Business valuations

Businesses need to be valued for a number of reasons such as their purchase and sale, obtaining a listing, inheritance tax and capital gains tax computations. Generally, valuation difficulties are restricted to unlisted companies because listed companies have a quoted share price. However, even listed companies can present valuation challenges for example when one is trying to predict the effect of a takeover on the share price.

Whenever a company is bought what the new owners have a right to depends on the stake they hold:

Majority holders: have access to their share of earnings and, because they can opt for a winding up, their share of net assets of the company.

Minority holders: have access to the dividends the majority decide to pay and a share of the net assets *if* the majority decides to wind the company up.

Therefore, because minority holders have little power and no control, a 20% share of a company should be less than 20% of its total value. Conversely, an 80% share should be worth more than 80% of the full value of the company. Majority holders should be prepared to pay a premium for control.

There are three broad approaches to share valuation:

1. Assets-based.
2. Income-based.
3. Cash flow-based.

ASSETS-BASED APPROACH

Here, the business is estimated as being worth the value of its net assets. However, there are three common ways of valuing its net assets: book values, net realisable values and replacement values.

- The book value approach is practically useless. The book value of non-current assets is based on historical (sunk) costs and relatively arbitrary depreciation. These amounts are unlikely to be relevant to any purchaser (or seller). The book values of net current assets (other than cash) might also not be relevant as inventory and receivables might require adjustment.
- Net realisable values of the assets less liabilities. This amount would represent what should be left for shareholders if the assets were sold off and the liabilities settled. However, if the business being sold is successful, then shareholders would expect to receive *more* than the net realisable value of the net assets because successful businesses are more than the sum of their net tangible assets: they have intangible assets such as goodwill, knowhow, brands and customer lists – none of which is likely to be reflected in the net realisable value of the assets less liabilities. Net realisable value therefore represents a 'worst case' scenario because, presumably, selling off the tangible assets would always be available as an option. The selling shareholders should therefore not accept *less* than the net realisable amount – but should usually hope for more.

- Replacement values. Once again, not of great practical benefit. The approach tries to determine what it would cost to set up the business if it were being started now. The value of a successful business using replacement values is likely to be lower than its true value unless an estimate is made for the value of goodwill and other intangible assets, such as brands. Furthermore, estimating the replacement cost of a variety of assets of different ages can be difficult.

So, of the three approaches, net realisable value is likely to be the most useful because it presents the sellers with the lowest value they should accept.

Figure 1

Non-current assets contain land and buildings that are valued $700,000 above their book value, and plant and machinery, which would sell for $200,000 less than their book value. Inventory would sell for $400,000 and only $250,000 would be realised from receivables.
Closure costs would add $100,000 to liabilities.

Book values		**$000**			**Net realisable values**		**$000**
Non-current assets		1,000	**+700 – 200** →		Non-current assets		1,500
Current assets					Current assets		
Inventory	500		**-100** →		Inventory	400	
Receivables	300		**-50** →		Receivables	250	
Cash	400				Cash	400	
		1,200					1,050
		2,200					2,550
Share capital		400			Share capital		400
Reserves		900			Reserves (balance)		1,150
		1,300					1,550
Bonds		400			Bonds		400
Current liabilities		500	**+100** →		Current liabilities		600
		2,200					2,550

The minimum amount that the shareholders should accept for this business is $1,550,000, the amount of share capital plus reserves after revaluation (or alternatively, $2,550,000 – 400,000 – 600,000).

INCOME-BASED APPROACH

The P/E ratio method is widely used in practice.

This method relies on finding listed companies in similar businesses to the company being valued (the target company), and then looking at the relationship they show

between share price and earnings. Using that relationship as a model, the share price of the target company can be estimated.

P/E ratios

The P/E ratio is the price per share divided by the earnings per share and shows how many years' worth of earnings are paid for in the share price.

Let's say that the market value of a small chain of UK-based grocery shops has to be estimated. The company has just has just enjoyed post tax earnings of $200,000, out of which it paid a dividend of $50,000.

The first task is to identify three UK listed companies in the grocery business, then look at their published characteristics. For this illustration, three large UK quoted supermarket chains (Morrison (W), Sainsbury and Tesco) have been chosen. On 24 December 2011 their published characteristics were:

	P/E ratio	
Morrison (W)	10.8	
Sainsbury	9.9	
Tesco	10.0	

Here, all the P/E ratios are very similar. Sometimes they are not – even in the same sector – because one or more has been distorted for whatever reason. For example, a company's market price might be unusually high because of bid speculation, or its earnings might be low because of once-off restructuring costs written off in the latest financial statements. Usually, any P/E that seems adrift from the others is left out of further calculations.

It is also important to look closely at listed companies' range of activities as often large listed companies have an element of diversification. For example, although Tesco is regarded as a UK supermarket chain, approximately one third of its revenues are earned overseas, and the importance to the company of selling clothing, electrical goods and financial services is growing rapidly. Care is therefore needed to make sure that there is not likely to be too much distortion in the P/E ratio when using Tesco as a model for a chain of simple grocery stores. Here, for the sake of this example, we will assume that any distortion is not material.

Then, usually for want of any better treatment, the average P/E of the selected listed companies is calculated. Here it is 10.2, and this represents the relationship that quoted companies, in the supermarket industry, are showing between their earnings after tax and their market capitalisation (or between their earnings per share and their price per share). Remember, 10.2 means that anyone who buys a share is buying it for 10.2 times its last published earnings.

Therefore, as the target company's post tax earnings are $200,000, its market value would be estimated at:
10.2 x $200,000 = $2,040,000.
However, just as the listed companies' P/E ratios might be distorted, so might the earnings of the company being valued. For example, if its owners had known for some

time that they wanted to sell the company, they could have planned to create inflated earnings. Current earnings can be flattered by cutting back on 'discretionary' costs such as research and development, maintenance, training and recruitment. Although this will make current earnings look good, it is likely to store up trouble and extra costs for the future when the company has to catch up with neglected expenditure. There is therefore a double trap for purchasers: paying a purchase price based on unsustainable earnings and then finding themselves owners of a company that has unexpected 'catch-up' expenses.

Assuming that we are happy with a P/E ratio of 10.2 and earnings of $200,000, then the calculated market value of $2,040,000 is the *starting point* for negotiations to begin. Here are some points to consider:

- When you buy a company, you are buying an entitlement to its future earnings, not its past earnings. Even if the earnings of $200,000 were not deliberately distorted, the buyer should still consider whether that figure is a fair representation of future earnings. For example, the market sector in which the company is operating could be in decline. Or, if the owner is retiring, will this damage the earning ability of the company, or will earnings increase because the owner no longer draws a large salary? It is worth noting that the sellers of a company usually know more about it than the buyers. Just think about the information asymmetry that there is if you are buying a second-hand car!
- Are the risk, stability, and expertise present in large, highly professional quoted companies comparable to those of a small company? Generally, large quoted companies will have advantages and should be valued on a higher multiple of their earnings than the small company.
- Quoted share prices and, therefore, P/E ratios can be very volatile. Share prices, particularly in turbulent economic times, can vary dramatically day-to-day. Are the P/E ratios chosen 'fair'?
- How relevant is a valuation based on earnings to a buyer of a minority stake who only ever receives dividends? The P/E ratio approach is therefore particularly appropriate for purchases of majority stakes.
- Quoted companies are more desirable investments *because* they are quoted. Shares in quoted companies are easy to sell on the market, whereas unquoted shares are much more difficult to sell because buyers have to be found and a price negotiated. Minority shareholders in unquoted companies can have a miserable time: they have little voting power and can be trapped in their investment.

To account for these differences, particularly the move from a listed to a private company, it is normal for the value of an unquoted company (as calculated above) to be reduced by 1/3 – 1/2. There is no great theory behind these reductions but they are common in practice and often accepted by the UK tax authorities. This would result in the valuation of the target company (above) being reduced from $2,040,000 to around 1,020,000 to 1,360,000, before the other factors mentioned above are negotiated and adjusted for. The valuation range is therefore from about $1m to $1.4m.

CASH FLOW-BASED APPROACH

The dividend valuation model (or growth model) suggests that the market value of a share is supported by the present value of future dividends. The formula given in the Paper F9 formula sheet is:

Figure 2

$$P_0 = \frac{D_0(1 + g)}{(r_e - g)}$$

where:

P_0 = ex div share price at Time 0

g = future annual growth rate from time 1 onwards

D_0 = dividend at Time 0

r_e = rate of return required by the equity shareholders.

Three amounts have to be estimated if this approach is to be used: D_0, r_e and g.

D_0

This is the dividend that has either just been paid or is just about to be paid: it is the dividend of now. This amount is easy to identify.

r_e

This is the return required by ordinary shareholders. Just as with P/E ratios, r_e would be estimated using statistics from appropriate listed companies.

r_e depends on both business risk and gearing risk.

Both of these risks have to be appropriate to the unlisted company being valued. Business risk derives from the type of business that the company is engaged in (such as house building, supermarkets, air travel, car manufacturing). Gearing risk is related to the amount of borrowing in the company's capital structure. The more borrowing there is, the more risk that shareholders are exposed to and the higher will be their required return.

There are two sets of listed company statistics that can be used to estimate r_e:

1. By using the formula from Figure 2, rearranged as:

   $$r_e = \frac{D_0(1 + g)}{P_0} + g$$

2. Alternatively, r_e can be estimated using the capital asset pricing model:

   Required rate of return, $r_e = R_f + \beta(R_m - R_f)$

where:
R_f = risk free rate
R_m = return from the market
β = the beta value for a listed company in the same type of business, appropriately adjusted for gearing

g
g is the *future* dividend growth rate from Time 1 onwards. Often this is estimated by looking directly at the historical dividend growth rate and assuming this will continue in the future. Alternatively, the Gordon's growth approximation can be used:

g = b x earnings rate of new investment in the company

where:
b = fraction of earnings *retained* in the company.

Figure 3

Valuation based on shareholders' rate of return earned from a listed company.

Statistics of the company, Company A, to be valued:

Dividend/share just paid = 12c
Historical dividend growth rate = 5%/year. This is expected to be maintained in the future.

Statistics of a suitable listed company (same business and same gearing):
Share price = $2.40
Dividend just paid = 22c
Historical dividend growth rate = 10%/year. This is expected to be maintained in the future.

To work out the share value of the unlisted company, first calculate what the shareholders' rate of return is in the listed company, and then apply that to the unlisted company.

Step 1 (listed company)

$$r_e = \frac{D_0(1 + g)}{P_0} + g$$

$$r_e = \frac{0.22(1 + 0.1)}{2.40} + 0.1 = 0.2, \text{ or } 20\%$$

Step 2 (unlisted company, Company A)

$$P_0 = \frac{D_0(1 + g)}{(r_e - g)}$$

$$P_0 = \frac{0.12(1 + 0.05)}{(0.20 - 0.05)} = 0.84$$

So, the value of a share in Company A is $0.84.

Note that this is very much a theoretical value. It takes into account the lower dividend per share and the lower growth rate in the unlisted company. However, as explained above, shares in unquoted companies are normally regarded as less desirable and riskier than shares in an equivalent listed company. The required rate of return is therefore likely to be higher in the unlisted company. If r_e in the unlisted company were 30% (say) rather than 20%, the share price would fall to $0.50

Figure 4

Valuation based on the β value of a listed company.

Statistics of the company, Company B, to be valued:

Dividend/share just paid = 12c
Historical dividend growth rate = 5%/year. This is expected to be maintained in the future.

Company B is entirely equity financed.

Statistics of a listed company in the same business:

β = 1.6
R_f = risk free rate = 5%
R_m = return from the market = 15%

This company is geared in the ratio Debt:Equity = 2:5
Tax rate = 25%

The shareholders' required rate of return in the listed company is given by the capital asset pricing model equation:

$r_e = R_f + \beta(R_m - R_f) = 5\% + 1.6(15\% - 5\%) = 21\%$

This is the return required by the shareholders of a company geared in the ratio D:E = 2:5. However, Company B is ungeared, so 21% is inappropriate for the shareholders of that company.

The F9 formula sheet provides a mechanism for adjusting β values to take account of gearing differences.

The asset beta formula

$$\beta_a = \left[\frac{V_e}{\left(V_e + V_d(1-T)\right)}\beta_e\right] + \left[\frac{V_d(1-T)}{\left(V_e + V_d(1-T)\right)}\beta_d\right]$$

The value of the second set of brackets is nearly always assumed to be zero because β_d, the beta of debt, is assumed to be zero.

Therefore,

$$\beta_a = \left[\frac{V_e}{\left(V_e + V_d(1-T)\right)}\beta_e\right]$$

where:
β_a = the 'asset beta', the beta relevant to the business risk in an ungeared company in the appropriate line of business. It can be useful to think of this as the 'ungeared beta' value.
β_e = the 'equity beta', the beta relevant to the risk experienced by a holder of equity in a geared company, in the appropriate line of business with a given level of gearing. It can be useful to think of this as the 'geared beta' value.

So, to convert the beta value of the geared listed company to the beta value if that company were ungeared use:

$$\beta_a = \frac{5}{5 + 2\,(1 - 0.25)} \times 1.6 = 1.23$$

Therefore, the cost of equity of an ungeared company in the same business as the geared company is:

$r_e = R_f + \beta(R_m - R_f) = 5\% + 1.23(15\% - 5\%) = 17.3\%$, say 17%

Therefore, the value of a share in Company B, an unlisted, ungeared company, is:

$$P_0 = \frac{D_0(1 + g)}{(r_e - g)}$$

$$P_0 = \frac{0.12(1 + 0.05)}{(0.17 - 0.05)} = 1.05$$

Once again, remember that this calculation would be a starting point for negotiation.

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