

Part

II

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**CORPORATE
FINANCE
TECHNIQUES**

During the early stages of a corporate financier's career, one of the most frequent tasks he will be faced with is the valuation of a company, a division or its securities. Valuation underpins the price at which an Initial Public Offering (*IPO*) is launched. Valuation is vital in determining the price to offer for a business in an acquisition or merger. Valuation of the different securities offered in a Management Buyout/Leveraged Buyout (*MBO/LBO*) can mean the difference between a completed transaction and a busted deal.

Part II of the book introduces the main tools used in the daily life of a corporate financier: the tools needed to understand how to value businesses and their securities. These chapters are concerned with the techniques used to value businesses for the transactions listed in Part I, as well as for determining whether securities are accurately priced in the secondary market. Chapter 8 presents the most common methods used to value securities: cash flow based and comparables or relative valuations. Chapter 9 covers the determination of the discount rate used in cash flow based valuations, while Chapter 10 introduces the concept of Shareholder Value Added or economic profit.

The following chapters assume that the reader is familiar with corporate financial statements – i.e., the balance sheet, and profit and loss statement. We also assume a basic understanding of the principles of the concept of present value.

Chapter

8



**VALUING
SECURITIES**

This chapter introduces two of the most popular equity valuation approaches: discounted cash flow, and comparable or relative valuations. The Appendix, which contains the results of a survey of UK corporate financiers, shows that these are the most frequently relied upon methods of valuation. Other specialised valuation methods are available to corporate financiers (e.g., asset valuations, option-based models), but we leave these to more specialised texts.

We begin by examining the process of bond valuation. Bonds and other fixed interest securities are relatively easy to value, because they promise a fixed stream of interest payments on known dates in the future. Equities, on the other hand, have a much greater degree of uncertainty regarding future dividends and capital appreciation. However, the principles of bond valuation underlie one of the most important business valuation methods.

VALUING BONDS

The core business valuation techniques in use today are derived from the pricing of bonds with fixed interest coupons. An understanding of bond pricing will provide the reader with a grounding in the fundamentals of Discounted Cash Flow (*DCF*) valuation. To understand the price of a bond, or any promise to pay a sum of money in the future, one starts with the concept of present value.

The simplest way to start is to look at a security that makes only one payment in the future: a zero-coupon

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bond, introduced in Chapter 2, fits the bill. As you will recall, the zero-coupon bond derives its name from the fact that there are no interest payments made during the life of the bond. The only cash flows involved are the amount the purchaser pays up front – the price of the bond – and the amount paid by the issuer on maturity – the redemption amount.

For example, a company issues 10-year bonds at a price of £385 per £1,000 face value. This means that the company receives £385 today, but must repay its investors £1,000 in 10 years' time. It is clear that zero coupons are not a source of free capital.

The yield to maturity (and hence, the effective interest rate being paid by the issuer) is calculated using the following formula:

$$P = \frac{M}{(1 + r)^n}$$

where P = Price;
 M = Maturity value (redemption amount);
 r = Yield to maturity;
 n = Number of years to maturity.

Therefore, the yield to maturity on the bond with a price of £385, 10 years to maturity and maturity value of £1,000 is calculated as follows:

$$385 = \frac{1,000}{(1 + r)^{10}}$$

By using a financial calculator or computer spreadsheet, r is calculated as approximately 10% per annum. Thus, the investor earns 10% compounded annually on her purchase of the zero-coupon bond. At the same time, we can see that it *costs* the company 10% per year to have use of the investor's loan.

For coupon bonds, today's value or price is the present value of the future payments (interest coupon and the return of capital on maturity) discounted by the yield to maturity:

$$P = \sum \frac{CF_n}{(1+r)^n}$$

CF represents both coupon and principal repayment on maturity
Risk: the discount rate r is adjusted for risk

where \sum = Sum of cash flows;

CF_n = Cash flow received in period n (coupon payment and principal repayment);

r = Yield to maturity (discount rate);

P = Principal amount to be repaid on maturity (sometimes called *par value*).

Box 8.1 illustrates the pricing of a new bond issue.

VALUING SHARES AND COMPANIES

There are numerous definitions of value when approaching equity valuation. The economic, or intrinsic, value of a business represents its value to the current owner or to a prospective owner (e.g., in an M&A deal). It is not necessarily the price at which the company's shares will

Box 8.1 Example of pricing a bond new issue.

BP is considering the issue of a Eurobond with a 5-year maturity to help fund its operations in America. The company wishes to pay a coupon of 7.5%, or \$75 per \$1,000 face value (par value). On maturity, the company will return the face value of the bonds to investors.

At present, bonds with similar characteristics and maturity have been issued by a number of oil and gas producers with the same credit rating and business profile as BP. The yield to maturity on these 5-year bonds averages approximately 8%. Thus, 8% is the appropriate discount rate, or yield to maturity, to use in determining the price at which BP's bonds should be issued:

$$\begin{aligned}
 \text{Price} &= \frac{75}{(1 + 0.08)^1} + \frac{75}{(1 + 0.08)^2} + \frac{75}{(1 + 0.08)^3} + \frac{75}{(1 + 0.08)^4} \\
 &\quad + \frac{75}{(1 + 0.08)^5} + \frac{1,000}{(1 + 0.08)^5} \\
 &= \frac{75}{(1.08)} + \frac{75}{(1.166)} + \frac{75}{(1.260)} + \frac{75}{(1.360)} + \frac{75}{(1.469)} + \frac{1,000}{(1.469)} \\
 &= 69.444 + 64.322 + 59.524 + 55.147 + 51.055 + 680.735 \\
 &= \$980.227
 \end{aligned}$$

Thus, BP would sell bonds with a \$1,000 par value at a price of \$980.23 per bond. If prevailing interest rates had been lower than 7.5%, the company would have priced its bonds at a level higher than the \$1,000 par value.

trade. The relative value of a share is its value as determined by the value of a group of similar 'comparable' companies. The market value, sometimes referred to as 'open market value', is defined as the price that an informed willing buyer would pay an informed willing seller for a business or shares of the business.

The value that an analyst comes up with may be very different depending on which method is used. Corporate financiers are most concerned with, in the first place, the intrinsic value of a business. Once she knows the intrinsic value, she will be able to advise her client on most transactions. The intrinsic value of a business is most important when considering a sale or acquisition, while the relative valuation is probably more important when trying to set the price of shares in a flotation or IPO.

Business valuation involves making a great number of assumptions – the ability to construct a complex ExcelTM spreadsheet is but one part of the valuation process. Senior corporate financiers use their experience and judgement when determining what method is most appropriate and, once having done so, a plethora of assumptions required to complete the valuation.

This book examines the two most popular corporate valuation approaches: discounted cash flows (based on bond pricing principles) and relative valuations which estimate value by comparing the pricing of comparable companies. In some situations, options-based valuation approaches or asset appraisals may be applied to the valuation of a company's shares. We leave discussion of these to specialist texts, some of which are listed in Additional Reading (p. 223). The technique or techniques chosen and their relative importance will vary from one circumstance to another. Experienced corporate financiers almost always use more than one technique in valuing a company's shares.

CASH FLOW BASED VALUATIONS

The Discounted Cash Flow (*DCF*) approach to corporate valuation follows the bond valuation approach most closely. However, as noted in the opening paragraphs of the chapter, there is a major difficulty. It is much more difficult to estimate the future cash flows to be generated by a company or one of its divisions than to determine the interest payments on a bond. From a theoretical perspective, DCF valuations provide the most reliable indications of corporate value, but their use is often limited in practice by lack of reliable cash flow forecasts.

The basic steps in determining the value of an enterprise through a DCF valuation are as follows:

- Estimate and analyse future cash flows (frequently derived from earnings projections), ensuring proper adjustment/inclusion for depreciation and amortisation; capital expenditure; changes in working capital.
- Make an estimate of the value of the company (division) following the forecast period (called the *residual* or *terminal value*).
- Determine an appropriate discount rate, to adjust for the time value of money and the riskiness of the cash flows (see Chapter 9).
- Calculate the present value of all future cash flows by application of the discount rate to the estimated cash flows and residual value.

In most instances, a corporate financier will work from forecasts of income statements and balance sheets.

These are accounting presentations. He then needs to determine the economic cash flows that are available to the providers of financing (i.e., debt and equity).

The free cash flow figure computed in a DCF forecast combines information from both the income statement as well as the balance sheet (e.g., capital expenditures are a use of cash, but are not reported on the income statement). Depreciation and amortisation are both recorded as expenses on the income statement, but do not reflect any movement in cash.

Typically, a corporate financier will make a cash flow forecast for a period of 5 years. In particularly volatile or uncertain industries, the forecast period may be only 3 years, while in more stable industries (e.g., utilities) cash flows will be forecast for 10 years or even more in exceptional circumstances. Although it can be difficult, the financial modeller should attempt to capture one business cycle.

For simplicity, our cash flow summary starts with Earnings Before Interest and Tax (*EBIT*) from the income statement (see Box 8.2).

The tax charge represents the taxes that a company would have to pay if it had no debt, marketable securities or non-operating income or expenses. In a free cash flow model the taxes are applied to EBIT at the highest marginal rate.

Free cash flow is the cash that is available to pay a return to the providers of capital – both shareholders and debt-

 Box 8.2 Determining free cash flow.

EBIT

Less: Taxes (at highest marginal rate)

Equals: Net Operating Profit After Tax (NOPAT). This is sometimes referred to as Net Operating Profit Less Adjusted Taxes (NOPLAT)

Plus: Non-cash expenses; particularly, depreciation and amortisation, etc.

Less: Capital expenditure
Increase in working capital

Note that both these items are found on the balance sheet (and its notes). They are both uses of cash.

Equals: Free cash flow

holders. From free cash flow, the corporate financier begins to determine the Enterprise Value of a business – i.e., debt and equity combined.

Table 8.1 illustrates a simplified 5-year forecast of free cash flow, for a business whose EBIT is growing at approximately 6% per annum. When looking at growing businesses – and very few forecasts predict declines – ensure that you also look at the capital expenditure and changes in working capital. Growing businesses almost always need to make capital expenditures and to increase working capital in order to achieve growth.

Once the forecast of free cash flows has been developed, the corporate financier must discount the cash flows by an appropriate discount rate in order to arrive at a present value. Table 8.2 uses the free cash flows from

Table 8.1 Sample cash flow forecast

	Year 1	Year 2	Year 3	Year 4	Year 5
EBIT	100	106	112	119	126
Taxes (30%)	30	32	34	36	38
NOPAT	70	74	78	83	88
<i>Plus:</i>					
Depreciation	25	28	30	33	37
<i>Less:</i>					
Capital expenditures	30	32	33	35	36
Increase (decrease) in working capital	12	15	16	10	(5)
Free cash flow (FCF)	53	55	59	71	94

Table 8.1 and a discount rate of 10%. The discount factor (row 2 in Table 8.2) is calculated using the following formula:

$$\frac{1}{(1+r)^n} = \frac{1}{(1.10)^n}$$

The discount factor in row 2 is then multiplied by the

Table 8.2 Determining the DCFs.

Row	Year 1	Year 2	Year 3	Year 4	Year 5
1 Free cash flow	53	55	59	71	94
2 <i>Times</i> : Discount factor (10%)	0.909	0.826	0.751	0.683	0.621
3 PV of FCF	48	45	44	48	58
4 Total PV of free cash flows	£243				

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free cash flow (row 1) for each year to arrive at the PV of FCF in row 3.

The present value of the forecast cash flows to the enterprise over the next 5 years is £243 million.

Determination of terminal/residual value

Once the corporate financier has calculated the present value of the cash flows over the forecast period, she is left with the decision of determining the value to be ascribed to the project in the future. In the simplest cases, the final or terminal value of a project is the salvage value of the plant and equipment used. However, when valuing companies or projects with an indeterminate lifespan, a value must be assigned to the business after the end of the explicit cash flow forecast. Often this terminal or residual value can constitute the largest portion of the valuation.

There are three commonly used approaches for determining the terminal value of projects or firms:

- asset value approaches;
- DCF approaches (economic approach);
- relative (or comparable) investment multiples (accounting approach).

Asset value

In certain project valuation exercises, particularly in the natural resources or extractive industries, the determination of the final value of the project may be

relatively easy to determine. The corporate financier simply makes an assumption about the value of the plant and equipment at the end of the project. The value in year 10, say, is then discounted to the present value at the appropriate cost of capital.

Discounted Cash Flow (economic approach)

The economic approach is the most appropriate method of determining the residual value according to financial theory. We will look at two possibilities. The first assumes there is no further growth in free cash flows following the final year of the forecast. The second assumes continued growth.

The first DCF approach assumes that the final year's free cash flow continues at the same level in perpetuity. The discount rate (r) to be used in the calculation of a perpetual cash flow is the weighted average cost of capital (see Chapter 9). The formula for calculating steady growth for ever is as follows:

$$TV = \frac{CF_n}{r}$$

where TV = Terminal value or residual value;
 CF_n = Cash flow in final year of forecast n ;
 r = Discount rate.

Continuing with the prior cash flow example, the final year's cash flow is estimated to be £94 million.

Assuming steady state, the terminal value would be:

$$\begin{aligned} TV &= \frac{94}{0.10} \\ &= \text{£}940 \text{ million} \end{aligned}$$

Remember that the £940 million is the estimated value at the end of year 5 – we need to calculate its present value. This is done by multiplying the terminal value (£940 million) by the year 5 present value factor of 0.621 (refer to year 5, row 2 in Table 8.2). The result is a present value of the terminal or residual value of £584 million.

In some instances, a 'steady state' approach is not appropriate. Some companies or projects might legitimately be assumed to continue to grow after the formal forecast period. If the growth is estimated to be a constant, the residual value can be estimated by using the mathematical concept of a growing perpetuity.

The formula for a growing perpetuity is:

$$TV = \frac{CF_n \times (1 + g)}{(r - g)}$$

where TV = Terminal value;

CF_n = Cash flow in final year of forecast n ;

r = Discount rate;

g = Growth rate.

It is generally recommended that the maximum growth rate used in the calculation should not exceed the

long-term sustainable growth rate of the economy. In companies operating in EU or North American economies, a maximum perpetual growth rate of 2% or 3% would be reasonable.

If the business in our example anticipated its cash flow to grow at 2% per annum in perpetuity, the terminal value would increase to £1,198 million:

$$\begin{aligned} TV &= \frac{94(1.02)}{0.10 - 0.02} \\ &= \frac{95.88}{0.08} \\ &= \text{£1,198 million} \end{aligned}$$

Discounting the estimated terminal value to the present using the year 5 discount factor results in a present value of the terminal value of £744 million (£1,198m × 0.621). Note the impact on value of relatively low growth of 2% is significant, even in present value terms. Using a growing perpetuity increases the value of the enterprise by £160 million.

Relative valuations (accounting approach)

This approach suggests the use of comparable multiples which are fully described in the following section. The corporate financier would find similar companies to the one being valued and take an average of the Price Earnings (*PE*) multiples. He would then multiply the forecast net income by the PE ratio to estimate the value.

Briefly, assume that in year 5 the net income is forecast to be £94 million and similar companies have a price earnings multiple of 12 times. Multiplying the net profit forecast by the average PE multiple results in a value of £1,128 million. This would then be discounted at the same discount rate, to arrive at an estimate of the equity value of the business of £700 million.

Determining the discount rate

Chapter 9 addresses the issue of determining the discount rate. In our example, we assume that it is 10%.

Determining the value of the business

The enterprise value of a business (whether a division, business unit, private or publicly quoted company) is calculated as the sum of the items in Box 8.3.

When cash on hand is valued at its balance sheet amount, it is important that the valuer does not include any investment income from that cash in his cash flow forecast. Redundant assets are assets that the business

Box 8.3 Components of enterprise value.

	Discounted cash flow (from forecast)
+	Present value of terminal value
+	Cash on hand at the date of the valuation
+	Redundant assets at the date of the valuation
=	Enterprise value

Box 8.4 Enterprise valuation.

	(£m)
Discounted cash flow	243
+ Present value of terminal value*	584
+ Cash on hand**	3
+ Redundant assets**	—
Enterprise value	£830

* Assumes that there is no growth in cash flows beyond the forecast period and the present value of the perpetual cash flows is used.

** Assumptions made for illustrative purposes.

owns but does not use in its ordinary operations. If they have value, the assets should be included in enterprise value calculation.

The enterprise valuation of the example company is shown in Box 8.4.

Enterprise value refers to the value of the assets of the business. (Here the business can be a division of a company, a privately held company, a stock exchange listed company or other entity.) The assets do not refer to the accounting book value or to the salvage value. It is the present value of the cash flows the assets of the firm are capable of generating. Enterprise value does not concern itself with how the assets are financed.

The value of the equity in the business is simply the enterprise value less the market value of outstanding debt, preference shares or other forms of financing. Lenders and preference shareholders have a prior claim

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Box 8.5 Calculation of equity value.

	Discounted cash flow:
+	Present value of terminal value
+	Cash on hand
+	Redundant assets
=	Enterprise value
<i>Less:</i>	
	Market value of preference shares
	Market value of debt
=	Equity value

on the assets of a company, ahead of ordinary shareholders. Therefore, the equity value of the business is the residual of the enterprise value after deduction for prior claims.

In practice, it can be difficult to determine the market value of the debt and other securities. When this is the case, corporate financiers tend to use the book value.

For example, the company has £325 million face value in long-term debt, but the market value is £300 million. Therefore, £300 million is subtracted from the enterprise value to determine the equity value. There are no preference shares outstanding, as shown in Box 8.6.

The equity value is the estimate of the business's market capitalisation. Note that while the discounted cash flow valuation approach is the most 'scientific', it does suffer from shortcomings. In particular, there are estimation errors surrounding most cash flow forecasts,

Box 8.6 Calculation of equity value.

	(£m)
Discounted cash flow	243
+ Present value of terminal value*	584
+ Cash on hand**	3
+ Redundant assets**	—
Enterprise value	830
<i>Less:</i>	
Market value of preference shares	—
Market value of debt**	300
	<hr/>
= Equity value	£530

* Assumes that there is no growth in cash flows beyond the forecast period and the present value of the perpetual cash flows is used.

** Assumptions made for illustrative purposes.

determination of the terminal value and, often most importantly, the choice of discount rate.

Most corporate financiers use the DCF approach in conjunction with another valuation method. In particular, they use investment ratios (multiples) from comparable companies (see the Appendix).

RELATIVE VALUATIONS

The most common, and in many ways the easiest to complete, method of valuing a company's equity is by comparing a number of financial and investment ratios with those of the firm's peer group. In general, it is easy to calculate multiples for other companies and they are particularly useful when there are a large number of

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comparable firms being traded, and the market is pricing these firms correctly.

However, the determination of what is a 'comparable' is not always straightforward and is often open to interpretation. Some of the key areas of difference and, therefore, difficulty in selecting companies as comparables include:

- size and future growth prospects of the company;
- riskiness of the business;
- scope of product offerings;
- variance in customer base;
- geographic reach;
- current and future profitability.

All these factors have an impact on the valuation of comparable companies, and judgement needs to be made in drawing conclusions as to the appropriate multiples to be used for the value range.

In some instances, particularly when comparing a privately held company with the investment ratios of public companies, adjustments must be made. The most frequent adjustments are:

To reported earnings:

- elimination of one-off items;
- add back 'excessive' management remuneration to EBIT;
- adjustments to align accounting policies with those used by public companies.

To multiples:

- a discount to compensate for the non-marketability of private company shares;
- a premium for control;
- an adjustment to reflect variations in overall quality of earnings (i.e., earnings variability).

Price earnings ratio

The most common earnings valuation method is the Price Earnings Ratio (*PER* or *PE ratio*) which is the multiple that the price or value represents of annual maintainable earnings. The earnings figures used are those earnings attributable to ordinary shareholders after deductions for interest, tax, minority interest and dividends attributable to preference shareholders.

The PE multiple (or ratio) is calculated as the market price per share divided by earnings per share. An alternative approach to the method is to take the market capitalisation of the company divided by net earnings (or profit or income) after tax. The resulting multiple will be identical.

As a simple example, consider a company with earnings attributable to ordinary shareholders of £5 million. A corporate financier who believes that a PE multiple of between 8 and 12 is appropriate would value the company at between £40 million and £60 million. If the company had 10 million shares outstanding, the earnings per share would be 50p. Applying a multiple of between 8 and 12 times would result in an estimated

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share price of 400p to 600p. This is often referred to as the capitalisation of earnings approach to valuation.

Price/EBIT multiple

An alternative earnings valuation method is to use a multiple of a business's earnings before interest and taxation (i.e., market capitalisation divided by EBIT). EBIT multiples are not commonly quoted for public companies, but are of particular use for situations where a stand-alone business is being acquired, and/or where the business being valued is highly leveraged.

Market to book value

The market to book value ratio, also called the *price to book value ratio*, is another frequently examined ratio. The market value of a company's shares (i.e., price) is divided by its book value per share; alternatively, the market capitalisation of a company is divided by the firm's shareholders' funds. Its importance is greater in some sectors (e.g., banking) than others (e.g., high-tech, software).

Some analysts favour the ratio because the book value is a relative constant which eases comparability over time or across companies. The price to book value ratio can be calculated even when a company's earnings or EBIT are negative. However, the book value does not reflect the assets' earning power and projected cash flows. It reflects the assets' original cost and is affected by accounting

decisions on depreciation. Finally, the ratio is not very useful in valuing service firms without significant fixed assets.

Dividend yield

The dividend yield valuation model is infrequently used, but when it is used, it is those businesses with a steady level of profitability and a consistent payout of a large proportion of earnings in the form of dividends that are the most appropriate subjects. It also can be used for the valuation of minority shareholdings. This technique values the dividend stream by comparing it with that available from other securities.

To calculate the equity value it is necessary to divide the dividend paid by the appropriate dividend yield. The appropriate dividend yield is chosen by reference to the Stock Market, to private transactions or to dividend yields on comparable businesses. By way of example, assume that similar firms to ours have an average prospective dividend yield (i.e., next year's estimated dividend per share divided by today's share price) of 3%. If we anticipate the payment of £25 million in dividends next year, we can estimate the firm's equity value:

$$\begin{aligned}\text{Equity value} &= \frac{\text{Expected dividend}}{\text{Prospective dividend yield}} \\ &= \frac{\text{£25m}}{3\%} \\ &= \text{£833 million}\end{aligned}$$

There are potential pitfalls when valuing on a dividend basis. First, the certainty of the dividend stream must be assessed both in terms of dividend policy where the shareholding does not give control, and in terms of the stability of earnings. Second, an assessment must be made of the proportion of earnings paid out as dividends ('the payout ratio') for it may be misleading to apply a dividend yield derived from companies with low-payout ratios to the dividend paid out by companies with high-payout ratios.

Enterprise value to EBITDA

This ratio first gained widespread use in the mid-1990s and continues to be popular. Enterprise value is calculated as:

Market capitalisation

$$= \frac{\text{Number of shares outstanding}}{\text{Share price}} + \text{Market value of outstanding debt}$$

The multiple compares the enterprise value of the business with its Earnings Before Interest, Tax, Depreciation and Amortisation (*EBITDA*) which is essentially an alternative measure of cash flow.

EBITDA is seen as a proxy for cash flow and is a useful number to use, particularly in companies or industries that are growing rapidly and may have not yet achieved profitability. The benefits of the ratio are numerous. It

may be computed for firms that have net losses and can be more appropriate for industries which require a substantial investment in infrastructure and long gestation periods (e.g., new telcos). For LBO (highly levered) transactions, EBITDA multiples capture the ability of the firm to generate cash flows that may be used to support debt payments in the short run. Finally, the EBITDA multiple allows for comparison of firms with different financial leverage.

Determining the value of a business based on ratios/multiples

In this section we examine the financial results of a privately held manufacturer, 'Blockade Holdings' and compare it with publicly traded companies in order to determine a valuation range for the company. Table 8.3 contains selected valuation statistics for five similar manufacturing companies. A corporate financier has assessed each of these business and deems them to be similar in size, product line, extent of operations, major accounting policies, etc.

In this table, EV refers to Enterprise Value (the sum of the firms' market capitalisation and market value of its outstanding debt). Price refers either to share price or to market capitalisation of the firm's equity.

Note that the mean and median statistics are fairly close for most ratios. This indicates that for most ratios there is not a company with outlying results, which may skew the valuation range. The exception to this is column 8,

Table 8.3 Publicly traded comparables.

1	2	3	4	5	6	7	8	9	10	11	12
Company	Price (p)	Market capitalisation (bn)	1-year return	PER $\frac{2005}{2006}$	EV/ EBITDA	Price/ FCF	Market capitalisation/book value	EV/ Revenues	EBITDA/ Revenues	Dividend yield	
Lawrence	479	£26.4	38%	18.7	14.3	6.9	26.2	1.00	1.24	18%	3.5%
Wilson	216	£1.1	NA	14.4	13.5	7.3	12.9	0.16	0.64	9%	1.7%
Hodges	378	£3.3	27%	7.6	7.1	4.5	16	0.55	0.70	16%	4.6%
Ranson	53	£0.6	-36%	11.8	7.3	3.9	14.5	0.25	0.51	13%	5.7%
Allen	773	£5.8	46%	13.8	12.7	6.6	-138.1	0.79	1.01	15%	3.1%
Average				13.3	11.0	5.8	-13.7	0.55	0.82	14%	3.7%
Median				13.8	12.7	6.6	14.5	0.55	0.70	15%	4.0%
Minimum				7.6	7.1	3.9	-138.1	0.2	0.51	9%	1.7%
Maximum				18.7	14.3	7.3	26.2	1.0	1.24	18%	5.7%

Box 8.7 Blockade Holdings summary financial statements.

Income statement	2005 (£m)
Revenues	300
EBITDA	50
Depreciation	14
EBIT	36
Interest expense	12
Earnings before tax	24
Income tax	7
Profit after tax	17
Dividends	7
Free cash flow	12
 Summary balance sheet	 Year end 2005 (£m)
Fixed assets	400
Current assets	100
Current liabilities	60
Long-term debt	80
Shareholders' equity	360

the Price/Free Cash Flow (*FCF*) column (market capitalisation of equity divided by free cash flow). Allen has a negative FCF, which adversely affects the average of the five companies. Ignoring Allen gives an average Price/FCF of 17.4 and a median of 15.3 for the remaining four companies. Box 8.7 contains summary financial results for the company.

The company's profit after tax is expected to grow to £20 million in the following year (2006) from £17 million in 2005. FCF for the year has been estimated as £12 million, reflecting capital expenditure and increases in working capital to finance the company's growth.

Table 8.4 contains the workings of the summary comparable valuation for Blockade Holdings. The mean and the median multiples from Table 8.3 are in the second column from the left (*Comparable multiple*). In the third

Table 8.4 Comparables-based valuation.

Ratio	Comparable multiple		Amount (£m)	Equity value range	
	Average value	Median value		(based on average)	(based on median)
	(£m)	(£m)		(£m)	(£m)
Earnings (trailing 2005)	13	14	17	226	235
Earnings 2006 est.	11	12.7	20	220	254
Free cash flow	15.3	17.4	12	184	209
Dividend yield	0.035	0.037	7	200	189
Book value (NAV)	0.55	0.55	360	198	198
EBITDA (as adjusted below)				210	250
Revenues (as adjusted below)				130	166
Range				130	250
Median of midpoints					198
Mean of midpoints					205
				Enterprise value	
EV/EBITDA	5.8	6.6	50	290	330
EV/Revenue	0.70	0.82	300	210	246

column (*Amount*) is the comparable figure from Blockade's financial statements as presented in Box 8.7. Our analysis (done elsewhere) has shown that the company's operating and financial characteristics are average when compared with the comparable group. The second column is multiplied by the third column to get the equity or enterprise valuation based on that multiple.

The column *Comparable multiple* contains a range of values based on the median and mean of the comparable companies as presented in Table 8.4. *Amount* is the figure for Blockade – e.g., in the 'Earnings (trailing 2005)' row we insert Blockade's net profit of £17 million. The 'Equity value range' column is the product of the two columns to its left – *Comparable multiple* multiplied by *Amount*.

Therefore, assuming we have chosen appropriate comparables, the market capitalisation of Blockade should be between £226 million and £235 million, based on an earnings multiple. Corporate financiers will always look at numerous multiples when arriving at an estimate of value.

In order to adjust the enterprise valuation to make it comparable with the equity valuation, subtract the value of debt (£80 million). In this example, we assume that the book value of the debt is the same as its market value as we do not have access to market figures.

Therefore, the equity value based on the EV/EBITDA multiple of 5.8 is £210 million (an enterprise value of £290 million less £80 million of outstanding debt), and

.....

the equity value based on EV/Revenues is £145 million (enterprise value of £225m less the value of debt, £80 million).

Based on the figures (median £198 million and mean £205 million) the management of Blockade would probably set the value of the business at approximately £200 million. A reasonable range for the valuation of the equity of the business, based on this extremely limited information, would be from, say, £185 million to, say, £215 million. Note that this final range has been called reasonable. It is based on the author's judgement: something that is very important in all valuations. Although the use of formulas and numerical ratios make valuation appear to be a science, it remains very much an art.