# 9

# ENTIRE FIRM VALUE MEASUREMENT

## Introduction

This chapter describes four 'market-based' measures of value performance. The feature common to all these measures is the focus on the stock market's valuation of the company. Total shareholder return (TSR) measures the rise or fall in the capital value of a company's shares combined with any cash payment, e.g. dividends, received by shareholders over particular periods of time, be it one year, three years or ten years. This gets to the heart of the issue for owners of companies – what return do I get on my shares from the activities of the managers hired to steward the resources entrusted to them?

The Wealth Added Index (WAI[1]) examines the change in share values after allowance for the required rate of return over the period of time examined. The other two metrics, Market Value Added (MVA[2]) and Market to Book Ratio (MBR) also examine the current share price in the market (together with the value of debt). However, rather than track share return performance through time these metrics relate the current market values to the amount of capital put into the business by the share owners (and lenders) since its foundation. If the company's strategic and operational actions have been robust in the pursuit of shareholder value then the current market value of the equity and debt should be significantly greater than the amount placed in the directors' hands by the purchasers of shares, through the retention of profits and the lending of debt capital. If, however, the market currently values the shares and the debt at less than the amount put in we know for sure that value has been destroyed.

The observation of a positive difference between current valuation and amount injected may or may not mean value has been generated. This depends on whether the investment made by shareholders and debt holders produced a sufficient *rate* of return given the time period over which the money was held in the stewardship of the directors. So, for example, if a firm founded 15 years ago with £1m of shareholder capital and £1m of debt paid out no dividends and received no more funds from finance providers is now valued at £3.56m for its shares and £1m for its debt we need to know the required rate of return on equity for this risk class given the shareholders' opportunity cost to judge whether the annual rate of return of around 8.8 percent is sufficient. (Chapter 10 discusses how to calculate required rates of return.)

These four metrics can only be used for 'entire firm' assessments for a select group of companies – those with a stock market price quote (around 2000 UK companies). Also note that these metrics cannot be used for analysis of parts of the business, such as a strategic business unit, due to the absence of a share price for a section of a company.

The metrics discussed in the previous chapter, on the other hand, can be used both for disaggregated analysis and for the entire firm. So it makes sense to think in terms of there being at least eight whole-firm value metrics available. These should not be thought of as mutually exclusive but complementary if calculated and viewed with sufficient informed thought.

## Total shareholder return (TSR)

Shareholders are interested in the total return earned on their investment relative to general inflation, a peer group of firms, and the market as a whole. Total returns includes dividend returns and share price changes over a specified period. For one-period TSR:

$$\text{TSR} = \frac{\text{Dividend per share} + (\text{Share price at end of period} - \text{Initial share price})}{\text{Initial share price}} \times 100$$

Consider a share that rises in price over a period of a year from £1 to £1.10 with a 5p dividend paid at the end of the year. The TSR is 15 percent.

$$\text{TSR} = \frac{d_1 + (\mathbf{P}_1 - \mathbf{P}_0)}{\mathbf{P}_0} \times 100$$

$$\text{TSR} = \frac{0.0\,5 + (1.10 - 1.00)}{1.00} \times 100 = 15\%$$

When dealing with multi-period TSRs we need to account for the dividends received in the interim years as well as the final dividend. The TSR can be expressed either as a total return over the period or as an annualized rate.

So, for example if a share had a beginning price of £1, paid annual dividends at the end of each of the next three years of 9p, 10p and 11p and had a closing price of £1.30, the total return (assuming dividends are reinvested in the company's shares immediately on receipt) is calculated via internal rate of return (see Chapter 2 for an introduction to IRR):

| Time | 0 | 1 | 2 | 3 |
|---|---|---|---|---|
| Price/cash flow (p) | –100 | 9 | 10 | 11+130 |

$$-100 + \frac{9}{1+r} + \frac{10}{(1+r)^2} + \frac{141}{(1+r)^3} = 0$$

At:
$r$ = 19%: –1.7037
$r$ = 18%: 0.6259

$$\text{The internal rate of return} = 18 + \frac{0.6259}{0.6259 + 1.7037} = 18.27\%$$

The annualized TSR is 18.27%.
The total shareholder return over the three years = $(1 + 0.1827)^3 - 1 = 65.4\%$.

TSRs for a number of periods are available from financial data organizations, such as Datastream.

TSR (often referred to simply as 'total return') has become an important indicator of managerial success:

> Performance against this type of measure is now used as the basis for calculating the major component of directors' bonuses in over half of FTSE 100 companies . . . TSR reflects the measure of success closest to the hearts of a company's investors: what they have actually gained or lost from investing in one set of executives rather than in another.
>
> (*Management Today*, March 1997, p. 48.)

In Table 9.1 the TSRs of the ten largest UK companies are shown for one year and for five years. Some perform better over one year relative to the others in the group, others perform better over five. The 'dividend yield plus capital gain' metric needs to be used in conjunction with a benchmark to filter out economy-wide or industry-wide factors. So, it would make sense to compare the TSR for HSBC with the TSR for the Banking sector to be able to judge whether a particular performance is due to factors lifting the entire sector or is attributable to good management in the firm.

**TABLE 9.1**

**TSRs for the ten largest UK quoted companies over one year and five years to December 2003**

| | TSR 1 year % | TSR 5 years % |
|---|---|---|
| Shell T&T | –7 | 29 |
| BP Amoco | 2 | 17 |
| Vodafone | 16 | –34 |
| GlaxoSmithKline | 15 | –34 |
| HSBC | 29 | 90 |
| AstraZeneca | 14 | 3 |
| Royal Bank of Scotland | 9 | 82 |
| HBOS | 4 | 19 |
| Barclays | 19 | 74 |
| Lloyds TSB | –16 | –24 |

Source: Datastream

TSR has taken off as a key performance measure. For example, in 1999 HSBC announced that its 'overall aim is to beat the average total shareholder returns of a peer group of nine leading international financial institutions – such as rival Citigroup – with a minimum objective of doubling shareholder returns over five years'[3] and Ford said it was 'setting a new objective of providing a total shareholder return – dividend plus share price appreciation – in the top quartile of the S&P500 group of companies over time'.[4] In 2000 Pilkington became the first UK company to pay its non-executive directors in shares only, in an attempt to align the management's interests to that of shareholders.

## Thoughtful use of TSR

There are three issues to be borne in mind when making use of TSR:

- *Relate return to risk class* Two firms may have identical TSRs and yet one may be subject to more risk due to the greater volatility of earnings as a result, say, of the economic cycle. The risk differential must be allowed for in any comparison. This may be particularly relevant in the setting of incentive schemes for executives. Managers may be tempted to try to achieve higher TSRs by taking greater risk.
- *Reliance on TSR assumes efficient share pricing* It is difficult to assess the extent to which share return outperformance is due to management quality and how much is due to exaggerated (or pessimistic) expectations of investors at the start and end of the period being measured. If the market is not efficient in pricing shares and is capable of being swayed by irrational optimism and pessimism then TSRs can be an unreliable guide to managerial performance.
- *TSR is dependent on the time period chosen* A TSR over a three-year period can look very different from a TSR measured over a one-year or ten-year period. Consider the annual TSRs for Company W in Table 9.2. Measured over the last two years the TSR of company W is very good. However over five years a £1m investment grows to only £1,029,600, an annual rate of return of 0.6 percent.

**TABLE 9.2**
**Annual TSRs for company W**

| | Annual TSR | Value of £1m investment made at the end of 1999 |
|---|---|---|
| 2000 | +10% | £1,100,000 |
| 2001 | –20% | £880,000 |
| 2002 | –40% | £528,000 |
| 2003 | +30% | £686,400 |
| 2004 | +50% | £1,029,600 |

TSRs must be used carefully. Fund managers are increasingly wary of using them in managerial incentive schemes because performance bonuses dependent on one-year TSRs may result in managers being rewarded for general stock market movements beyond their control – *see* Exhibit 9.1. Even worse would be the encouragement of the selective release of information to boost short-term TSR so that managers can trigger higher bonuses.

## Investor warns companies on measures for executive pay

Tony Tassell

One of the country's leading institutional investors has warned companies to avoid using share price-based performance measures in setting executive pay.

Standard Life, which has about £70bn of assets under management and owns about 2 per cent of the UK stock market, said it would oppose say packages solely based on share price-based performance targets such as total shareholder return – the share price movement of a company plus dividend payments.

The fund manager, one of the most activist in the UK market, said in its new corporate governance guidelines that pay schemes should be underpinned by challenging performance targets of underlying financial performance such as earnings. 'We expect executive bonus and share incentive schemes to use challenging performance conditions that are neither too easy nor too tough to achieve,' said Guy Jubb, head of corporate governance. 'We continue to have reservations about the use of total shareholder return and other share price performance schemes.'

Some shareholders believe share price-based targets are influenced too much by factors outside management control such as general stock market sentiment.

**EXHIBIT 9.1 Investor warns companies on measures for executive pay**

Source: *Financial Times* 2 December 2003

## Wealth Added Index (WAI)

The Wealth Added Index, developed by consultant firm Stern Stewart, measures the increase in shareholders' wealth through dividends received and share capital gains (or losses) over a period of time, say five years, after deducting the 'cost of equity', defined as the return required for shares of that risk class. It thus addresses one of the key criticisms of TSR by checking whether an impressive looking TSR has actually produced a return greater than the investor's opportunity cost given the length of time over which the TSR is measured.

To calculate the WAI first observe the rise in market capitalization (value of all the shares) over say five years. Deduct the rise that is due to the firm obtaining more money from shareholders in this period, for example from a rights issue. Then add back cash returned to shareholders in the form of dividends and share buy-backs. Then deduct the required return on the money shareholders committed to the company for the relevant period – this is the equity opportunity cost. (See Chapter 10 for a discussion on how this might be calculated.)

Under WAI analysis those companies whose share values grow more than the return required by investors create value. Those that return less than the required return destroy value. Take the case of Vodafone over the five years to December 2001 as shown in Exhibit 9.2. It increased market capitalization (+debt) by $184,305m (that is $57,588m + $126,717m). However, according to WAI it

## Search for an index that can be counted on

Andrew Balls

Falling share prices remind investors of basic rules that may have been overlooked in the bull market. It is dangerous to focus on only one 'metric', be it earnings per share or earnings before interest, tax, depreciation and amortisation. Accounting numbers should be treated with caution. Mergers do not always work out as planned. Stock options do not necessarily align management and shareholder interests.

… Now, in response to the latest round of scandals and disappointment, Stern Stewart has come up with a new measure of performance: the wealth added index (WAI), which aims to measure corporate performance from the shareholder's perspective.

The new index judges a company's return on equity against its cost of equity, using the Capital Asset Pricing Model, the foundation of modern portfolio theory. While EVA is based on accounts, the simple WAI is based on share price performance. This allows cross-border comparisons between companies – and hence a global ranking.

To create wealth for shareholders, a company must provide returns that exceed the cost of equity. Earnings may go up, quarter after quarter, or following an acquisition. But that does not guarantee that a company is creating wealth. Rather, supranormal returns, above the cost of equity, create wealth; sub-par returns destroy wealth.

The WAI equation, put simply, measures the change in market capitalisation plus dividends, minus shareholders' required returns and net shares issued. To see what this means in practice look at the tables, which show the top and bottom 40 companies in the WAI.

Between 1997–2001. Wal-Mart's enterprise value increased by $215bn and Vodafone's enterprise value increased by $184bn. Yet, according to Stern Stewart's measure, Wal-Mart created almost $150bn (£97bn) of wealth for its shareholders while Vodafone destroyed $105bn of shareholder wealth.

The difference is largely explained by capital Vodafone raised to deliver the growth in enterprise value – a total of almost $242bn. This included roughly $170bn of shares issued to acquire Mannesman and the debt raised to buy third-generation mobile phone licences …

According to Erik Stern, managing director of Stern Stewart in Europe, the real value of the WAI comes in the analysis of the four pillars of wealth added represented on the table – and what this tells you about the company.

The first column measures what Stern Stewart calls the change in the value of profits. This takes the current level of profits, measured by net operating profit after tax, and values it as if this level of profits were to be earned indefinitely, using a simple formula. The change over the period measures the difference in the perpetuity value of the level of profits prevailing at the start and the end of the period.

The second column subtracts the value of profits from the company's enterprise value. This represents the value embedded in the share price for future growth – called the value of prospects. Again, comparing 1997 and 2001 gives the change in the market's valuation of the company's future growth prospects. Since profits tend to be fairly stable, most of the observed change reflects changes in the value of prospects, which amounts to a re-rating or de-rating of the stock.

## Wealth added index

**Companies that have created the most wealth in the last five years …**

| Dec 2001 ($m) | Change in value of profitability | Change in value of prospects | Financing | Required return | WAI |
|---|---|---|---|---|---|
| Wal Mart Stores | 45,809 | 168,482 | 2,616 | 62,013 | **149,662** |
| Microsoft | 42,822 | 188,267 | 11,875 | 125,435 | **93,780** |
| IBM | 16,034 | 109,261 | –34,090 | 66,294 | **93,092** |
| General Electric | 109,881 | 242,896 | 96,949 | 163,971 | **91,857** |
| Citigroup | n.a. | n.a. | n.a. | n.a. | **82,682** |
| Nokia | 27,103 | 78,373 | –9,494 | 32,814 | **82,156** |
| Home Depot | 22,814 | 70,566 | 4,732 | 29,269 | **59,378** |
| Johnson & Johnson | 30,396 | 77,377 | 5,048 | 46,708 | **56,017** |
| Dell Computer | 11,539 | 47,954 | –1,788 | 25,929 | **35,352** |
| Nestlé | 25,050 | 32,684 | 3,418 | 19,707 | **34,609** |
| Pfizer | 74,097 | 123,125 | 105,149 | 61,362 | **30,712** |
| Royal Bank of Scotland | 51,542 | 10,987 | 21,831 | 11,585 | **29,114** |
| Amgen | 7,105 | 35,927 | –520 | 14,470 | **29,082** |
| Sanofi Synthelabo | 10,587 | 32,309 | 6,727 | 8,770 | **27,399** |
| Abbott Laboratories | 8,683 | 43,232 | –407 | 25,694 | **26,627** |
| Shell Transport & Trading | 52,199 | –3,311 | –25,581 | 49,678 | **24,792** |
| Oracle | 16,148 | 28,092 | –10,101 | 30,535 | **23,806** |
| Siemens | –6,041 | 53,333 | 5,533 | 18,693 | **23,066** |
| Bristol Myers Squibb | 23,397 | 20,686 | –19,720 | 42,035 | **21,768** |
| Lowes | 8,608 | 23,420 | 4,216 | 6,318 | **21,494** |
| Wyeth | 13,059 | 33,194 | –1,338 | 26,439 | **21,152** |
| Phillips Electronics | –20,190 | 50,820 | –1,689 | 11,462 | **20,858** |
| HSBC | 23,938 | 35,870 | 16,714 | 22,330 | **20,765** |
| Lilly, Eli | 13,673 | 31,293 | –6,786 | 31,025 | **20,728** |
| Medtronic | 6,016 | 41,925 | 11,672 | 15,880 | **20,389** |
| Target | 9,974 | 21,890 | 3,540 | 8,846 | **19,479** |
| Barclays | 30,387 | 2,397 | –1,364 | 15,117 | **19,031** |
| L'Oréal | 8,288 | 22,492 | –719 | 12,689 | **18,810** |
| Total Fina Elf | 97,128 | –3,195 | 54,649 | 20,480 | **18,803** |
| Telecom Italia | –461 | 55,816 | 16,503 | 20,715 | **18,136** |
| Taiwan Semiconductor Man' | –1,081 | 39,621 | 10,845 | 10,289 | **17,406** |
| Samsung Electronics | 9,478 | 24,149 | 6,711 | 9,759 | **17,158** |
| Takeda Chemical Industries | 16,323 | 5,348 | –3,106 | 8,677 | **16,100** |
| Pepsico | 15,973 | 19,431 | –4,170 | 23,484 | **16,089** |
| Novartis | 9,768 | 30,181 | –6,340 | 30,927 | **15,362** |
| Kohl's | 5,116 | 16,078 | 1,722 | 4,142 | **15,330** |
| Ford Motor | –68,288 | 77,309 | –29,829 | 23,929 | **14,921** |
| Walgreen | 5,335 | 19,878 | 1,117 | 9,340 | **14,756** |
| Anheuser Busch | 9,647 | 12,789 | –3,974 | 12,064 | **14,346** |
| British American Tobacco | 17,619 | –17,560 | –20,984 | 6,878 | **14,164** |

### How the Wealth Added Index is calculated

The WAI builds on Total Shareholder Return. TSR measures capital appreciation plus dividends re-invested in the company's stock), making two adjustments. First it subtracts external capital raised (equity and debt raised but not retained profits). Second, it subtracts a capital charge, the cost of equity multiplied by the market capitalisation at the start of the period, to give a dollar sum. If new shares are issued, say to finance an acquisition, they are recognised at the date of issue.

**… and those that have destroyed the most wealth**

| Dec 2001 ($m) | Change in value of profitability | Change in value of prospects | Financing | Required return | WAI |
|---|---|---|---|---|---|
| Vodafone | 57,588 | 126,717 | 241,671 | 47,207 | **–104,574** |
| NTT | 72,338 | –123,667 | 281 | 39,252 | **–90,861** |
| Lucent Technologies | –93,280 | 87,371 | 38,614 | 42,072 | **–86,594** |
| AT&T | –69,731 | 99,949 | 53,403 | 54,468 | **–77,653** |
| JDS Uniphase | –170 | 10,918 | 73,210 | 9,021 | **–71,483** |
| Coca Cola | 9,670 | –23,250 | –8,161 | 62,793 | **–68,211** |
| WorldCom | 51,683 | –940 | 81,712 | 36,859 | **–67,827** |
| Sumitomo Banking | –47,900 | 32,062 | 21,001 | 13,351 | **–50,190** |
| Nortel Networks | –47,636 | 58,761 | 29,180 | 29,956 | **–48,011** |
| Motorola | –13,737 | 12,335 | 16,233 | 23,146 | **–40,781** |
| Deutsche Telekom | –16,253 | 69,336 | 51,213 | 41,739 | **–39,868** |
| SBC Communications | 48,638 | 65,317 | 97,565 | 50,550 | **–34,160** |
| Boeing | 22,055 | –17,179 | 16,995 | 20,531 | **–32,651** |
| Walt Disney | 11,128 | –16,627 | –1,695 | 27,710 | **–31,515** |
| Compaq Computer | –6,011 | 4,573 | 11,969 | 16,154 | **–29,651** |
| Pacific Century Cyberworks | 6,977 | 4,385 | 37,432 | 2,789 | **–28,860** |
| Cisco Systems | –7,979 | 93,635 | 41,851 | 68,897 | **–24,092** |
| Toyota Motor | 51,063 | –74,914 | –27,566 | 27,068 | **–23,353** |
| AOL Time Warner | 80,054 | 81,419 | 150,434 | 34,160 | **–23,120** |
| Eastman Kodak | –4,234 | –10,606 | –1,820 | 9,437 | **–22,457** |
| Gillette | –96 | –6,736 | –4,139 | 19,616 | **–22,309** |
| Asahi Bank | –46,506 | 30,028 | 1,653 | 3,892 | **–22,022** |
| Bank One | 35,492 | –8,335 | 24,329 | 24,544 | **–21,716** |
| British Telecommunication | –17,828 | 32,936 | 9,847 | 26,475 | **–21,214** |
| Du Pont | –26,581 | 8,970 | –22,589 | 25,846 | **–20,869** |
| Corning | –1,524 | 610 | 10,126 | 9,765 | **–20,804** |
| Verizon Communications | 49,141 | 97,670 | 122,114 | 44,768 | **–20,072** |
| Xerox | –5,208 | –4,184 | –422 | 10,543 | **–19,514** |
| Pharmacia | 10,665 | 20,495 | 32,954 | 17,429 | **–19,222** |
| Cable & Wireless | –10,753 | 4,760 | 1,903 | 10,924 | **–18,820** |
| Bank of America | 35,640 | 35,303 | 41,469 | 47,857 | **–18,383** |
| Roche | 7,871 | –1,796 | –3,621 | 27,979 | **–18,284** |
| Waste Management | 20,941 | 1,439 | 32,419 | 8,003 | **–18,043** |
| Singapore Telecommunications | 2,098 | –4,738 | 6,455 | 8,844 | **–17,939** |
| KDDI | 8,773 | –5,050 | 17,683 | 3,916 | **–17,876** |
| Mitsubishi Heavy Industries | –9,423 | 1,088 | 5,466 | 3,747 | **–17,548** |
| Honeywell International | 13,938 | –1,465 | 16,674 | 12,568 | **–16,769** |
| Yahoo! | 63 | 8,759 | 13,415 | 11,978 | **–16,571** |
| Sun Hung Kai Properties | n.a. | n.a. | n.a. | n.a. | **–16,029** |
| Alcatel | –32,421 | 43,679 | 14,156 | 12,735 | **–15,633** |

The first two columns of the table measure the change in a company's enterprise value (its market capitalisation plus its net debt) during the five years to December 2001. Add them together, and subtract the third column which is financing – capital raised, net of cash returned to shareholders as dividends and share buybacks – and then subtract the fourth column, the capital charge. The result is the wealth created or destroyed, in dollars.

**EXHIBIT 9.2** Search for an index that can be counted on

Source: *Financial Times* 9 October 2002

destroyed shareholder wealth because this rise was more than accounted for by the extra money taken from shareholders (and debt holders), e.g. $170bn of shares issued to acquire Mannesman, during the five years. It raised an amazing total of $241.7bn. If this is deducted from the increase in investors pot of wealth in Vodafone we end up with a negative number. And this is before we deduct the required rate of return on the amount of shareholders' money over the five years. This takes the wealth added down a further $47bn into negative territory.

### Points to consider when using WAI

- Stern Stewart rely on the capital asset pricing model to calculate the required return on share capital. There are serious problems with this – see Chapter 10 for a discussion of the subject.
- There is an assumption that stock markets price shares correctly given company prospects at both the start and end dates. The experience of the tech bubble around the turn of the millennium should have raised a doubt here, let alone the evidence of share mispricing in the academic literature. So, one has to be skeptical as to whether outperformance is due to managerial skill or market movements. Volatile markets can turn a 'wealth creator' into a 'wealth destroyer'.
- Because the WAI measures in cash terms rather than percentages, the biggest companies appear at the top (and bottom) of the league tables pushing out smaller companies with higher percentage rates of return on shareholders' capital.

## Market Value Added (MVA)

Stern Stewart & Co. has also developed the concept of Market Value Added (MVA). This looks at the difference between the total amount of capital put into the business by finance providers (debt and equity) and the current market value of the company's shares and debt. It provides a measure of how executives have performed with the capital entrusted to them. A positive MVA indicates value has been created. A negative MVA indicates value has been destroyed.

$$\text{MVA} = \text{Market value} - \text{Capital}$$

where:

Market value = Current value of debt, preference shares and ordinary shares.

Capital = All the cash raised from finance providers or retained from earnings to finance new investment in the business, since the company was founded.

Managers are able to push up the conventional yardstick, total market value of the business, simply by investing more capital. MVA, by subtracting capital injected or retained from the calculation, measures net value generated for shareholders.

### Illustration

MerVA plc was founded 20 years ago with £15m of equity finance. It has no debt or preference shares. All earnings have been paid out as dividends. The shares in the company are now valued at £40m. The MVA of MerVA is therefore £25m:

$$\text{MVA} = \text{Market value} - \text{Capital}$$

$$\text{MVA} = £40\text{m} - £15\text{m} = £25\text{m}$$

If the company now has a rights issue raising £5m from shareholders the market value of the firm must rise to at least £45m for shareholder wealth to be maintained. If the market value of the shares rose to only £44m because shareholders are doubtful about the returns to be earned when the rights issue money is applied within the business (that is, a negative NPV project) shareholders will lose £1m of value. This is summarized below:

| | *Before rights issue* | *After rights issue* |
|---|---|---|
| Market value | £40m | £44m |
| Capital | £15m | £20m |
| MVA | £25m | £24m |

According to Stern Stewart if a company pays a dividend both the 'market value' and the 'capital' parts of the equation are reduced by the same amount and MVA is unaffected. Imagine an all-equity financed company with an equity market value of £50m at the start of the year, which increased to £55m by the end of the year after generating £10m of post-tax profit in the year and the payment of a £6m dividend. The capital put into the firm by shareholders over the company's life by purchasing shares and retained earnings amounted to £20m at the start of the year.

| | *Start of year* | | *End of year* |
|---|---|---|---|
| Market value | £50m | | £55m |
| Capital | £20m | £20m | |
| | plus earnings | £10m | |
| | less dividend | –£6m | |
| | | | £24m |
| MVA | £30m | | £31m |

If the company had not paid the dividend then, according to Stern Stewart both the market value and the capital rise by £6m and MVA would remain at £31m. Thus:

| | *Start of year* | *End of year* |
|---|---|---|
| Market value | £50m | £61m |
| Capital | £20m | £30m |
| MVA | £30m | £31m |

This dividend policy irrelevance argument is challenged in Chapter 14, where it is shown that increasing or decreasing the dividend may add value. The point to take from this section is that profits produced by the business are just as much part of the ownership capital as money raised through the sale of shares to owners at the foundation of the business or in later years. If £1 is to be retained rather than paid out to shareholders then market capitalization should rise by £1 to avoid loss of shareholder value. If it does not, then that £1 can be put to a better use outside of the firm.

## A short cut

In the practical application of MVA analysis it is often assumed that the market value of debt and preference shares equals the book value of debt and preference shares. This permits the following version of MVA, cutting out the necessity to obtain data for the debt levels (market value or balance sheet value) or the preference share values:

$$\text{MVA} = \text{Ordinary shares market value} - \text{Capital supplied by ordinary shareholders}$$

## Judging managerial performance by MVA

The absolute level of MVA is perhaps less useful for judging performance than the change in MVA over a period. Alistair Blair, writing in *Management Today*,[5] is quite scathing about crude MVA numbers:

> An MVA includes years old and now irrelevant gains and losses aggregated on a pound-for-pound basis with last year's results and today's hope or despair, as expressed in the share price. Surely, what we are interested in is current performance, or if we're going to be determinedly historic, performance since the current top management team got its hands on the controls.

What Alistair Blair seems to be proposing is that we convert MVA into a period (say five years) measure of performance so we can isolate the value-creating contribution of a particular span of years under the leadership of a team of managers.

## Points to consider when using MVA

There are a number of problems with MVA.

### Estimating the amount of cash invested

Measuring the amount of capital put into and retained within a business after it has been trading for a few years is fraught with problems. For example, does R&D expenditure produce an asset (i.e. become part of shareholders' funds) or is it an expense to written off the profit and loss account? How do you treat goodwill on acquisitions? The accountants' balance sheet is not designed for measuring capital supplied by finance providers, but at least it is a starting point. Stern Stewart make use of a proxy measure called 'economic book value'. This is based on the balance sheet capital employed figure, subject to a number of adjustments. It has been pointed out by critics that these adjustments are rather arbitrary and complex, making it difficult to claim that economic book value equals the theoretically correct 'capital' in most cases.

### When was the value created?

The fact that a positive MVA is produced is often of limited use when it comes to evaluating the quality of the current managers. For a company that is a few decades old the value drivers may have been put in place by a previous generation of directors and senior managers. The MVA measure can be considered crude in that it measures value created over the entire life of the firm but fails to pinpoint when it was created. Nor does it indicate whether value creation has stopped and the firm is living off accumulated fat in terms of strong market positions, patents, etc. Ideally we need to know whether new value creating positions are being constructed rather than old ones being eroded.

### Is the rate of return high enough?

If it is not specified when value is created, it is difficult to know whether the amount generated is sufficiently in excess of capital used to provide a satisfactory return relative to the risk-adjusted time value of money. Positive MVA companies can produce poor rates of return. Take company B in the following example. It has a much lower rate of return on capital than A and yet it has the same MVA.

| | A | B |
|---|---|---|
| MVA | £50m | £50m |
| Market value | £100m | £100m |
| Capital | £50m | £50m |
| Age of firm | 3 years | 30 years |

(Both firms have paid out profits each year as dividends, therefore the capital figure is the starting equity capital.)

### Inflation distorts MVA

If the capital element in the equation is based on a balance sheet figure then during times of inflation the value of capital employed may be understated. If capital is artificially lowered by inflation *vis-à-vis* current market value for companies where investment took place a long time ago then MVA will appear to be superior to that for a similar firm with recently purchased assets.

### MVA is an absolute measure

Judging companies on the basis of absolute amounts of pounds means that companies with larger capital bases will tend to be at the top (and bottom) of the league tables of MVA performance. Size can have a more significant impact on MVA than efficiency. This makes comparing firms of different sizes difficult. The next metric examined, the market to book ratio, is designed to alleviate this problem.

## Market to Book Ratio (MBR)

Rather than using the arithmetical difference between the capital raised and the current value, as in MVA, the MBR is the market value divided by the capital invested. If the market value of debt can be taken to be the same as the book value of debt then a version of the MBR is the ratio of the market value of the company's ordinary shares to the amount of capital provided by ordinary shareholders (if preference share capital can be regarded as debt for the purpose of value-based management).

There is, of course, the problem of estimating the amount of capital supplied, as this usually depends on adjusted balance sheet net asset figures. For example, goodwill write-offs and other negative reserves are reinstated, as in MVA. It is also suggested that asset values be expressed at replacement cost so that the MBR is not too heavily distorted by the effects of inflation on historic asset figures.

### Illustration

MaBaR plc has an equity market value of £50m, its book debt is equal to the market value of debt, and the adjusted replacement cost of assets attributable to ordinary shareholders amounts to £16m.

| | |
|---|---|
| Market value | £50m |
| Capital | £16m |
| MVA | £34m |
| MBR £50m/£16m | = 3.125 |

MaBaR has turned every pound put into the firm into £3.125.

The rankings provided by MBR and MVA differ sharply. The largest companies dominating the MVA ranks generally have lower positions when ordered in terms of MBR.

Care must be taken when using MBR for performance measurement and target setting because if it is wrongly applied it is possible for positive NPV projects to be rejected in order for MBR to be at a higher level. Take the case of a company with an MBR of 1.75 considering fundraising to make an investment of £10m in a project estimated to produce a positive NPV of £4m. Its market to book ratio will fall despite the project being shareholder wealth enhancing.

| | | *Before project* | | *After project acceptance* |
|---|---|---|---|---|
| Value of firm | | £70m | (70 + 10 + 4) | £84m |
| Capital | | £40m | | £50m |
| MVA | | £30m | | £34m |
| MBR | 70/40 = | 1.75 | 84/50 = | 1.68 |

The new project has an incremental MBR of 1.4 (14/10 = 1.4). This is less than the firm's original overall MBR of 1.75, so this is dragged down by accepting of the project. This effect should be ignored by managers motivated by shareholder wealth enhancement. They will focus on NPV.

## Conclusion

TSR, WAI, MVA and MBR should be seen not as competitors, but as complementary, especially as each has serious drawbacks. Relying on one indicator is unnecessarily restrictive. It is perfectly possible to use all these measures simultaneously, thereby overcoming many of the weaknesses of each individually. And don't forget that the measures described in the previous chapter may be used alongside these in the assessment of value creation by the entire firm.

## Notes

1 Wealth Added Index and WAI are both registered trademarks of the consulting firm Stern Stewart.
2 Market Value Added and MVA are both registered trademarks of the consulting firm Stern Stewart.
3 George Graham, 'HSBC's new guiding light aims to outshine peer group', *Financial Times*, 23 February 1999, p. 25.
4 Nikki Tait, 'Ford aims to slash $1bn from cash base this year', *Financial Times*, 8 January 1999, p. 17.
5 Alistair Blair, *Management Today*, January 1997, p. 44.