

# 11 Acquisition Pricing-Profitability, Dividend Policy and Cash Flow

## Introduction

If analysts could successfully measure the value of a business using data drawn directly from its published accounts, the valuation of one company by another would present little difficulty. However, we have observed that beyond their stewardship function (providing a historical record of transactions which have actually taken place) published financial statements are “not fit for purpose”.

The limitations of company accounts (even those based on current cost) arise because of the necessity for up to date information that relate the income of the firm to annual reporting periods; a “snapshot” which rarely conforms to the cycle of its operations. If all inputs into the productive process were converted into output and sold within a single accounting period, there would be no problem. The only asset held by the firm would be cash. Since business is a continuous process, however, at the end of each period there are normally significant amounts of input. Each at various stages of conversion into output, all of which need to be valued. It is this “piecemeal” approach to asset valuation that poses the greatest problem when valuing a company as a going concern. How do we place an entity value on a company as a “whole” as evidenced by its future earning power?

Fortunately, alternative approaches to corporate valuation are available to predator companies, which are not asset based but driven by income expectations. These utilise discounted revenue theory and the capitalisation of a perpetual annuity (using earnings, dividends, or cash flows) that can be made operational through a series of investment yields (capitalisation rates) namely:

- A capitalised earnings valuation using a P/E ratio applied to post-tax earnings
- A capitalised dividend valuation based on dividend policy
- A present value (PV) calculation using a cash flow yield

### 11.1 Takeover Valuation: The Profitability Basis

If we adopt an *entity* view, takeover valuations can be derived from the capitalisation of a company’s post-tax accounting profits, rather than the sum of its net tangible assets and an allowance for goodwill. Of course, great care should still be taken to ensure that the profit figure provides a realistic basis for capitalisation. Allowance must be made for all charges (including tax) and retention policy, because what should motivate the purchaser is the amount earned by leaving the business in at least the same position as it was prior to takeover. Note that the after tax profit figure is unlikely to be the same as the dividend payout, because an allowance for ploughback may produce a different valuation (a point to be discussed later).

Items that should be given particular attention in the target's accounts are:

- a) Managerial remuneration, which might be artificially high, not only in a bonus culture, but also to avoid corporation tax.
- b) Transactions that are not at "arms length" and therefore unavailable to the prospective purchaser.
- c) Cost of sales, which should be in current terms.
- d) Adequacy of depreciation in order to provide funds for the replacement cost of assets. Note that depreciation rates could also be used to keep cash in the business in order to maintain a dividend distribution at the expense of reinvestment (as the following example reveals).

Watts plc (\$ m)				Wyman plc (\$ m)			
<b>Balance Sheet for Year One</b>				<b>Balance Sheet for Year One</b>			
Share Capital	<u>100</u>	Assets	<u>100</u>	Share Capital	100	Assets	100
Profits before depreciation = 20 p.a.				Profits before depreciation = 20 p.a.			
Depreciation over 5 years				Depreciation over 10 years			
<b>Balance Sheet for Year Five</b>				<b>Balance Sheet for Year Five</b>			
Share Capital	100	Assets (cost)	100	Share Capital	100	Assets (cost)	100
		Depreciation	<u>80</u>			Depreciation	<u>40</u>
		Net book value	20			Net book value	60
	—	Cash	<u>80</u>		—	Cash	<u>40</u>
	100		100		100		100
No dividends				Dividends \$40			

- e) The correct treatment of R and D as either revenue or capital.
- f) The impact of future repairs and maintenance on profitability.
- g) The inclusion of any non-recurring income or profits, such as those arising from the sale of excess or idle assets.
- h) Provision for bad debts.

After making adjustments to post-tax profit, the predator company must then ascertain whether it is possible to use the figure as an estimator for maintainable earnings at the valuation date. This may be problematic if there are fluctuations in past profits. Even where steady growth is evident, there is also the question of whether this will continue. However, having arrived at an acceptable figure, this must now be capitalised by reference to an appropriate P/E ratio (or desired earnings yield) that relates to the investment's risk.

If we assume that profits are constant in perpetuity, the going-concern value of the target company may be defined as follows:

$$(25) V = \Pi(1 - t) \times P/E$$

Or alternatively:

$$(26) V = \Pi (1-t) / K_e$$

Where:

V	=	going concern value of the business
$\Pi$	=	expected profits at the valuation date
t	=	rate of corporation tax
P/E	=	$1 / K_e$
$K_e$	=	earnings yield

If profits grow at a constant rate in perpetuity (g) we can rewrite Equation (26) using the constant growth formula explained in Part Two, based on anticipated post-tax earnings one year after takeover:

$$(27) V = [\Pi (1-t)] (1 + g) / K_e - g \quad \text{subject to the proviso that } K_e > g \text{ for } V \text{ to be finite.}$$

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In the absence of a suitable P/E ratio relating to the target itself (or similar companies in a similar industry) we can assume the *minimum* yield to be sought by a prospective purchaser is the rate of return obtained from risk-free government securities (gilt-edged stocks). To this yield a premium must be added for the risk of acquiring the company. The amount of risk depends very much on the individual circumstances for takeover and the attitude of the predator. For example, will management continue to function well in the purchased company? Does technical expertise reside with individuals, rather than the nature of the business itself? In fact, will the nature of the business change post-acquisition?

The assets are also important in any risk assessment. If the net assets divided by the market capitalisation of profits “cover” the price of the investment significantly (i.e. the *asset backing* is high) or its reciprocal (the *valuation ratio*) is only slightly greater than one, this may compensate for corporate failure post-takeover if the assets need to be sold off piecemeal.

#### Activity 1

Using the following target data (£m) evaluate the asset cover and valuation ratio for a company willing to pay a capitalised profit figure of £120 million for an acquisition.

Share capital	50
Retained earnings	50
Net assets at valuation	100

The purchase value of the tangible assets relative to the profitability valuation (asset backing) is measured by:

$$(28) \text{ Cover} = \text{Net asset valuation} / \text{Profitability valuation} = 0.83$$

The acquisition can also be assessed by the reciprocal of cover, using the *valuation ratio*

$$(29) \text{ Valuation ratio} = \text{Profitability valuation} / \text{Net Asset valuation} = 1.20$$

If the purchaser pays £120 million for the business because of strong earnings then the cover is £100 million divided by £120 million. In other words, the asset backing is 0.83, which is substantial. Conversely, this corresponds to a valuation ratio of 1.20 (£120 million divided by £100 million) which is reasonable. The net assets relative to future profitability minimise the risk of investment. If the former were higher than the latter, the target firm would obviously be “worth more dead than alive” and ripe for asset stripping.

As a basis for valuation, distinction should also be drawn between the P/E ratio (and its reciprocal the earnings yield) and the dividend yield. The former is more important to investors wishing to acquire control of a company. This is not to say that predatory companies can ignore how earnings are packaged for distribution. On the contrary, a dividend valuation contributes to a “range” of bid prices underpinned by a benchmark net asset valuation. Adequate dividend yields are necessary to attract investors, now as well as in the future, who seek regular income (as we shall discover). But this should not be at the expense of reinvestment policy.

Consider the following target companies:

£m	<i>Bilbo</i>	<i>Frodo</i>	<i>Pippin</i>
Purchase price: V	1,000	1,000	1,000
Profitability: P/E ratio	8.3	11.1	16.7
Earnings yield	12%	9%	6%
Earnings before tax	160	120	80
Tax at 25%	40	30	20
Profits after tax	120	90	60
Dividend yield (5%)	50	50	50
Retained earnings	70	40	10
Ploughback %	58%	45%	16%

Whilst the dividend yield for each company is identical, Bilbo’s ploughback of 58 percent clearly offers the best prospects for growth and capital gains.

The capitalisation of net maintainable earnings using an appropriate P/E ratio should produce a going concern figure in excess of the total net asset value employed in the business. To this value we may have to add excess or idle assets that are surplus to requirements post-acquisition at a realisable valuation (*i.e.* assets whose income has not been included in the net maintainable earnings figure).

Thus:

$$(30) V = \text{Going concern valuation} = \text{capitalised earnings, plus surplus assets at realisable value}$$

This going concern valuation (the total market capitalisation) divided by the number of shares then provides a bid price per share:

$$(31) P = \text{Bid price per share} = \text{market capitalisation} / \text{number of shares}$$

## 11.2 Takeover Valuation: Dividend Policy

Whilst takeover activity should be guided by profit opportunities, the role of dividend policy must be factored in to satisfy shareholders expectations and attract potential shareholders from competitors once the acquisition is complete. So, an earnings valuation should be compared with a dividend valuation based on distributable profits (net of tax and an allowance for ploughback).

Since dividends convey information to the stock market concerning likely future earnings (*dividend signalling*) this forecast distribution may be defined as:

The expected dividend payout expressed in monetary terms, based upon either the dividend yields of similar firms, or their return on nominal value (dividend percentage) multiplied by the shares' market value.

This figure will give the highest valuation based on rational dividend expectations post-acquisition.

To illustrate this rationale, let us consider the following purchase data:

	£m
Share capital: 5 million shares of £10 each	50
Retained earnings	50
	100
Represented by a net asset valuation	100

We shall assume that:

- (i) Pre-tax earnings are expected to be £20 million per annum (*i.e.* zero growth).
- (ii) The retention rate is 80 percent
- (iii) The earnings yield is 15 percent, equivalent to a P/E reciprocal of 6.66.
- (iv) The dividend percentage on nominal value shares for similar firms is 6 percent.
- (v) The rate of Corporation Tax is 25 percent.

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With all this information we can calculate:

**(a) Going concern valuations based on an earnings yield or P/E ratio**

(i)  $V = \text{Market capitalisation} = \text{Post-tax earnings} \times \text{P/E} = £20\text{m} (1 - 0.25) \times 6.66 = £100\text{m}$

(ii)  $P = \text{Price per share} = \text{Market capitalisation} / \text{Number of shares} = £100\text{m} / 5\text{m} = £20$

**(b) Going concern valuations based on the par value dividend percentage**

The target company's *actual* dividend distribution is determined as follows:

	£m
Pre-tax profits	20
Less taxation (25%)	5
	15
Ploughback (80%)	12
Distribution	3

The *expected* dividend is six percent of the nominal share capital value:

$$£50 \text{ million} \times 6\% = £3 \text{ million}$$

So, the predator company can define:

$$V = \text{Forecast total value} = (\text{Actual dividend} / \text{Expected dividend}) \times \text{Market capitalisation}$$

$$= £3.0 \text{ million} / £3.0 \text{ million} \times £100 \text{ million} = £100 \text{ million}$$

$$P = \text{Forecast value per share} = \text{Forecast total value} / \text{Number of shares}$$

$$= £100 \text{ million} / 5 \text{ million} = £20$$

### Activity 2

You will observe from the previous data set that knowledge of actual and expected dividends changed nothing. The dividend and earnings valuations were equivalent.

Given your appreciation of the inter-relationships between share valuation models, as well as the investment ratios dealt with in Part Two, can you explain why?

You will recall that if a company pursues a full distribution policy ( $E_t = D_t$ ) with a dividend yield equal to the earnings yield ( $K_e$ ) and P/E reciprocal ( $1/K_e$ ):

$$(32) P_0 = D_t / K_e = E_t / K_e = E_t \times P/E$$

Where:

$P_0$	=	current share price
$E_t$	=	constant EPS per period
$D_t$	=	constant periodic dividend per share
$K_e$	=	common capitalisation rate for earnings and dividends
P/E	=	$1/K_e$

It is obvious that price ( $P_0$ ) and hence the market capitalisation of equity ( $V$ ) will only converge if a unique relationship exists between the dividend yield, earnings yield and P/E, relative to dividend distributions and profits after tax (dividends plus retentions) respectively.

To explain why, let us first analyse the inter-relationships for the previous data set.

- (i) Whilst the return on nominal value (dividend percentage) is 6 percent the return on market value (dividend yield) is 3 percent.
- (ii) The dividend percentage is twice the yield because market value is twice the nominal value, (think about it!).
- (iii) Since the retention rate (ploughback) is 80 percent, the dividend payout ratio is 20 percent. Hence, dividend cover is five.
- (iv) If earnings cover dividends five times it follows that a dividend yield of 3 percent must be equivalent to an earnings yield of 15 percent.
- (v) Since the earnings yield is the reciprocal of the P/E ratio, the P/E must equal 6.66.

Armed with this information, it is no accident that our previous earnings and dividend valuations are identical.

If the dividend yield and actual dividend are *both* a fifth of the earnings yield and post tax earnings respectively, it follows from Equation (32) that:

$$V = 3 \text{ million} / 0.03 = \text{£}15 \text{ million} / 0.15 = \text{£}100 \text{ million}$$

Moreover, if the *actual* dividend conforms to the *expected* dividend in similar firms in similar industries:

$$\begin{aligned} V &= (\text{Actual dividend} / \text{Expected dividend}) \times \text{Market capitalisation} \\ &= 1 \times \text{£}100 \text{ million} = \text{£}100 \text{ million} \end{aligned}$$

### Activity 3

To prove that dividend and earnings valuations may also *diverge*, use the previous data set to confirm that:

If the expected dividend percentage for similar firms was 5 percent, the dividend *signalling effect* of an actual £3 million distribution post-takeover would cause the share price to rise from £20 to £24 per share.

First, we can revise the market capitalisation of equity by adjusting the original earnings valuation of £100 million relative to an expected dividend of 5 percent, rather than 6 percent, on nominal share capital.

$V = \text{Forecast total value} = (\text{Actual dividend} / \text{Expected dividend}) \times \text{Market capitalisation}$

$$= \text{£3.0 million} / \text{£2.5 million} \times \text{£100 million} = \text{£120 million}$$

Thus, the market price per share is defined as follows

$P = \text{Forecast value per share} = \text{Forecast total value} / \text{Number of shares}$

$$= \text{£120 million} / 5 \text{ million} = \text{£24}$$



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However, it must be emphasised that an earnings valuation is the prime motivational factor for investors seeking control of a company. As we also observed in Part Two, based on the pioneering work of M.J.Gordon and Modigliani and Miller (MM), the role of dividend policy as a determinant of equity value (for acquisition pricing or any other purpose) still remains a fundamental point of disagreement among academics and financial analysts alike.

### 11.3 Takeover Valuation: The Cash Flow Basis

The derivation of accounting profit depends upon a company's asset values and *vice versa*. The assets only have value in as much as they generate future income. Periodic income can only be determined by valuing the assets at two points in time.

For the purpose of acquisition pricing, this circle can be broken if management define income entirely in cash terms, rather than accounting revenue less historical costs, which also includes *non-cash* expenses such as provisions for capital maintenance (depreciation), bad debts, R and D and goodwill write-offs.

Using a discounted cash flow (DCF) analysis, with which you are familiar:

The basic going concern value of a target company equals the present value (PV) of future cash inflows less cash outflows resulting from the cycle of its operations.

To this value may be added the *realisable* value of assets to the extent that "surplus" assets may be sold post-takeover and the sale price will form part of future cash inflows. Conversely, if the total assets are inadequate, further investment (a cash outflow) at *replacement* cost must be incorporated into the analysis.

You should also note that the predator's decision is now based on an economic forecast, rather than adjustments to a set of stewardship-based accounts. However, once the target firm is acquired, published accounting statements for the newly merged entity will obviously be produced in accordance with generally accepted accounting principles (GAAP) based on historical costs and the accruals concept. But these may well differ from the cash projections used for the investment analysis that justified the bid price and acquisition.

Despite this disparity between accounting profits and cash flow, the latter approach to a going concern valuation is now based on a fundamental capital theory proposition explained in Chapter Two. Expressed mathematically, the value of an investment is the future net cash inflows it delivers discounted back to the present at an appropriate rate of return.

$$(33) \quad PV_0 = \sum_{t=1}^n C_t / (1+K_c)^t$$

And if the yield ( $K_c$ ) and cash receipts ( $C_t$ ) are constant and tend to infinity, their PV simplifies to the capitalisation of a *perpetual annuity*:

$$(34) \quad PV_0 = C_t / K_c$$

You should also remember from Chapter Three that if cash flows are not constant over time, but grow at a constant annual rate ( $g$ ) then their PV can be defined as follows:

$$(35) \quad PV_0 = C_1 / K_e - g \quad \text{subject to the proviso that } K_e > g \text{ for } PV_0 \text{ to be finite}$$

### Review Activity

Let us develop our previous numerical example using a cash flow analysis.

You will recall from earlier Activities that the following going concern valuations were derived using an earnings yield of 15 percent (equivalent to a P/E of 6.66) and a dividend yield of 3 percent respectively,

$$\text{Total market value} = \text{£100 million} \quad \text{Bid price per share} = \text{£20}$$

Both figures were determined by an annuity capitalisation of accounting profitability. Now assume that at the valuation date:

- (i) The predator company requires an earnings yield of 18 percent on a *cash* flow basis.
- (ii) First-year net cash income after charging depreciation of £8 million to the accounts is expected to be £17 million.
- (iii) Taxable accounting profits are £20 million.
- (iv) The rate of corporation tax is 25 percent.
- (v) Cash flows are expected to grow at 2 percent per annum.

Recalculate the total market value and bid price with reference to dividend policy.

Because accounting depreciation does not create a cash flow (*i.e.* it is a *non-cash* expense) a going concern value must be calculated based upon first-year cash flows by adding depreciation to net cash income. Taxation, which is a cash outflow but based on accounting profit, must then be subtracted to derive the true cash flow.

	£m
Net cash flow	17
Add depreciation	8
	25
Less tax (£20 million x 0.25)	5
Cash inflow	20

Using Equation (35) subject to the proviso that  $K_e > g$  for  $PV_0$  to be finite.

$$PV_0 = C_1 / K_e - g = \text{£}20 \text{ million} / 0.18 - 0.02 = \text{£}125 \text{ million}$$

So, with 5 million shares in issue, the target company's valuation per share equals £25.

Note that these cash flow valuations are 25 percent higher than our previous accounting valuations, not only because of the depreciation adjustment, but also because the capitalisation rate is higher and income is assumed to grow.

Turning to dividend policy, if the *current* yield for similar firms is 3 percent (as stated in our previous Activities) the first-year distribution is no longer £3 million (as before) but:

$$\text{£}125 \text{ million} \times 0.03 = \text{£}3.75 \text{ million}$$

Assuming the firm maintains a constant dividend payout ratio post-takeover from cash flows growing at 2 percent per annum, management also need to determine the *long-run* dividend yield ( $K_D$ ). Fortunately, using Gordon's growth equation from Chapter Three (given  $PV_0$ ,  $g$  and  $D_1$  equal to the first-year dividend distribution) we can determine its value.

$$(36) \quad PV_0 = D_1 / K_D - g$$

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$$£125 \text{ million} = 3.75 \text{ million} / (K_e - 0.02)$$

Rearranging terms and solving for  $K_e$ :

$$\begin{aligned} (37) \quad K_e &= (D_1 / P_0) + g \\ &= 5\% \end{aligned}$$

As explained in Part Two, if dividends do not affect share price, there must be a unique relationship between their yield and dividend policy. What the example reveals is Gordon's proposition (1962) previously contested by MM (1961) that the long-run equity capitalisation rate used in the constant growth formula must be an increasing function of the growth rate. It will be recalled that in the original example with zero growth the dividend yield ( $K_e$ ) was not 5 percent but only 3 percent.

However, these figures do not necessarily conflict with the "law of one price" and the dividend irrelevancy hypothesis proposed by MM. They would suggest that the rationale behind a higher yield relates to the profitability of investment opportunities provided by the 2% growth of retained earnings over time, rather than any increase in dividend distributions.

## Summary and Conclusions

Alternative approaches to acquisition pricing are available to predator companies, which are either asset based or driven by income expectations, using conventional accounting data prepared on a *non-cash* basis. The latter utilise discounted revenue theory and the capitalisation of a perpetual annuity (either earnings or dividends) that can be made operational through a series of investment yields (capitalisation rates) namely:

- A capitalised earnings valuation using a P/E ratio applied to post-tax earnings
- A capitalised dividend valuation based upon dividend policy

P/E ratios and dividend yields can also be applied to the most sophisticated technique for valuing a company as a going concern.

- A present value (PV) analysis of future cash flows

However, it is important to realise that as an introduction to the subject and guide for further study, the PV analysis was kept deliberately simple. It implicitly assumed that the following information was known with certainty:

- (i) All future cash flows in perpetuity, including an allowance for constant growth, which is less than the rate of capitalisation.
- (ii) A single rate of capitalisation, with capital costs and reinvestment rates equal to this (i.e. borrowing and lending rates are equal).
- (iii) That sufficient funding was retained to maintain the expected future cash flows without compromising dividend policy.

- (iv) The timing and amounts of any asset replacements.
- (v) The realisable value and timing of the sale of surplus assets.

Relax any one of these assumptions and the valuation process not only becomes extremely complex but its cost and margin for error may outweigh the benefits. Perhaps this is why practical going concern valuations and bid prices are still underpinned by published financial statements, stock market ratios and other publicly available information.

### Selected References

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