity and apparent precision.

The main shortcoming of earnings as a driver of value lies in the unrealistic assumption that P/E ratios remain constant. In practice this is not so: P/E multiples change all the time, due to factors such as changes in companies' financial structures and financial policies, new investment opportunities, acquisitions and so on. Furthermore, earnings are reported according to the guidelines of Generally Accepted Accounting Practice (GAAP), which allows for the use of different accounting policies.

A focus on earnings leads to a manipulation of accounting policies that maximizes earnings. Some companies resort to a practice, called "trade loading" or "channel stuffing" to improve sales and earnings (Ehrbar 1998:68). This entails the shipping of goods that are not wanted on the distributors' premises to retailers near the end of a quarter (or financial reporting period), even though there is no consumer demand for the goods. Typically, the retailers normally do not pay for goods until they resell them and this means that additional debtors need to be financed, which in turn reduces the cash flow.

### **2.3 THE ECONOMIC MODEL**

The economic model of value states that only two factors determine share prices and shareholder wealth, namely

- the cash the business will generate over its entire life; and
- the risk associated with those cash flows.

It is true that, for most companies, their earnings and cash flows move together most of the time. However, in order to determine which of the two, earnings or cash flows, has the most profound impact on shares prices, further investigation is required, as discussed in Section 2.4.

## **2.4 THE ACCOUNTING MODEL VERSUS THE ECONOMIC MODEL**

The accounting model determines earnings by acknowledging realized income, by writing off expenses in the Income Statement and by deferring (or “capitalizing”) capital expenditure in the Balance Sheet. By contrast, the economic model uses only cash inflows and outflows, irrespective of where these are recorded for accounting purposes. Where a company has a choice regarding the accounting treatment of certain items, substantial differences between earnings and cash flows may be noted. The best-known measures that cause earnings to be an unreliable indicator of wealth (and cause reported earnings to deviate from reported cash flows) are discussed below.

### **2.4.1 LIFO versus FIFO**

A switch from a first in, first out (FIFO) to a last in, first out (LIFO) inventory valuation in times of rising prices causes lower profits (and earnings) and lower taxes to be recorded. The decrease in taxes is a cash benefit. However, an important question is how markets react to a decrease in earnings and an increase in cash flow. Accounting guidelines in South Africa do not allow this practice at the moment.

Empirical studies in the USA (Stewart, 1991:24) have found that companies that have changed from FIFO to LIFO experienced a 5% increase in share prices on the day when the change was first announced. Stewart (1991:24) mentions that a group of researchers have shown that the share price gain was in direct proportion to the present value of the taxes to be saved by making the switch. These studies strongly support the contention that cash generation dictates share prices, and not book earnings.

#### **2.4.2 Amortisation of goodwill**

“Goodwill” normally refers to any premium paid over and above the estimated fair (book) value of a seller’s assets. The amount of goodwill is usually written off (or amortised) against earnings over the period over which it is expected to yield future benefits, normally between five and 20 years in South Africa (or a maximum of 40 years in the USA). The amortisation of goodwill is not deductible for tax purposes and therefore does not affect cash flow. However, it is included in the accounting model because it lowers earnings.

In this regard, it is important to ask whether potential investors would turn down an acquisition due to the effect that the amortisation of the goodwill may have on future earnings, or whether they would look beyond the earnings and take a decision based on the expected cash flows. Walking away from a value-adding acquisition because of the expected negative effects of the amortisation of goodwill is a situation referred to by Stewart (1991:26) as “letting the accounting tail wag [the] business dog”.

In studies done in the USA (Stewart, 1991:26), where companies that amortised goodwill (using the so-called “purchase method”) were compared to those that did not (using the so-called “pooling of interests method”), no significant differences in the performance of the share prices of the two groups of companies were found. This provides further evidence that share prices are determined by expected cash generation, rather than by reported earnings. Stewart (1991:28) concludes that a company’s earnings explain its share price only to the extent that earnings reflect cash. Hence, he argues that earnings are misleading and should be abandoned as a basis for making decisions and for determining bonuses.

#### **2.4.3 Research and development expenditure**

Expenditure on research and development (R&D) can make up a large portion of the total expenditure of certain companies, for instance, “high-tech” organizations and pharmaceutical companies. Normal accounting practice is conservative in that

it immediately writes off the research expenditure as an expense and either writes off the development costs immediately or writes them off over a number of years if certain criteria are met.

Writing off all or most of the R&D expenditure immediately causes earnings to be understated. From an investor's point of view, the benefits or payoff from an investment in research and development would be expected over the long term and therefore the expenditure should be treated as an investment. One could also ask whether unsuccessful R&D efforts should be written off immediately. Such an approach would cause the rates of return in financial periods following the year during which the expense was incurred to be overstated because the capital investment has been understated. In turn, this may lead managers to over-invest in projects or businesses that are not as profitable as they seem on paper.

Studies quoted by Ehrbar (1998:74) have shown that companies that announced planned increases in R&D spending saw immediate increases in their share prices, on average more than 1,4%. If the market does indeed capitalize R&D spending, it makes no sense to write off such spending immediately for accounting purposes.

To bring the accounting treatment in line with the investment approach, Ehrbar (1998:74) suggests that (all) the expenditure on R&D is capitalized in the balance sheet and written off against earnings over an "appropriate" period. The "appropriate" period would be the period over which the successful R&D efforts are expected to yield future benefits.

#### **2.4.4 Deferred taxation**

For accounting purposes, deferred taxation is classified neither as a reserve, nor as a liability. Consequently, it is shown separately in the Balance Sheet, between equity and liabilities. If a pessimistic view is taken, it can be argued that a company's financial situation may become so bad that assets need to be sold in order to repay debts. If this happens, the company has to pay tax on the

recoupment of past tax allowances (those that gave rise to the deferred tax). In that case, treating deferred tax as a liability can be justified. Lenders to the company may hold this pessimistic perspective regarding deferred tax.

If, on the other hand, an optimistic approach is taken (for example, by the shareholders) it can be argued that as long as the company remains a going concern, the assets that give rise to the deferred tax provisions are replaced continuously. This means that the deferred tax is never paid. Hence, it is possible to classify deferred tax as a reserve and therefore as part of equity. The expectation that a business enterprise will remain a going concern in future tends to be shared by investors and accountants. In order to treat deferred tax as a reserve, the annual change in deferred tax needs to be added back to earnings. This ensures that a cash flow approach is taken, in that tax is only taken as an expense when it is paid (and not when it is provided for).

#### **2.4.5 EPS**

EPS is still a very popular performance measure among investment analysts. However, it has the same weaknesses as earnings itself. There are also several other characteristics of EPS that make it even more inappropriate as a reliable measure of performance than earnings.

A company that does not pay out all its earnings as dividends can expect an increase in EPS from one year to the next. This may be misconstrued as better performance. The problem is that the reinvested portion of earnings, with or without possible extra borrowings to maintain the capital structure, in fact leads to a bigger asset base, which in turn is expected to result in higher overall earnings and higher EPS.

Assume that Company A has total assets of R10m, financed only by equity consisting of 1 million ordinary shares issued. If the earnings for the year just ended are R2 million (earnings “return” of 20% on total assets), the EPS is R2 per share. If one also assumes that half of the earnings are paid out as dividends (and

the other half is reinvested), the total assets at the beginning of the next year are R11 million. If the earnings rate of 20% on assets is repeated, the earnings are R2,2 million and the EPS increases to R2,20, without any real improvement in performance. The increase in EPS from R2 to R2,20 would be due to growth in assets and not to better performance. An astute analyst should be aware of the risk of using EPS as a measure of performance, which could be misleading.

There is another situation where changes in EPS may be (wrongly) interpreted as an improvement or deterioration in performance. It happens when one company acquires another and where the P/E ratios of the respective companies are quite different, and the purchase price of the shares in the target company is paid by an issue of shares in the company making the acquisition (a share exchange). Even if no synergy advantages are expected from the takeover, the EPS of the newly formed group as a whole changes.

Assume that Company A has 2 million issued ordinary shares with a current market price of R10 each (total market value R20 million) and its total earnings per year are R2 million (an EPS of R1 and a P/E ratio of 10). Company B has 1 million issued ordinary shares with a current market price of R5 (total market value R5 million) and its total earnings per year are R1 million (an EPS of R1 and a P/E ratio of 5). If Company A takes over Company B, it needs to issue 500 000 shares at R10 each to the shareholders of Company B. The number of new issued ordinary shares will be 2,5 million and the combined earnings (without synergies) is R3 million, giving a new EPS of R1,20. If the market does not perceive any changes in value due to the takeover, the combined market value is R25 million, giving a new P/E ratio of 8,33. The increase in EPS may look attractive to the existing shareholders of Company A, but they need to be bear in mind that the quality of the earnings of the combined company, as reflected in the P/E ratio, has declined (from 10 to 8,33).

In a situation where Company B takes over Company A, Company B needs to issue 4 million ordinary shares at R5 per share (a purchase price of R20 million) to the shareholders of Company A. The total number of ordinary shares issued is then 5 million; with combined earnings of R3 million (as above), giving a new EPS

of R0,60. The new P/E ratio is also 8,33 (R25 million ÷ R30 million). In this situation, the shareholders of Company B may not be satisfied with the potential decrease of the EPS from R1 to R0,60, but they should not overlook the fact that the quality of the earnings of the combined company, as reflected by the P/E ratio, has improved from 5 to 8,33.

From these examples it can be concluded that one should not be fooled by the expected changes in the EPS when the acquisition of another company is considered. Irrespective of which company takes over which (whether Company A takes over Company B or *vice versa*), the newly formed combined company will be the same in terms of assets, earnings, risks and value. The direction in which the takeover is done should not affect the value of the new group. From an economic point of view, all that matters is whether the value acquired is more than the value sacrificed to pay for the acquisition. The transfer of earnings as indicated by the change in EPS (up or down) should not dictate the decision whether to take over a company. Clearly, focusing on EPS as a measure of performance or value creation could lead to misguided decisions.

#### **2.4.6 Earnings growth**

When considering two companies with identical earnings and similar expected growth rates (in earnings), one might be inclined to reason that they would have similar P/E ratios and therefore similar share prices. This is not necessarily the case. It all depends on how the growth is achieved.

Growth attained by spending large amounts on assets and boosting sales by means of aggressive marketing could be unwise, because such policies could result in high levels of inventory and debtors. Such an approach would indeed lead to growth in sales and earnings, but only for a limited time. The build-up of inventory and debtors eventually causes the rate of return on assets to drop. New share issues (probably rights issues) and increased debt financing would

inevitably be needed in order to keep up this growth and to counter increasing cash flow problems.

If, on the other hand, growth is accomplished by more efficient use of capital investments, the growth would be sustainable and should lead to a higher share price (and P/E multiple) for a company growing in this way. On its own, earnings growth as a performance measure does not pass the test of a reliable indicator of value. To summarize, growth only adds value if it is accompanied by adequate returns.

#### **2.4.7 Dividends**

Contrary to popular belief, dividends, whether as an absolute amount paid, or as dividend growth, do not play an important role in the determination of value. The well-known Gordon growth model of share valuation (Lintner, 1962:247; Correia *et al.* 2003:237; Gitman, 2003:326) was based on the assumption that the value of ordinary shares is determined by future dividends.

This model suggests that for a minority valuation, only future dividends matter and therefore any expected changes in future dividends would cause a change in the value of the shares. The arguments supporting the relevance of dividends were linked to the so-called “signaling theory”, which held that changes in the dividends paid by a company would send, or signal, some information about the future prospects of the company to shareholders.

Research by Professors Miller and Modigliani (1961) has shown that under perfect market conditions (where there are rational investors, no taxes and no transaction costs), the payment of dividends is irrelevant and that the value of a company is unaffected by the payment of dividends. They have concluded that the value of a company is determined purely by the earning power and risk of its assets and that the way in which it splits its stream of earnings between dividends and internal re-investment does not affect that value.

The economic model supports the view that dividends do not have any noteworthy impact on the share value of a company. Paying dividends is seen as an acknowledgement by management that it cannot find enough profitable projects in which to invest all of the company's available funds (cash). It is argued that companies should only pay out dividends if they have no more suitable capital projects to invest in (the so-called "residual approach") and that shareholders can "make" their own dividends by selling some of their shares (or adding more cash-yielding investments in their portfolio) when they need cash.

However, it must be admitted that dividend announcements have often had a significant effect on share prices in the past. The explanation given by those who support the economic model is that share prices did not move because of the change in dividends, but because of some other event (like the expected collapse of a certain market). Therefore the model does not deny the historical correlation between dividends and share prices, but it argues that this correlation is not a causal relationship (the change in dividends does not cause the change in the share price). In support of the economic model, Stewart (1991:54) comments on the irrelevance of dividends as follows: "So long as there is a sufficient number of investors with sufficient wealth who are not seeking dividends, companies that pay few or no dividends have no cause for concern. Their stocks will sell for their fair value."

Black and Scholes (1974:21) found in their research that the return to investors was explained by the level of risk and was not affected by how the return was divided between dividends and capital gains. They concluded that investors would be better off if they assumed that dividends do not matter in the choice of shares to be included in their investment portfolio. Factors such as value, risk, taxes and diversification should be taken into account by investors, but not dividends *per se*. Black and Scholes (1974:21) advise the management of companies not to formulate dividend policy in order to influence the returns to shareholders. The dividend policy should instead be chosen according to the company's own investment needs and financing options.

### 2.4.8 ROE

A perennial favourite overall corporate performance measure is ROE. It is calculated by taking the net income after tax (earnings) of a given year and dividing it by the book value of equity (ordinary shares) at the beginning of the year. Alternatively, the average equity can be used. Equity would consist of the issued ordinary share capital, plus the share premium and reserves.

The calculation of ROE can be broken up into three separate ratios, as follows:

$$\text{ROE} = \frac{\text{Earnings}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Assets}} \times \frac{\text{Assets}}{\text{Equity}}$$

The three components, or ratios, can be described (in sequence) as profitability, asset turnover and financial leverage. The ROE can therefore be improved by improving profitability, by using assets more efficiently and by increasing financial leverage.

One important problem with ROE is that the flaws inherent in earnings also affect ROE. Furthermore, the book value of equity is not a good approximation of the capital invested into the company, because it needs to be adjusted for the same reasons that adjustments must be made to earnings (as discussed in Sections 2.4.1 to 2.4.4).

ROE is very sensitive to changes in financial gearing. ROE increases with more financial gearing, as long as the returns earned on the borrowed funds exceed the cost of the borrowings. The danger inherent in increasing the financial gearing beyond a certain level is that the increased financial risk may cause the value of the company (and the share price) to drop. Pursuing higher ROE's may lead to wealth destruction, which is obviously not in line with the economic principles of shareholder value creation.

Rappaport (1986:43) has pointed out that the second component of ROE (as shown above), namely asset turnover, is affected by inflation in such a way that it

may increase even when assets are not utilized better. He reasons that sales immediately reflect the impact of inflation, whereas the book value of assets, which is a mixture of new and older assets, does not adapt as quickly to the effects of inflation.

Rappaport's (1986:43) studies in the 1970's revealed that although the earnings of Standard & Poor's 400 companies decreased dramatically during the 1970's, their ROE's actually increased through increased levels of asset turnover and gearing. The markets, however, were not misled by this apparent "better performance". Consequently the market returns during this period were generally very poor, or "dismal", according to Rappaport.

Copeland *et al.* (1996:105) argue that ROE is a short-term performance measure and that too much focus on it can lead a company to overlook long-term growth opportunities that might increase shareholder value. A company may also be able to improve its ROE, while at the same time earning a return that is below its WACC, and thereby destroy value.

## **2.5 ECONOMIC METHODS OF VALUATION**

In contrast with the accounting model of valuation based on earnings and its inherent flaws, as discussed in the preceding sections of this chapter, there are a number of economic models that emphasize cash flows, rather than profits, in the estimation of value. These economic methods have been widely used with varying levels of success. The models discussed here are the NPV approach, SVA and economic profit.

The continuous quest for value has led to critical evaluations of existing accounting measures of performance. As a result there is now a greater emphasis on economic profits, than on accounting profits. This shift has led to new insights and the refinement of existing methods. The process has culminated in the advent of EVA and MVA (as discussed in Chapter 3) as valuation models.

### **2.5.1 NPV**

The NPV method is widely acknowledged to be the best approach to evaluating capital investment projects (Weston and Copeland 1992:313, Ross *et al.* 1996:200, Brealy and Myers, 2000:73, Correia *et al.* 2003:298). As a first step, an appropriate risk-adjusted discount rate is determined. For projects which pose normal risk this “cut-off” rate is the WACC, which usually consists of two components: own capital (equity) cost and borrowed capital cost. If the present value of all future net cash inflows over the estimated life of the project (discounted at the appropriate cut-off rate) is more than the initial outlay, the NPV is positive, and implementing the project should add value to the company (if the anticipated estimated cash flows materialize).

A company can be seen as consisting of a combination of current and future capital investment projects. Therefore the value of a business can be expressed as a current invested capital plus all future NPV's to be generated by the company for as long as it exists. Although the NPV approach is highly recommended for capital investment decision-making, because it encourages maximization of shareholder value, it is of little value in performance measurement.

Very few companies track actual cash flows in relation to specific projects and compare these cash flows to the estimated cash flows on which the decision to invest was based. Furthermore, the NPV approach also has strong limitations as a method of valuation because it is almost impossible to know beforehand what capital projects a company may embark on in future, let alone estimate the associated cash flows.

### **2.5.2 SVA**

SVA was originally developed and introduced by Rappaport (1986). His point of departure was that a company can be seen as consisting of a portfolio of capital investment projects. In order to maximize shareholder wealth, the future cash

flows to be generated by these capital investments need to be estimated and maximized, while taking into account the risks involved. After the value of the business as a whole has been determined, the part of the value available to the shareholders is calculated as follows:

Shareholder value = Total business value – Market value of outstanding loans

The total business value is determined by the so-called “free cash flows” (FCFs) of the organization, discounted at the WACC. It is suggested that the expected future free cash flows of the business be estimated over a “planning horizon” of ten years or so and that a “residual value” (or terminal value) be estimated for the end of the planning horizon. The present value of the free cash flows over the planning horizon plus the present value of the residual value would result in the value of the business as a whole. The value available to ordinary shareholders can then be calculated by subtracting the market value of debt.

So, for example, assume that Company X has had sales of R400 million during the past year and the operating profit margin is 30% of sales. The depreciation charges for the year were R20 million and the cash tax rate for the year was 25% of the operating profit. During the year, R20 million was spent to replace fixed assets, while another R36 million was invested in additional fixed assets. A further R28 million was invested in additional working capital.

The free cash flows of the company can be calculated as follows:

	<u>R million</u>	<u>R million</u>
Sales		<u>400</u>
Operating profit (30% x R400 million)		120
<i>Add</i> Depreciation charge		<u>20</u>
Operating cash flows		140
<i>Less</i> Cash tax (25% x R120 million)		<u>30</u>
Operating cash flows after tax		110
<i>Less</i> Replacement of fixed assets	20	
Additional fixed assets	36	
Additional working capital	<u>28</u>	<u>84</u>
Free cash flows		<u>26</u>

When the reasonable assumption is made that the depreciation charge added back (an inflow of R20 million) is the same as the replacement cost of the fixed assets (an outflow of R20 million), the calculation of the free cash flows can be shortened to exclude these two items. The key variables or drivers of free cash flows can then be identified as

- sales;
- the operating profit margin;
- the cash tax rate;
- the additional investment in fixed assets; and
- the additional investment in working capital.

It is clear that key business decisions, namely operational, investment and financing decisions, all have an impact on these value drivers. In order to extend the example above to determine the value available to shareholders, some further assumptions need to be made.

So, for example, assume that the WACC is 20% and the planning horizon is five years. The terminal value of the business after five years is estimated at R300 million and the market value of borrowed capital is R60 million. The free cash flows (FCF's) for the next five years are as follows:

	year 1	year 2	year 3	year 4	year 5
	R million				
Free cash flows	22	24	26	29	32

The value of the business as a whole can then be calculated as follows:

$$\text{Total business value} = \sum [Cf_t / (1 + WACC)^t] + \text{Residual value} / (1 + WACC)^5$$

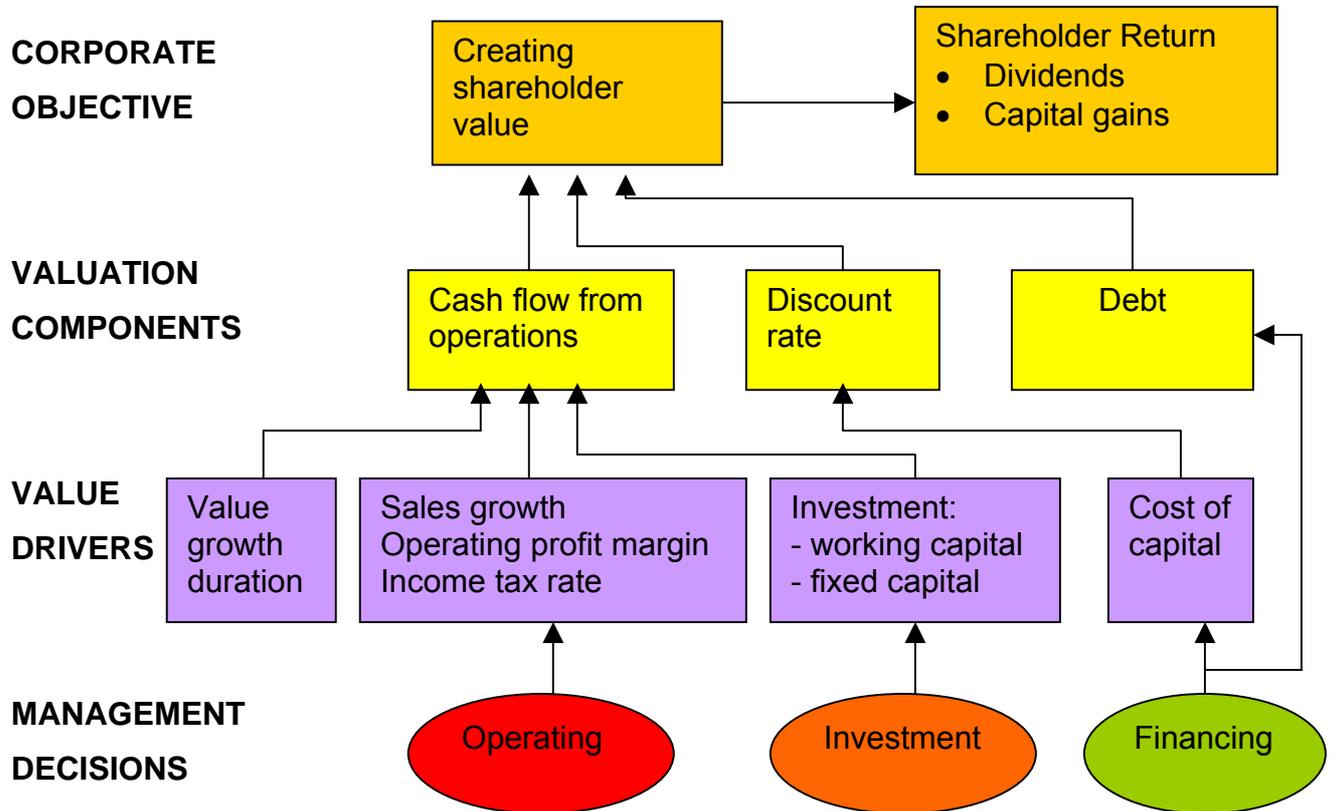
	R million
Total business value	197,46
Less Market value of debt	<u>60,00</u>
Shareholder value	<u>137,46</u>

SVA is of great value when important decisions that will have an impact on shareholder value are considered. Typical strategic decisions include

- acquiring new businesses;
- selling existing businesses;
- developing new products or markets; and
- reorganizing or restructuring the business.

Rappaport (1986:76) illustrates the link between shareholder value creation, value drivers and management decisions as set out in figure 2.1.

Figure 2.1: The Shareholder value network



Source: Rappaport (1986:76)

The work of Fruhan (1979:65) on shareholder value creation preceded the findings of Rappaport and provided a foundation for the principles of SVA. Fruhan (1979:65) recognized that the value of an investment is linked to its expected future cash flows and its cost of capital: “The economic value of any investment is a function of the future cash flows anticipated from that investment, and the cost of capital required to finance that investment.”

Although SVA is radically different from the accounting measures of value creation, it provides a very helpful strategic framework to identify the value drivers in a business that have the biggest impact on shareholder value. Attrill and

McLaney (2002:316) comment: “If SVA is implemented, it can provide the basis of targets for managers to work towards, on a day-to-day basis, that should promote maximization of shareholder value.”

Apart from defining the SVA approach to value creation, Rappaport (1986) also linked SVA with a competitive strategy framework along the lines of the framework developed by Michael E. Porter (1998) in his book *Competitive Strategy*. Furthermore, Rappaport (1986) extended the application of SVA to incorporate performance evaluation and executive remuneration as well.

The SVA approach, however, is not without its drawbacks. These include the difficulty of forecasting the future cash flows and determining the terminal value for the end of the planning horizon and the comprehensive information needed. The approach also does not provide a uniform performance measure which remuneration can be linked equitably to.

### **2.5.3 The economic profit model**

The economic profit model described by Copeland *et al.* (1996:149) expresses the value of a company as the amount of capital invested plus a premium equal to the present value of the value created each year going forward.

The concept of economic profit dates back as far as 1890 when the economist Alfred Marshall (cited in Copeland *et al.* 1996:149) stated that the value created by a company during any period must take into account not only expenses recorded in its accounting records, but also the opportunity cost of the capital employed in the business.

Compared to the FCF model used in SVA, the economic profit model has the advantage that economic profit is a valuable measure of performance in any given single year. The problem with FCF is that it is affected by highly discretionary investment in fixed assets and working capital, which makes comparing actual FCFs with estimated FCFs in a specific year meaningless.

The formula for the determination of economic profit is the following:

$$\text{Economic profit} = \text{Invested capital} \times (\text{ROIC} - \text{WACC})$$

It shows that the economic profit is equal to the invested capital multiplied by the difference (or spread) between the ROIC and the cost of capital. If the invested capital of a company is R100m, the return on invested capital is 24% and the cost of capital is 20%, the economic profit is calculated as follows:

$$\begin{aligned} \text{Economic profit} &= \text{R100 million} \times (24\% - 20\%) \\ &= \text{R100 million} \times (4\%) \\ &= \text{R4 million} \end{aligned}$$

The economic profit can be stated in another way. It is also the after-tax profit, less a charge for the capital used to earn those profits:

$$\begin{aligned} \text{Economic profit} &= \text{NOPLAT} - \text{Capital charge} \\ &= \text{NOPLAT} - (\text{Invested capital} \times \text{WACC}) \end{aligned}$$

where

$$\text{NOPLAT} = \text{Net operating profit after adjusted tax}$$

Using the same information as above:

$$\begin{aligned} \text{Economic profit} &= \text{R24 million} - (\text{R100 million} \times 20\%) \\ &= \text{R24 million} - \text{R20 million} \\ &= \text{R4 million} \end{aligned}$$

What is clear from this approach is that the economic profit is almost the same as the net income, but with the difference that there is a charge for all the capital used, not only the interest on the debt.

The value of a business can be determined using economic profit as follows:

$$\text{Value} = \text{IC} + \text{Present value of projected economic profit}$$

From this definition of the value of a business, one can deduce that if the returns that a company earns on its assets are exactly the same as the cost of capital, there is an economic profit of zero, and the value of the business remains at the value of the amount invested. In other words, there is no value added.

If one looks at the example where the economic profit was calculated at R4 million, and one adds the assumption that it will remain the same in future, the present value of the economic profit can be calculated as a perpetuity as follows:

$$\begin{aligned} \text{Present value of economic profit} &= \text{R4 million} / 20\% \\ &= \text{R20 million, therefore} \end{aligned}$$

$$\begin{aligned} \text{Value of the business} &= \text{invested capital of R100 million} \\ &\quad + \text{R20 million} \\ &= \text{R120 million} \end{aligned}$$

It can be shown that the present value of the future expected FCFs gives the same answer:

$$\begin{aligned} \text{Present value of FCF} &= \text{R24 million} / 20\% \\ &= \text{R120 million} \end{aligned}$$

## 2.6 CONCLUSION

The helpfulness of accounting measures such as earnings, EPS, earnings growth, dividends and ROE has been criticized with growing intensity for some time. In a chapter entitled “Marketing Myths”, Stewart (1991:66) remarks: “Earnings, earnings per share and earnings growth are misleading measures of corporate

performance... Many investors are fooled by accounting shenanigans, but the investors who matter, are not.”

Ehrbar (1998:161) clearly describes the growing ineffectiveness of accounting measures in determining value: “The association between accounting data and market values is not only weak, but appears to have been deteriorating over time. Overall, the fragile association between accounting data and capital market values suggests that the usefulness of financial reports... is rather limited... The widening gap, as it were, between GAAP and reality grows out of an extreme conservative bias in the accounting profession.”

Rappaport (1986:43) is slightly less severe in his criticism of accounting measures, but still made the following point: “The demonstration here that accounting-based numbers such as earnings per share and ROI are not reliable indicators of shareholder value should not be interpreted as a failure of accounting. The problem lies not so much with accounting but rather its use by managers for unintended, inappropriate purposes.” He also points out that the role of top management is to assess the relationship between investment now and the magnitude and timing of uncertain future cash flows. Decisions should not be influenced by arbitrary conventions that do not affect cash flow.

Stern (1993:36) points out that none of the popular accounting indicators pass the test of a reliable performance measure. He cites a survey which shows that not one of a selected number of accounting measures (including earnings and ROE) showed any significant correlation with changes in share value.

The most important criticism leveled at an earnings-oriented approach to value relates to the accounting treatment of various items that cause earnings to diverge from cash flows and lead to a general understatement of the amount invested in the assets of a company. What investors are most interested in is not necessarily profits, but the company’s ability to generate future cash flows, as well as the risks associated with the projects undertaken to generate them.

Because of the inadequacy of accounting performance measures, finding new, reliable indicators of value creation is a top priority for researchers, business managers and investors. The prerequisites for a reliable measure of performance would have to include strong correlation with changes in share values, a cash flow approach, flexibility in application, measurability over different financial periods and the ability to be linked to manager performance evaluation and remuneration.

The following chapters endeavour to address and describe an appropriate performance measure of shareholder value, its application and its ramifications for top management in dealing with the process of share value maximization. Apart from generally simplistic, but popular accounting methods of valuation, there are a number of economic methods based on underlying cash flows rather than on profits. These economic methods include the NPV approach to capital investment decision-making and valuation, the SVA approach and the economic profit model.

The NPV method works very well when it is applied to capital investment decision-making. It is still regarded as superior to all other capital investment techniques, but it fails as a tool of valuation for an organization as a whole and as a performance measure.

SVA, first developed and introduced by Rappaport (1986), is based on the organization's expected future FCFs, discounted at the WACC, which is adjusted for the risk involved. Rappaport has identified the main drivers of shareholder value and incorporated a strategic perspective into a strategic framework for the evaluation of management decisions regarding takeovers, mergers and the sale of some investments.

To date, SVA has proved its worth as a management tool. The criticism leveled at SVA revolves around the fact that too much uncertain information is needed to estimate future FCFs as well as the terminal value. Also, it does not provide an adequate performance measure on which to base executive remuneration.

The Economic Profit Model, as defined by Copeland *et al.* (1996), calculates the "actual" or economic profit after taking into account the full cost of all sources of

capital used. It uses the WACC to determine a “capital charge”, which is subtracted from the profit before interest, but after tax. This incorporates an important correction of the accounting profit, which does not take into account the opportunity cost of own (equity) capital used.

In this chapter the weaknesses of the accounting measures of performance have been discussed, as well as some alternative measures of economic profits. In the next chapter, the concept of EVA (based on economic profits) and MVA are explored more fully.