Corporate Valuation and Takeover

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About the Author

With an eclectic record of University teaching, research, publication, consultancy and curricula development, underpinned by running a successful business, Alan has been a member of national academic validation bodies and held senior external examinerships and lectureships at both undergraduate and postgraduate level in the UK and abroad.

With increasing demand for global e-learning, his attention is now focussed on the free provision of a financial textbook series, underpinned by a critique of contemporary capital market theory in volatile markets, published by bookboon.com.

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Part I: An Introduction

1 An Overview

Introduction

The 2007 global financial crisis ignited by reckless bankers and their flawed reward structures will be felt for years to come. Emerging from the wreckage, however, is renewed support for the over-arching objective of traditional finance theory, namely the long-run maximisation of shareholder wealth using the current market value of ordinary shares (common stock) as a benchmark.

If capitalism is to survive, it is now widely agreed that conflicting managerial aims and short-term incentives, which now seem to characterise every business sector, must become entirely subordinate to the preservation of ownership wealth, future income and capital gains.

And as we shall discover, the key to resolving this *principle-agency* problem begins with a *theoretical* critique of how shares are valued. This not only underpins the *practical* measures of current and historical stock market performance published in the financial press (price, yield, cover, and the P/E ratio) used by market participants throughout the world. It also provides private individuals and the companies or financial institutions acting on their behalf with a common framework to analyse all their future investment decisions, whether it is an individual share transaction, a market placement, or corporate takeover activity.

1.1 Some Observations on Traditional Finance Theory

Based on the *Separation Theorem* of Irving Fisher (1930), traditional *normative* theory explains how corporate management should maximise shareholder wealth by maximising the expected net present value (NPV) of all a firm's investment projects.

According to Fisher, in a world of *perfect* capital markets, characterised by *rational-risk averse* investors, with *no barriers* to trade and a *free flow* of information, it is also irrelevant whether a company's future project cash flows are distributed as dividends to match shareholders consumption preferences at any point in time. If a company decides to retain profits for reinvestment, shareholder wealth measured by share price will not fall, providing that:

> Management's *minimum* required return on new projects financed by retention (the discount rate) at least equals the shareholders' *opportunity* rate of return (yield) that they can expect to earn on alternative investments of comparable risk, or their the *opportunity* cost of capital (borrowing rate).

If shareholders need to borrow to satisfy their consumption (income) requirements they can do so at the market rate of interest, leaving management to reinvest current earnings (unpaid dividends) on their behalf to finance future investment, growth in earnings and future dividends.

Following Fisher's logic, all market participants should therefore earn a return commensurate with the risk of their investment. And because *perfect* markets are also *efficient* markets, shares are immediately and correctly priced at their *intrinsic* value in response to managerial policy, just like any other information and current events.

Yet, we now know that markets are *imperfect*. Investors may be *irrational*, there are *barriers* to trade and information is *limited* (particularly if management fail to communicate their true intentions to shareholders) any one of which invalidates Fisher's theorem. As a consequence, the question subsequent twentieth century academics sought to resolve was whether an *imperfect* capital market can also be *efficient*. To which the answer was a resounding "yes".

Based on the pioneering work of Eugene Fama, which began to emerge in the 1960s, modern finance theory now hypothesises that real-world stock markets may not be *perfect* but are *reasonably efficient*. Shareholder wealth maximisation is premised on the law of supply and demand. Large numbers of investors are assumed to respond rationally to new public information, good, bad, or indifferent. They buy, sell, or hold shares in a market without too many barriers to trade. A privileged few, with access to *insider* information, or either the ability, time or money to analyse all *public* information, may periodically "beat the market" by being among the first to react to events. But share price still reverts *quickly* if not *instantaneously* to a new *equilibrium* value, correctly priced, in response to the *technical* and *fundamental* analyses of historical trends and the latest news absorbed by the vast majority of market constituents.

Today's trading decisions are assumed to be *independent* of tomorrow's events. So, markets are assumed to have "no memory". And because share prices and returns therefore exhibit *random* behaviour, conventional wisdom, now termed the *Efficient Market Hypothesis* (EMH), states that in its *semi-strong* form:

- *Short term*, investors win some and lose some.
- *Long term*, the market is a "fair game" for all, providing returns commensurate with their risk.

Today, even in the wake of the first global financial crisis of the 21st century, governments, markets, financial institutions, companies and many analysts continue to cling to the wreckage by promoting policies premised on the theoretical case for semi-strong efficiency. But since the 1987 crash there has been an increasing unease within the academic community that the EMH in any form is "bad science". Many observe that "it puts the cart before the horse" by relying on simplifying assumptions, without any empirical evidence that they are true. Financial models premised on rationality, efficiency and randomness, which are the bedrock of modern finance, therefore attract legitimate criticism concerning their real world applicability.

1.2 Some Observations on Stock Market Volatility

Over the past decade, global capital markets have experienced one of the most volatile periods in their entire history. For example, since the millennium, the index of Britain's highest valued companies, the FT-SE 100 (Footsie) has often moved up and down by more than 100 points in a single day, fuelled by the extreme price fluctuations of risky internet or technology shares, the changing profitability of blue-chip companies at the expense of emerging markets, rising oil and commodity prices, interest rates, global financial crises, increased geo-political instability, military conflict, natural disasters and even nuclear fallout. Consequently, conventional methods of assessing stock market performance, premised on efficiency and stability, as well as the models upon which they are based, are now being seriously questioned by a new generation of academics and professional analysts.

So, where do we go from here?

Post-modern theorists with their cutting-edge mathematical expositions of speculative bubbles, catastrophe theory and market incoherence, believe that *markets have a memory*. They take a *non-linear* view of society and dispense with the assumption that we can *maximise* anything. Unfortunately, their models are not yet sufficiently refined to provide simple guidance for many market participants (notably private investors) in their quest for greater wealth.

Irrespective of its mathematical complexity, the root cause of the problem is that however you model it, financial analysis is not an exact *physical* science but an imprecise *social* science. And history tells us that the theories upon which it is based may even be "bad" science.

All economic decisions are characterised by *hypothetical* human behaviour in a *real* world of *uncertainty* that by definition is *unquantifiable*. Thus, theoretical financial strategies may be logically conceived but are inevitably based on objectives underpinned by *simplifying assumptions* that rationalise the complex world we inhabit. At best they may support our model's conclusions. But at worst they may invalidate our analysis.

As long ago as 1841, Charles Mackay's classic text "Extraordinary Delusions and the Madness of Crowds (still in print) offered a plausible *behavioural* explanation for volatile and irrational financial market movements in terms of "crowd behaviour". He asserted that:

> It is a natural human tendency to feel comfortable in a group and only make a personal decision, which may even be irrational, after you have observed a trend.

The late Charles P. Kindleberger's classic twentieth century work "Manias, Panics and Crashes: A History of Financial Crises" first published in 1978 provides further insight into Mackay's "theory of crowds" As a study of frequent irrational investor behaviour in sophisticated markets, the book became essential reading in the aftermath of the 1987 global crash. Now in its sixth edition (2011) revised and fully expanded by Robert Aliber to include analyses of the causes, consequences and policy responses to the 2007 financial crisis, it is even more relevant today.

Kindleberger and Aliber argue that every financial crisis from *tulip mania* onwards has followed a similar pattern. Speculation is always coupled with an economic boom that rides on new profit opportunities created by some major exogenous factor, like the end of a war (1945 say) a change in economic policy (stock market de-regulation) a revolutionary invention (like the computer) political tension (the Middle East) or a natural disaster (Japan). Fuelled by cheap money and credit facilities (note the interest rate cuts that financed American post-Gulf war exuberance and the internet boom of the 1990s) prices and borrowing rise dramatically. At some stage a few insiders decide to sell their investments and reap the profits. Prices initially level off, but a period of market volatility ensues as more investors sell to even bigger fools. This stage of the cycle features financial distress, characterised by financial scandals, bankruptcies and balance of payment deficits, as interest rates rise and the market withdraws from financial securities into cash. The process tends to degenerate into panic selling that may result in what Kindleberger terms "revulsion".

At this point, disillusioned investors refuse to participate in the market at all and prices fall to irrationally low levels. The key question then, is whether prices are low enough to tempt even sceptics back into the market.

Robert Shiller, in his recent edition of "Irrational Exuberance" (2005) developed Kindleberger's analysis by citing investors who act in unison but not necessarily rationally. Market sentiment gains a popular momentum, unsubstantiated by any underlying corporate profitability, intrinsic asset values, or significant economic events, which are impossible to unscramble as more individuals wait to sell or buy at a certain price. When some psychological barrier is breached, price movements in either direction can be triggered and a crash or rally may ensue. As Shiller concludes, if *Wall Street is a place to avoid*, the question we must ask ourselves is how can market participants (private individuals, or companies and financial institutions who act on their behalf) satisfy their investment criteria in a post-modern world.

Fortunately, traditional finance theory can still throw a lifeline. Human action, reaction, or inaction may be reinforced by habit and individual investors may only become interested in a market trend (up or down) when it has run its course and a crash or rally occurs. But in between time, when markets are reasonably *stable, bullish* or *bearish*, there are plausible strategies for individuals and financial institutions that continually trade shares, as well as companies considering either a stock market listing for the first time, or periodic predatory takeovers.

All are based on today's news, current events, historical data contained in published accounts, the financial press, as well as the internet and other media that relay financial service, analyst and broker reports. And as we shall discover, until new models are sufficiently refined to justify their real world application, the common denominator that drives this information overload upon which investment strategies are based is still conventional share price theory.

Review Activity

If you have previously downloaded other studies by the author in his *bookboon* series, then before we continue you ought to supplement this Introduction by re-reading the more detailed critiques of Fisher's Theorem, the development of Finance Theory and the Efficient Market Hypothesis (EMH) contained in any of the following chapters.

Strategic Financial Management: Exercises (SFME), Chapter One, *bookboon.com* (2009).

Portfolio Theory and Financial Analyses (PTFA), Chapter One, *bookboon.com* (2010).

Portfolio Theory and Investment Analysis (PTIA), Chapter One, bookboon.com (2010).

These will not only test your understanding so far, but also provide a healthy scepticism for the theory of modern finance that underpins the remainder of this text.

If new to *bookboon* then I recommend you at least download SFME and pay particular attention to Exercise 1.1.The exercise (plus solution) is logically presented as a guide to further study and easy to follow.

Throughout the remainder of this book, each chapter's exercises and equations also follow the same structure as all the author's other texts. So, you should be able to complement, reinforce and test your theoretical knowledge of the practicalities of corporate valuation and takeover at *your own pace*.

Summary and Conclusions

The key to unlocking stock market analysis, irrespective of volatility, is an understanding of theories of share price determination that underpin its performance. Traditional financial theory assumes that:

Shareholder wealth maximisation (increased share price) is based upon the economic law of supply and demand in a capital market that may not be *perfect* but *reasonably efficient*.

Investors respond *rationally* to new information (good, bad or indifferent) and buy, sell, or hold shares in a market without too many barriers to trade.

As a consequence, yesterday's trading decision (and price) is *independent* of today's state of play and investment is a "fair game" for all.

However, the view taken here is that irrespective of whether markets are efficient, investors are rational and prices or returns are random, the investment community still requires standards of comparison to justify their latest trading decisions and stay in their comfort zone. And in this respect, despite its deficiencies, traditional finance theory has much to offer.

Explained simply, stock market performance is not an *absolute* but *relative*. It must be related to some *standard* of comparison. For example, has a firm's current share price risen, fallen, or stayed the same, relative to the market the market as a whole, its own business sector and its direct competitors since yesterday, or over the past 52 weeks say, as revealed by the financial press? And if so, how does its return, evidenced by either dividend yields or P/E ratios, fit into a *comparative* performance analysis?

To answer these questions we shall therefore begin our analyses with the theoretical determinants of share price and specifically the *capitalisation of a perpetual annuity*. This concept underpins the derivation of *maintainable* dividend yields and the P/E ratio, which are published world wide in the financial press.

As we shall discover, this model enables current shareholders and prospective investors (including management) to evaluate the risk-return profiles of their latest dividend and earnings expectations *vis a vis* current share prices for any company of interest.

Moving on, we shall explain and analyse how share price listings that encompass dividends (the yield and cover) and earnings (the P/E ratio) are used to implement trading decisions (*i.e.* whether to "buy, sell or hold").

Having clarified the inter-relationships between these universally available measures, by which individual investors analyse stock market performance, we shall then explore two practical applications of stock market data that corporate management can implement to maximise shareholder wealth. Both applications not only provide an opportunity to reflect upon the relevance of dividend policy and overall profitability to investment and financial decisions. They also represent the most important strategic decisions that management is ever likely to encounter.

The first case concerns an unlisted company coming to the capital market for the first time that requires an aggregate "flotation" value and "offer for sale" price per share. Particular attention is paid to the dividend yield, dividend cover and price earnings (P/E) ratio required by future shareholders.

The second evaluates various valuation models and methodologies, which underpin acceptable "bid prices" that support *rational* managerial motives for acquiring another business as a "going concern" in the event of a "predatory" takeover

Having read this text, you should also be in no doubt that:

The derivation of a share's price that utilises NPV cash flow analyses of prospective earnings or dividends, rather than historical data drawn from published financial accounts, represents an ideal wealth maximisation criterion throughout the investment community.

Selected References

1. Fisher, I., *The Theory of Interest*, Macmillan, 1930.
2. Fama, E.F., "The Behaviour of Stock Market Prices", *Journal of Business*, Vol. 38, 1965.
3. Mackay, L.L. D., (originally published in 1841), *Extraordinary Delusions of Madness of Crowds*, Farrar, Strauss and Giroux, 2011.
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Part II: Share Valuation Theories

2 How to Value a Share

Introduction

The key to understanding the basic measures of stock market performance (price, yield, P/E ratio and cover) used by investors to analyse trading decisions requires a theoretical appreciation of the relationship between a share's price and its return (dividend or earnings) using various models based on discounted revenue theory.

To set the scene, we shall keep the analysis simple by outlining the theoretical determinants of share price with particular reference to the *capitalisation of a perpetual annuity* using both a dividend yield, and earnings yield. Detailed consideration of the controversy as to whether dividends or earnings are a prime determinant of share price will be covered in Chapter Three.

2.1 The Capitalisation Concept

Discounted revenue theory defines an investment's present value (PV) as the sum of its relevant periodic cash flows (C_t) discounted at an appropriate opportunity cost of capital, or rate of return (r) on alternative investments of equivalent risk over time (n). Expressed algebraically:

$$(1) \quad PV_n = \sum_{t=1}^{n} C_t / (1+r)^t$$

The equation has a convenient property. If the investment's annual return (r) and cash receipts (C_t) are *constant and tend to infinity*, ($C_t = C_1 = C_2 = C_3 = C\infty$) their PV simplifies to the formula for the *capitalisation of a constant perpetual annuity*:

$$(2) \quad PV_\infty = C_t / r = C_1 / r$$

The return term (r) is called the *capitalisation* rate because the transformation of a cash flow series into a capital value (PV) is termed "capitalisation". With data on PV∞ and r, or PV∞ and C_t, we can also determine C_t and r respectively. Rearranging Equation (2) with one unknown:

$$(3) \quad C_t = PV_\infty \cdot r$$

$$(4) \quad r = PV_\infty / C_t$$

Activity 1

The previous PV equations are vital to your understanding of the various share valuation models that follow. They also underpin the remainder of this study. If you are unsure of their theory and application, then I recommend that you download *Strategic Financial Management (SFM)* from the author's *bookboon* series and read Chapters Two and Five before you continue.

Having completed this reading, you will appreciate that shares may be traded either *cum-div* or *ex-div*, which means they either include (cumulate) or exclude the latest dividend. For example, if you sell a share *cum-div* today for P_0 the investor also receives the current dividend D_0. Excluding any transaction costs, the investor therefore pays a total price of (D_0 + P_0). Sold *ex -div* you would retain the dividend. So, the trade is based on current price (P_0) only.

This distinction between *cum-div* and *ex-div* is important throughout the remainder of our study because unless specified otherwise, we shall adopt the time-honoured academic convention of defining the current price of a share using an *ex-div* valuation.

2.2 The Capitalisation of Dividends and Earnings

Irrespective of whether shares are traded *cum-div or ex-div*, their present values can be modelled in a *variety* of ways using discounted revenue theory. Each depends on a definition of future periodic income (either a dividend or earnings stream) and an appropriate discount rate (either a dividend or earnings yield) also termed the equity capitalisation rate.

For example, given a forecast of periodic future dividends (D_t) and a shareholder's desired rate of return (K_e) based on current dividend yields for similar companies of equivalent risk:

The present *ex-div* value (P_0) of a share held for a *given* number of years (n) should equal the discounted sum of future dividends (D_t) plus its eventual *ex-div* sale price (P_n) using the current dividend yield (K_e) as a capitalisation rate.

Expressed algebraically:

$$(5) \quad P_0 = [(D_1 / 1 + K_e) + (D_2 / 1 + K_e)^2 + ... + (D_n / 1 + K_e)^n] + (P_n / 1 + K_e)^n$$

Rewritten and simplified this defines the *finite-period dividend valuation model:*

$$(6) \quad P_0 = \sum_{t=1}^{n} D_t / (1+K_e)^t + P_n / (1 + K_e)^n$$

Likewise, given a forecast for periodic future earnings (E_t) and a desired return (K_e) based on current earnings yields of equivalent risk:

The present *ex-div* value (P_0) of a share held for a *given* number of years (n) equals the sum of future earnings (E_t) plus its eventual *ex-div* sale price (P_n) all discounted at the current earnings yield (K_e).

Algebraically, this defines the *finite-period earnings valuation model:*

$$(7) \quad P_0 = \sum_{t=1}^{n} E_t / (1+K_e)^t + P_n / (1 + K_e)^n$$

Activity 2

A logical approach to financial analysis is to make *simplifying* assumptions that rationalise its *complexity*. A classic example is the derivation of a series of dividend and earnings valuations, other than the *finite* model. Some are more sophisticated than others, but their common purpose is to enable investors to assess a share's performance under a variety of conditions.

To illustrate the point, briefly summarise the theoretical assumptions and definitions for the following models based on your reading of *SFM* (Chapter Five) or any other source material.

The *single-period* dividend valuation
The *general* dividend valuation
The *constant* dividend valuation

Then give some thought to which of these models underpins the data contained in stock exchange listings published by the financial press worldwide.

We know that the *finite-period* dividend valuation model assumes that a share is held for a given number of years (n). So, today's *ex div* value equals a series of expected year-end dividends (D_t) plus the expected *ex-div* price at the end of the entire period (P_n), all discounted at an appropriate dividend yield (K_e) for shares in that risk class. Adapting this formulation we can therefore define:

- The *single-period* dividend valuation model

Assume you hold a share for one period (say a year) at the end of which a dividend is paid. Its current *ex div* value is given by the expected year-end dividend (D_1) plus an *ex-div* price (P_1) discounted at an appropriate dividend yield (K_e).

- The *general* dividend valuation model

If a share is held indefinitely, its current *ex div* value is given by the summation of an infinite series of year-end dividends (D*t*) discounted at an appropriate dividend yield (K_e). Because the share is never sold, there is no final *ex-div* term in the equation.

- The *constant* dividend valuation model

If the annual dividend (D_t) not only tends to infinity but also remains constant, and the current yield (K_e) doesn't change, then the *general* dividend model further simplifies to the *capitalisation of a perpetual annuity*.

2.3 The Capitalisation of Current Maintainable Yield

Your answers to Activity 2 not only reveal the impact of different assumptions on a share's theoretical present value, but why basic price and yield data contained in stock exchanges listings published by the financial press favour the *constant* valuation model, rather than any other.

Think about it. The derivation and analyses of current share prices based on future estimates of dividends, *ex-div* prices and appropriate discount rates for billions of market participants, even over a single period is an impossible task. To avoid any weakness in forecasting characterised by uncertainty and to provide a *benchmark* valuation for the greatest possible number, stock exchange listings therefore assume that shares are held in *perpetuity* and the latest reported dividend per share will remain *constant* over time. This still allows individual investors with other preferences, or information to the contrary, to model more complex assumptions for comparison. There is also the added commercial advantage that by using the simplest metrics, a newspaper's stock exchange listings should have universal appeal for the widest possible readership.

Turning to the mathematics, given your knowledge of discounted revenue theory based the *capitalisation of a perpetual annuity* (where $PV = C_t / r$) share price listings define a current *ex- div* price (P_0) using the *constant* dividend valuation model as follows:

(8) $$P_0 = D_1 / K_e$$

Next year's dividend (D_1) and those thereafter are represented by the latest reported dividend (*i.e.* a constant). Rearranging terms, (K_e) the shareholders desired rate of return (equity capitalisation rate) is also a constant represented by the current yield, which is assumed to be *maintainable* indefinitely.

(9) $$K_e = D_1 / P_0$$

2.4 The Capitalisation of Earnings

For the purpose of exposition, so far we have focussed on dividend income as a determinant of price and value, with only passing reference to earnings. But what about shareholders interested in their *total* periodic returns (dividends plus retentions) from corporate investment? They need to capitalise a post-tax earnings stream (E_t) such as *earnings per share* (EPS) and analyse its yield (K_e). No problem: the *structure* of the valuation models summarised in Activity 2 remains the same but E_t is substituted for D_t and K_e now represents an earnings yield, rather than a dividend yield. Thus, we can define a parallel series of equations using:

The *single-period*, earnings valuation model
The *finite-period*, earnings valuation model
The *general* earnings valuation model
The *constant* earnings valuation model

Turning to stock exchange listings and the financial press, we also observe that for simplicity the publication of earnings data is still based on the *capitalisation of a perpetual annuity*.

(10) $P_0 = E_1 / K_e$

Next year's earnings (E_1) and those thereafter are represented by the latest reported profit (*i.e.* a constant). Rearranging terms, (K_e) the shareholders desired rate of return (equity capitalisation rate) is also a constant represented by the current earnings yield, which is assumed to be *maintainable* indefinitely.

(11) $K_e = E_1 / P_0$

Review Activity

Having downloaded this text and others in the *bookboon* series, it is reasonable to assume that you can already interpret a set of published financial accounts, if not share price data. To test your level of understanding for future reference, select a newspaper of your choice and a number of companies from its stock exchange listings. Then use the data to explain:

- The mathematical relationship between a company's dividend and earnings yields and why the two may differ.
- The definition of earnings yields published in the financial press.

Our discussion of efficient markets in Chapter One explained why a company's shares cannot sell for different prices at a particular point in time. So, it follows that:

(12) $P_0 = D_1 / K_e = E_1 / K_e$

And if a company adopts a policy of full distribution (whereby $D_1 = E_1$) then the equity capitalisation rates for dividends and earnings, using a current maintainable yield (K_e) must also be identical.

(13) $K_e = D_1 / P_0 = K_e = E_1 / P_0$

But what of the more usual situation, where a company retains a proportion of earnings for reinvestment?

Given P_0 (but $D_1 < E_1$) the respective equity capitalisation rates (K_e) now differ.

(14) $K_e = D_1 / P_0 < K_e = E_1 / P_0$

Not only is the dividend yield lower than the earnings yield but as we shall explore in Chapter Three, there is a *behavioural* explanation for relationship between the two. For the moment, suffice it to say that there is also an underlying mathematical relationship. For example, if a company's current share price, latest reported dividend and earnings per share are $100, $10 and $20 respectively, then because earnings *cover* dividends twice (again, more of which later) the dividend yield is half the earnings yield (10 and 20 percent respectively).

This difference in yields is not a problem for investors who know what they are looking for. Some will prefer their return as current income (dividends and perhaps the sale of shares). Some will look to earnings that incorporate retentions (future dividends plus capital gains). Most will hedge their bets by combining the two in share portfolios that minimise risk. So, their respective returns will differ according to their risk-return profile. Which is why share price listings in newspapers worldwide focus on dividends *and* earnings, as well as the *interrelationship* between the two measured by dividend cover.

Moving on to the second question posed by our Review Activity, if you are at all familiar with share price listings published in the financial press, you will be aware of a *convention* that also enables investors to avoid any confusion between dividend and earnings yields when analysing a share's performance.

Given the current earnings yield:

(11) $K_e = E_1 / P_0$

The equation's terms can be rearranged to produce its *reciprocal*, the price-earnings (P/E) ratio.

(15) $P/E = P_0 / E_1 = 1/K_e$

Unlike the earnings yield, which is a *percentage* return, the P/E ratio is a *real* number that analyses price as a *multiple* of earnings. On the assumption that a firm's current post tax profits are maintainable indefinitely, the ratio therefore provides an alternative method whereby a company's distributable earnings can be capitalised to establish a share's value.

Because the two measures are reciprocals whose product always equals one, the interpretation of the P/E is that the *lower* the figure, the *higher* the earnings yield and *vice versa*. And because investors are dealing with an *absolute* P/E value and not a *percentage* yield, there is no possibility of confusing a share's dividend and earnings performance when reading share price listings, articles or commentaries from the press and media, analyst reports, or internet downloads.

Finally, having noted that low valuation multipliers correspond to high returns and that a number multiplied by its reciprocal equals one, use Table 2.1 to confirm a *perfect inverse* relationship between a share's P/E and its earnings yield. Not only will this exercise be useful for future reference throughout this text, but future reading of the financial press should also fall into place.

P/E	=	P_0 / E_1	=	1/Ke	50	40	20	15	12	10	8	5	2
Yield	=	E_1 / P_0	=	Ke	2	2.5	5	6.66	8.33	10	12.5	20	50

Table 2.1: The Relationship between the P/E Ratio and Earnings Yields

Summary and Conclusions

This Chapter has outlined the fundamental relationships between share valuation models and the derivation of the cost of equity capital for the purpose of analysing stock market returns.

We set the scene by explaining the derivation of basic share valuation models using discounted revenue theory, with particular reference to the capitalisation of a perpetual annuity. We noted that corresponding equity valuations based on current dividend and earnings should be financially equivalent.

The relationship between an *ex-div* dividend and earnings valuation revealed why a few select metrics (based on price, dividend yield and the P/E ratio) published in the financial press encapsulate a company's stock market performance and provide a guide to future investment.

As we shall discover in later chapters, a share's intrinsic value (price) is only meaningful if we consider other data about a company and then place it in context. For example, given a company's latest reported dividend and profit figures, investors can use existing dividend yields and P/E ratios to place a comparative value on that company's shares. These can then be compared with its actual value (current market price) to establish whether the company is either undervalued, equitable, or overvalued, relative to the market for similar shares of equivalent risk. Needless to say, undervalued, rational investors buy, equitable they hold, overvalued they sell.

Selected References

Hill, R.A., *Strategic Financial Management:* Chapters Two and Five, *bookboon.com* (2008).

3 The Role of Dividend Policy

Introduction

For simplicity, so far we have assumed that if a share is held indefinitely and future dividends and earnings per share remain constant, the current *ex-div* price can be expressed using the *capitalisation of a perpetual annuity* based on its current dividend or earnings yields. The purpose of this Chapter is to refine the *constant* valuation model by considering two inter-related questions.

- What happens to a share's current price if its forecast dividends or earnings are not constant in perpetuity?
- When valuing a company's shares, do investors value current dividends more highly than earnings retained for future investment?

3.1 The Gordon Growth Model

Chapter One began with a discussion of investment principles in a perfect capital market characterised by certainty. According to Fisher's Separation Theorem (1930), it is irrelevant whether a company's future earnings are paid as a dividend to match shareholders' consumption preferences at particular points in time. If a company decides to retain profits for reinvestment, shareholder wealth will not diminish, providing that:

- Management's *minimum* required return on a project financed by retention (the discount rate, r) matches the shareholders' *desired* rate of return (the yield, K_e) that they can expect to earn on alternative investments of comparable risk in the market place, i.e. their *opportunity* cost of capital.
- In the interim, shareholders can always borrow at the market rate of interest to satisfy their income requirements, leaving management to invest current unpaid dividends on their behalf to finance future investment, growth in earnings and future dividends.

From the late 1950's, Myron J. Gordon developed Fisher's theory that dividends and retentions are *perfect substitutes* by analysing the impact of different dividend and reinvestment policies (and their corresponding yields and returns) on the current share price for all-equity firms using the application of a *constant growth* formula.

What is now termed the *Gordon dividend-growth model* defines the current *ex-div* price of a share by capitalising next year's dividend at the amount by which the shareholders' desired rate of return exceeds the constant annual rate of growth in dividends.

Using Gordon's original notation where K_e represents the equity capitalisation rate; E_1 equals next year's post-tax earnings; b is the proportion retained; (1-b) E_1 is next year's dividend; r is the return on reinvestment and r.b equals the constant annual growth in dividends:

(16) $P_0 = (1\text{-}b)E_1 / K_e - rb$ subject to the proviso that $K_e > r.b$ for share price to be finite.

Today, in many Finance texts the equation's notation is simplified with D_1 and g representing the dividend term and growth rate, now subject to the constraint that $K_e > g$

(17) $P_0 = D_1 / K_e - g$

In a *certain world*, Gordon confirms Fisher's relationship between corporate reinvestment returns (r) and the shareholders' opportunity cost of capital (K_e). Share price only responds to profitable investment opportunities and not changes in dividend policy because investors can always borrow to satisfy their income requirements. To summarise the dynamics of Equation (16).

(i) Shareholder wealth (price) will stay the same if r is equal to K_e
(ii) Shareholder wealth (price) will increase if r is greater than K_e
(iii) Shareholder wealth (price) will decrease if r is lower than K_e

Activity 1

To confirm the impact of retention financed investment on share price defined by Gordon under conditions of *certainty*, use the following stock exchange data for Jovi plc with an EPS of 10 pence and a full dividend distribution policy to establish its current share price.

Dividend Yield 2.5%

Now recalculate price, with the same EPS forecast of 10 pence, assuming that Jovi revises its dividend policy to reinvest 50 percent of earnings in projects with rates of return that equal its current yield.

Comment on your findings.

- Full Distribution (Zero Growth)

Without future injections of outside finance, a forecast EPS of 10 pence and a policy of *full distribution* (*i.e.* dividend per share also equals 10 pence) Jovi currently has a *zero growth rate*. Shareholders are satisfied with a 2.5 per cent yield on their investment. We can therefore define the current share price using either a *constant* dividend or earnings valuation for the capitalisation of a *perpetual annuity*, rather than a growth model, because they are all financially equivalent.

$P_0 = E_1 / K_e = D_1 / K_e = 10 \text{ pence} / 0.025 = D_1 / K_e - g = 10 \text{ pence} / 0.025 - 0 = £4.00$

- Partial Distribution (Growth)

Now we have the same EPS forecast of 10 pence but a reduced dividend per share, so that 50 percent of earnings can be reinvested in projects with rates of return equal to the current equity capitalisation rate of 2.5 percent.

According to Gordon, dividends will *grow at a constant rate in perpetuity*. Thus, Jovi's revised current *ex-div* share price is determined by capitalising next year's dividend at the amount by which the desired rate of return exceeds the constant annual growth rate of dividends.

Using Equations (16) or (17):

$P_0 = (1\text{-}b)E_1 / K_e - rb = P_0 = D_1 / K_e - g = 5 \text{ pence} / 0.025 - 0.0125 = £4.00$

- Commentary

Despite abandoning a constant share valuation in favour of the growth model to accommodate a change in economic variables relating to dividends retention, reinvestment and growth, Jovi's share price remains the same.

According to Gordon, this is because movements in share price relate to the profitability of corporate investment opportunities and not alterations to dividend policy. So, if the company's rate of return on reinvestment (r) equals the shareholders' yield (K_e) price will not change. It therefore follows logically that:

(i) Shareholder wealth (price) will only increase if r is greater than K_e
(ii) Shareholder wealth (price) will only decrease if r is lower than K_e

Activity 2

Can you confirm that if K_e = 2.5%, b = 0.5 but r moves from 2.5% to 4.0%, or down to 1.0%, then P_0 moves from £4.00 to £10.00 or £2.50 respectively, just as Gordon's model predicts.

3.2 Gordon's 'Bird in the Hand' Model

Gordon's initial analysis of the determinants of share price depends critically on the assumptions of *certainty*. For example, our previous Activity data incorporated a constant equity capitalisation rate (K_e) *equivalent* to a managerial assessment of a constant return (r) on new projects financed by a constant retention (b). This ensured that wealth remained constant (effectively Fisher's Separation Theorem). We then applied this mathematical logic to demonstrate that share price and hence shareholder wealth stays the same, rises or falls only when:

$$K_e = r; \quad K_e > r; \quad K_e < r$$

But what if the future is *uncertain*?

According to Gordon (1962 onwards) rational, risk averse investors should *prefer dividends earlier, rather than later* (a "bird in the hand" philosophy) even if retentions are more profitable than distributions (i.e. $r > K_e$). They should also prefer *high dividends to low dividends* period by period. Thus, shareholders will discount near dividends and higher payouts at a lower rate (K_{et} now dated) and require a higher overall *average* return on equity (K_e) from firms that retain higher earnings proportions, with obvious implications for share price. Expressed mathematically:

$$K_e = f(K_{e1} < K_{e2} < \ldots K_{en})$$

The equity capitalisation rate is no longer a *constant* but an *increasing* function of the *timing* and *size* of a dividend payout. So, an *increased* retention ratio results in a *rise* in the discount rate (dividend yield) and a *fall* in the value of ordinary shares:

To summarise Gordon's plausible hypothesis in a *world of uncertainty*, where dividend policy, rather than investment policy, determines share price:

The lower the dividend, the higher the risk, the higher the yield and the lower the price.

Review Activity

According to Gordon, the theoretical policy prescription for an *all-equity* firm in a world of uncertainty is unambiguous.

Maximise the dividend payout ratio and you minimise the equity capitalisation rate, which maximises share price and hence shareholder wealth.

But from 1959 to 1963 Gordon published a body of theoretical and empirical work using real world stock market data to prove his "bird in the hand philosophy" with conflicting statistical results.

To understand why, analyse the two data sets below for Jovi plc in a world of *uncertainty*. The first represents a dividend policy of full distribution. The second reflects a rational managerial decision to retain funds, since the company's return on investment exceeds the shareholders' increased capitalisation rate (Fisher's theorem again).

- Explain why the basic requirements of the Gordon growth model under conditions of uncertainty are satisfied.
- Confirm whether the corresponding share prices are positively related to the dividend payout ratio, as Gordon predicts.

Dividend Policy, Growth and Uncertainty

Forecast EPS	Retention Rate	Dividend Payout	Return on Investment	Growth Rate	Overall Shareholder Returns
E_1	(b)	(1-b)	(r)	rb = g	K_e
£0.10	0	1.0	-	-	0.025
£0.10	0.5	0.5	0.075	0.0375	0.050

- The Basic Requirements

Under conditions of *certainty* Gordon asserts that movements in share price relate to the profitability of corporate investment and not dividend policy. However, in a world of *uncertainty* the equity capitalisation rate is no longer constant but an increasing function of the timing of dividend payments. Moreover, an increase in the retention ratio results in a further rise in the periodic discount rate.

So far so good, since our data set satisfies these requirements. Moving from full distribution to partial distribution elicits a rise in K_e even though withholding dividends to finance investment accords with Fisher's wealth maximisation criterion ($r > k_e$) and also satisfies the mathematical constraint of the Gordon growth model ($K_e > rb$).

- Has share price fallen with dividend payout?

Rational, risk averse investors may prefer their returns in the form of dividends now, rather than later (a "bird in the hand" philosophy that values them more highly). But using the two data sets, which satisfy all the requirements of the Gordon model under conditions of uncertainty, reveals that despite a change in dividend policy, share price remains unchanged!

Uncertainty, *Differential* Dividend and Growth Rates with a *Uniform* Price: $P_0 = (D_1/K_e\text{-}g) = £4.00$

Forecast EPS E_1	Retention Rate (b)	Dividend Payout (1-b)	Return on Investment (r)	Growth Rate rb = g	Overall Shareholder Returns Ke
£0.10	0	1.0	-	-	0.025
£0.10	0.5	0.5	0.075	0.0375	0.050

Summary and Conclusions

The series of variables in the previous table were deliberately chosen to ensure that share price remained unchanged. But the important point is that they all satisfy the requirements of Gordon's model, yet contradict his prediction that share price should fall. Moreover, it would be just as easy to provide another data set that satisfies these requirements but produces a rise in share price. No wonder Gordon and subsequent empirical researchers have often been unable to prove with statistical significance that *real world equity values* are:

Positively related to the dividend payout ratio
Inversely related to the retention rate
Inversely related to the dividend growth rate

Explained simply, Gordon confuses dividend policy (*financial risk*) with investment policy (*business risk*). For example, an increase in the dividend payout ratio, without any additional finance, reduces a firm's operating capability and *vice versa*.

Using Equation (17)

$$P_0 = D_1 / K_e - g$$

the weakness of Gordon's hypothesis is obvious. Change D_1, then you change K_e and g. So, how do investors unscramble their differential effects on price (P_0) when all the variables on the *right hand side* of the equation are now affected? And in our example cancel each other out!

For the moment, suffice it to say that Gordon encountered a very real world problem when testing his theoretical model empirically. What statisticians term *multicolinearity*. Fortunately, as we shall discover, two other academic researchers were able to provide the investment community with a more plausible explanation of the determinants of share price behaviour.

Selected References

1. Fisher, I., *The Theory of Interest*, Macmillan (New York), 1930.
2. Gordon, M. J., *The Investment, Financing and Valuation of a Corporation,* Irwin, 1962.

4 Dividend Irrelevancy

Introduction

Under conditions of *certainty*, the Gordon growth model ($P_0 = D_1 / K_e - g$) reveals why movements in share price relate to the profitability of a company's investment policy (business risk) and not variations in dividend policy (financial risk).

In a world of *uncertainty*, Gordon then explains why movements in share price relate to corporate dividend policy. Rational, risk-averse investors prefer their returns in the form of dividends now, rather than later (a "bird in the hand" philosophy).

The purpose of this Chapter is to evaluate an alternative hypothesis developed by the joint Nobel Prize winning economists, Franco Modigliani and Merton H. Miller (MM henceforth). Since 1958, their views on the *irrelevance of dividend policy* when valuing shares based on the economic "law of one price" have defined the development of modern finance.

4.1 The MM Dividend Irrelevancy Hypothesis

MM (1961 onwards) criticise the Gordon growth model under conditions of uncertainty supported by a wealth of empiricism, most recently the consultancy work of Stern-Stewart referenced by the author in *Strategic Financial Management* (*op cit*). According to MM, dividend policy is not a determinant of share price in reasonably efficient markets because dividends and retentions are *perfect economic substitutes*.

If *shareholders* forego a current dividend to benefit from a future retention-financed capital gain, they can still create their own *home made* dividends to match their consumption preferences by the sale of shares or personal borrowing and be no worse off.

If a *company* chooses to make a dividend distribution, it too, can still meet its investment requirements by a new issue of equity, rather than use retained earnings. So, the effect on shareholders' wealth is also neutral.

Consequently, *business risk*, rather than *financial risk*, defines all investors and management need to know about corporate economic performance.

Theoretically and mathematically, MM have no problem with Gordon under conditions of *certainty*. Their equity capitalisation rate (K_e) conforms to the company's class of business risk. So, as Fisher predicts (1930) share price is a function of variations in profitable corporate investment and not dividend policy. But where MM depart company from Gordon is under conditions of *uncertainty*.

As we explained in Chapter Three, Gordon confuses dividend policy with investment policy. For example, an increase in the dividend payout ratio, without any additional finance, reduces a firm's operating capability and *vice versa*. MM also assert that because uncertainty is *non-quantifiable*, it is logically impossible to capitalise a *multi-period* future stream of dividends, where $K_{e1} < K_{e2} < K_{e3}$ ...*etc.* according to the investors' perception of the unknown.

MM therefore define a current *ex-div* share price using the following *one period* model, where K_e equals the shareholders' desired rate of return (capitalisation rate) relative to the "quality" of a company's periodic earnings (class of business risk). The greater their variability, the higher the risk, the higher K_e, the lower the price and *vice versa*.

(18) $P_0 = D_1 + P_1 / 1 + K_e$

MM then proceed to prove that for a *given* investment policy of *equivalent* business risk (where K_e remains constant) a change in dividend policy cannot alter current share price (P_0) because:

- The next ex-div price (P_1) only increases by any corresponding reduction in dividend (D_1) and vice versa.

Activity 1

To illustrate MM's dividend irrelevancy hypothesis, let us reinterpret the stock exchange data for Jovi plc, initially applied to Gordon's growth model in Chapter Three.

- With an EPS of 10 pence a full dividend distribution policy and yield of 2.5 per cent, establish Jovi's current *ex-div* share price using Equation (18).
- Now recalculate this price, with the same EPS forecast of 10 pence, assuming that Jovi revises its dividend policy to reinvest 100 percent of earnings in future projects with rates of return that equal its current yield.

With a policy of *full* dividend distribution, MM would define:

(18) $P_0 = D_1 + P_1 / 1 + K_e = £0.10 + £4.00 / 1.025 = £4.00$

Refer back to Chapter Three and you will discover that this *ex-div* price is *identica*l to that established using the Gordon growth model.

Turning to a policy of *nil* distribution (*maximum* retention) where profits are reinvested in projects of equivalent business risk (*i.e.* 2.5 per cent):

(18) $P_0 = D_1 + P_1 / 1 + K_e = £0 + £4.10 / 1.025 = £4.00$

According to MM, because the managerial cut-off rate for investment still equals K_e, the *ex-div* price rise matches the fall in dividend exactly, leaving P_0 unchanged.

You might care to confirm that using the Gordon growth model from the previous Chapter:

(17) $P_0 = D_1 / K_e - g = 0$

In other words, if a company does not pay a dividend, which is not unusual (particularly for high-tech growth firms), it is not possible to determine a share price.

4.2 The MM Hypothesis and Shareholder Reaction

You will also recall from Chapter Three that even if Gordon's model is mathematically definable (K_e>g as well as D_1>0) he argues that a *fall* in dividends should produce a *rise* in the equity capitalisation rate, causing share price to *fall*. However, MM *refute* this argument.

If a company's reduction in dividends fails to match shareholders' expectations, they can always create *home-made* dividends by selling part of their holdings (or borrowing) to satisfy their consumption preferences, without affecting their overall wealth.

To understand MM's proposition, let us develop the data from Activity 1 using Equation (18) assuming that the number of shares currently owned by an individual shareholder is defined by (n) to represent their holding.

(19) $nP_0 = nD_1 + nP_1 / 1 + K_e$

Activity 2

Assume you own a number of shares (n = 10,000) in Jovi plc and expect an initial policy of full dividend distribution. From the previous Activity and Equation (19) it follows that your current stock of wealth is worth:

$$nP_0 = nD_1 + nP_1 / 1 + K_e = £1,000 + £40,000 / 1.025 = £40,000$$

Now assume that the firm withholds all dividends for reinvestment. What do you do, if your income requirements (consumption preferences) equal the dividend foregone (£1,000)?

According to MM, the *ex-div* price should increase by the reduction in dividends. So, your holding is now valued as follows, with no overall change:

(19) $nP_0 = nD_1 + nP_1 / 1 + K_e = £0 + £41,000 / 1.025 = £40,000$

However, you still need to satisfy your income preference for £1,000 at time period one.

So, why not sell 250 shares for £41,000 / 10,000 at £4.10 each?

You now have £1,025, which means that you can take the income of £1,000 and reinvest the balance of £25 on the market at your desired rate of return (K_e=2.5%). And remember you still have 9,750 shares valued at £4.10.

To summarise your new stock of wealth:

Shareholding 9,750: Market value £39,975: Homemade Dividends £1,000: Cash £25

Have you lost out?

According to MM, *of course not*, since future income and value are unchanged:

	£
nP_1 = 9,750 x £4.10	39,975
Cash reinvested at 2.5%	25
Total Investment	40,000
Total annual return at 2.5%	1,000

To summarise, MM conclude that if *shareholders do not like the heat they can get out of the kitchen* by selling an appropriate proportion of their holdings, borrowing (or lending) to match their consumption (income) preferences.

4.3 The MM Hypothesis: A Corporate Perspective

Let us now turn to the company and what is now regarded as the *proof* of the MM dividend irrelevancy hypothesis. Usually, it is lifted *verbatim* from the mathematics of their original article and relegated to an Appendix in the appropriate chapter of most modern financial texts, with little, if any, numerical explanation.

So, where do we start?

According to MM, dividends and retentions are *perfect economic substitutes*, leaving shareholder wealth unaffected by changes in distribution policy. For its part too, a firm can resort to new issues of equity to finance any shortfall in its investment plans without compromising its current *ex-div* price.

To illustrate MM's *corporate* proposition, assume a firm's total number of shares currently in issue equals (n). We can define its *total market capitalisation of equity* as follows:

(19) $nP_0 = nD_1 + nP_1 / 1 + K_e$

Now assume the firm decides *to distribute all earnings as dividends.* If investment projects are still to be implemented, the company must therefore raise new equity capital equivalent to the proportion of investment that is no longer funded by retentions.

According to MM, the number of new shares (m) issued at an ex-*div* price (P_1) must therefore equal the total dividend per share retained (nD_1) defined by:

(20) $mP_1 = nD_1$

Based on all shares *outstanding* at time period one ($nP1+mP_1$) MM then rewrite Equation (19) to represent the total market value of *original* shares in issue as follows:

(21) $nP_0 = 1/ K_e [nD_1 + (n + m) P_1 – mP_1]$

And because $mP_1 = nD_1$ this equation simplifies to:

(22) $nP_0 = 1/ K_e (n + m) P_1$

MM therefore conclude that because the dividend term disappears from their market capitalisation, it is impossible to assert that share price is a function of dividend policy.

To illustrate the *corporate* dynamics of MM's argument, let us develop the data from Activity 2, using the preceding equations where the company's total number of shares in issue equals (n).

Activity 3

Assume Jovi plc begins the period with a *maximum* retention policy (*nil* distribution) and a given investment policy. Shares are therefore valued currently at £4.00 with an *ex-div* price of £4.10 at time period one as follows:

(18) $P_0 = D_1 + P_1 / 1 + K_e$ = £0 + £4.10 / 1.025 = £4.00

If Jovi has one million shares in issue, we can also derive the company's *total market capitalisation of equity:*

(19) $nP_0 = nD_1 + nP_1 / 1 + K_e$ = £0 + £4.1m / 1.025 = £4m

But now assume that the firm decides *to distribute all earnings as dividends* (10 pence per share on one million issued) without compromising investment (*i.e.* it is still a "given")

Confirm that this policy leaves Jovi's share price unchanged, just as MM hypothesise.

If investment projects are still to be implemented, the company must raise new equity capital equal to the proportion of investment that is no longer funded by retained earnings. According to MM, the number of new shares (m) issued *ex-div* at a price (P_1) must therefore equal the total dividend per share retained (nD_1) defined by the following equation.

(20) $mP_1 = nD_1$ = £100,000

Based on all shares *outstanding* at time period one ($nP1+mP_1$) we can rewrite Equation (19) representing the total market value of *original* shares in issue as follows:

(21) $nP_0 = 1/ K_e [nD_1 + (n + m) P_1 – mP_1]$

This simplifies to the following equation where *the dividend term disappears*.

(22) $nP_0 = 1/ K_e (n + m) P_1 = 1/ 1.025 (nP_1 + £100,000) =$ £4 million

Since there is also only one unknown in the equation (P_1) dividing through by the number of shares originally in issue (n = one million) and rearranging terms, we revert to:

(18) $P_0 = D_1 + P_1 / 1 + K_e = P_1 + £0.10 / 1.025 =$ £4.00

And simplifying, then solving for P_1:

$$P_1 = £4.00$$

Thus, as MM hypothesise:

- The *ex-div* share price at the end of the period has fallen from its initial value of £4.10 to £4.00, which is exactly the same as the 10 pence rise in dividend per share, therefore leaving P_0 unchanged.
- Because the dividend term has disappeared from the equations, it is impossible to conclude that share price is a function of dividend policy.

Review Activity

To reaffirm the logic of the MM dividend irrelevancy hypothesis, revise the Jovi data set for a *nil* distribution to assess the implications for both the shareholders and the company if management now adopt a policy of *partial* dividend distribution, say 50 per cent?

Summary and Conclusions

MM criticise the Gordon growth model under conditions of uncertainty from both a *proprietary* (shareholder) and *entity* (corporate) perspective. The current value of a firm's equity is *independent* of its dividend distribution policy, or alternatively its retention policy, because they are *perfect economic substitutes:*

- The *quality* of earnings (business risk), rather than how they are *packaged* for distribution (financial risk), determines the shareholders' desired rate of return and management's cut-off rate for investment (project discount rate) and hence its share price.

- If a company *chooses* to make a dividend distribution it can always meet its investment requirements by a new issue of equity, rather than use retained earnings, so that the effect on shareholders' wealth is neutral.
- As a corollary, dividend policy should therefore be regarded as a *passive residual*, whereby management return unused funds to shareholders (the *agency* principle) because their search for new investment opportunities cannot maintain shareholder wealth.

It therefore seems reasonable to conclude Part Two with the following practical observation on our analyses of share valuation theories.

The P/E ratios associated with *business risk*, rather than dividend yields associated with *financial risk*, which are published in the financial press that we first outlined in Chapter Two, should encapsulate all the investment community needs to know about corporate economic performance.

We shall see.

Selected References

1. Gordon, M. J., *The Investment, Financing and Valuation of a Corporation,* Irwin, 1962.
2. Miller, M. H. and Modigliani, F., "Dividend policy, growth and the valuation of shares", *The Journal of Business of the University of Chicago*, Vol. XXXIV, No. 4 October 1961.
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Part III: A Guide to Stock Market Investment

5 How to Read Stock Exchange Listings

Introduction

Normative capital theory maintains that if company accepts projects with a positive NPV, financed by retentions or equity issues discounted at their shareholders' current rate of return, the market value of shares should rise by an amount equal to the NPV. Rational, risk-averse investors will regard the company's shares as a "good buy" with the result that increased demand forces up their price. Eventually a new *equilibrium* point is established, which maximises share price with a yield equal to investments of comparable risk elsewhere on the market.

Of course, the price of shares can fall as well as rise. If shareholders are generally satisfied with their return, given the risk a firm is taking, they will hold on to their investment. Price and yield therefore remain stable. However, if they are dissatisfied, they will attempt to sell their holding. But with little demand, price will fall and return rise to compensate new investors for increased risk. As we observed in Part Two:

> A basic stock market law is the *higher* the risk, the *lower* the price, the *higher* the yield and *vice versa*.

These risk-return relationships between price and yield explain why a few select ratios published daily in the financial press are used extensively by the global investment community to analyse stock market performance. The purpose of this chapter and the next is to develop our understanding of the phenomena as a guide to future investment.

5.1 Stock Exchange Listings

Corporate performance is not an *absolute* but *relative*. It must be related to some *standard of comparison*. A share's price is only meaningful if you know other data about a company, and then place it in context. When buying or selling shares you must also remember that recent stock market activity may be the exception, rather than the rule. So, how do you acquire this information and what can it tell you?

Fortunately, help is at hand in the share price columns of the financial press provided by global stock exchanges. These enable investors to analyse a company's vital statistics, or compare them with those for similar companies, on world markets over time.

The publication of stock exchange listings can be traced back to Charles H. Dow, the first editor of the Wall Street Journal, who started to compile daily share price averages in 1897. These are still manifest in the best known barometer of stock market performance, the Dow-Jones Industrial Index. In the UK, the Financial Times (FT) performs a similar function and calculates a variety of indices for the London Stock Exchange (LSE) such as the FT-SE 100. For the purpose of exposition, let us focus on the LSE.

The *FT London Share Service* publishes individual share price information in the Financial Times on Tuesdays through to Saturdays. Each day, companies are listed alphabetically within each business sector (such as Electricals) with data on each share given in ten columns. Other UK newspapers provide a more selective analysis. For example, the Daily Mail carries a reasonably simple five-column guide to share prices and the Sunday Times Business Section a seven-column listing. To shed light on these and other equity data worldwide, let us consider some typical information for a hypothetical newspaper and company expressed in pence (£ sterling).

2013		Company	Price	Change	Dividend	Cover	Yield	P/E	Mkt. Cap
High	Low			+ or -	net		gross		
175	150	Coldplay	200	+5	8	2.5	5	10	£100m

(1) **Prices**

The first two columns show the highest and lowest prices in pence for the ordinary shares (common stock) during the year. Early in the year these prices will be the extremes from the previous year. So, in February 2013 you will be reading highs and lows since 1 January 2012.These place the current price in perspective.

In our example, the share has had a good run recently and exceeds the year's high point. Compare this with the market as a whole, or similar shares in similar industries and you can establish whether it is following a trend. But before purchasing shares, remember the biggest winners are sometimes the biggest losers. Price movements might be based on *speculation*, rather than any *intrinsic* value underpinned by actual profits, or other trading fundamentals and the bubble may be about to burst. As we explained in Chapter One, astute investors will have bought low, waiting to sell high, which can then create "crowd" behaviour in the form of a selling frenzy, causing individual share prices to plummet and even markets to crash (think dot.com 2000).

Next in our listing is the name of the company (Coldplay) followed by the share's current *ex-div* price in pence at the end of the day's trading on the previous day. This is in fact the *middle* value, which is halfway between the price at which shares were bought and sold. In the next column there is a figure preceded by a plus or minus sign to show how the share price moved, if at all, during the day.

If you then jump to the last column, the total market value of the company (price per share multiplied by the number in issue) is represented by the *market capitalisation* of equity. The higher the value, the higher the firm is ranked in the stock exchange listing. Note, however, that this is only a *size* criterion and not a *performance* measure. Large companies can still make losses (remember BP?) whilst those with a smaller capitalisation may be extremely profitable, as we shall discuss in Chapter Six.

(2) **Dividends**

Returning to the sixth column, dividends are introduced. Normally, the figure given is the total *net* dividend per share for the latest year because income tax is deducted at the basic rate (assumed here to be 20 per cent). Sometimes the dividend shown is the company's own forecast of its next dividend, which is a useful indicator of the company's confidence concerning future performance.

Next is the *dividend cover*. This is a simple measure of *financial* risk that reveals the maximum number of times a company's dividend (the amount of profits distributed to shareholders) could be paid out of post-tax earnings. Since our company has paid a dividend of 8 pence per share that is covered 2.5 times, it therefore has sufficient earnings to pay 20 pence per share. As a general rule, dividends covered twice are desirable.

- A dividend well covered by profits is normally a secure dividend
- Conversely, low dividend cover might indicate difficulty in maintaining future payouts.

Like price, it is useful to compare one company with others of similar risk, to see if it is bucking the trend.

Column eight shows the *gross yield*. This defines the annual *percentage* return shareholders receive on every £100 invested, before tax is deducted at their basic rate. This is calculated using the latest dividend (gross) divided by the current *ex-div* market price.

A dividend *yield* differs from the dividend *percentage* published in company accounts. The latter conforms to *historical* cost convention and *generally accepted accounting principles* (GAAP). It is calculated using the *nominal* or *par* value of ordinary shares (common stock) which is a *constant*. Thus, we cannot say that an improvement in a company's dividend percentage, or a company with a higher dividend percentage than its competitors, represents a more attractive investment. A correct interpretation depends upon the price at which shares were acquired in relation to their latest *market* value.

For example, if you bought 100 ordinary shares at a nominal value of £1.00 in a company that pays a dividend percentage of ten per cent, its yield would also be ten percent. It provides a return of £10 on every £100 invested in the company. However, should those shares double in price, the value of your holding and the price paid by new investors would now be £200. If the dividend percentage was still held at ten percent, the revised yield would be precisely half the dividend percentage, since the market value is now twice the nominal value. You still earn ten percent on your original investment. However, with a yield of only five percent you might consider selling the shares, taking the capital gain and moving your funds elsewhere. But note the following, again part of stock market law:

- A relatively low dividend yield can suggest that investors believe a company's prospects are good and dividends are expected to grow in the future, i.e. share price is buoyant.
- A relatively high yield (low price) may indicate risk concerning a company's growth and ability to sustain dividends.

Remember, that without prospective capital gains, rational risk-averse investors might also require a higher current return if they are to buy shares (a "bird in the hand" strategy). A lower yield can also mean that the dividend has been cut.

(3) **The Price-Earnings Ratio**

In our example, the ninth column, entitled P/E, is the price-earnings ratio, which is a *valuation multiplier* expressed as a *whole* number. You will recall from Part Two that it is the *reciprocal* of the earnings yield based on post-tax earnings. The P/E rates a company's share price as a *multiple* of profits, rather than the percentage return it earns. For our company, a P/E of ten corresponds to a yield of 10 percent, which means that the total value of a company's shares (the market capitalisation, in the last column) is ten times its annual post-tax profits. Alternatively, the P/E may be calculated by dividing current share price by latest reported earnings per share (EPS).

At this point it is also worth noting what a P/E tells investors about corporate performance that an EPS cannot. EPS is calculated by dividing net distributable profits by the number of shares in issue. So, if EPS is higher this year then the company is presumably performing better because profits are growing. Existing investors might therefore be inclined to hold on to their investment, or even increase their stake in the firm. However, just like a reliance on a dividend percentage (rather than a yield) is misguided, so too is the use of EPS at the expense of a P/E.

The validity of both strategies depends upon the price at which shares were trading when they were originally acquired, relative to their current market value. For example, if the price of a company's shares has risen faster than its EPS over the last twelve months, then the shareholders' *real* rate of return will have fallen and the P/E will have risen proportionately. Thus, shareholders might consider selling their holdings to reap the capital gain and invest elsewhere at a lower price for a higher return (*i.e.* lower P/E).

Given a company's latest reported profit figures, we can also use existing P/E ratios for similar firms to place a comparative value on that company's shares. This can then be compared with its actual total market capitalisation or the current share price to establish whether the company is either undervalued, equitable, or overvalued, relative to the market for similar shares. Undervalued, investors buy, equitable they hold, overvalued they sell, no more so than when the market collapsed with the 2007 banking crisis.

Based on the Modigliani-Miller (MM) dividend irrelevancy hypothesis explained in the previous Chapter, many investors (institutional or otherwise) believe that the P/E ratio encapsulates all the factors which determine the price of a company's shares, irrespective of its distribution policy (dividend yield).

- A high P/E suggests that the company is highly rated and shares are sought after, (but note this could mean they are relatively expensive and not necessarily a bargain buy)
- Conversely, a low P/E might reflect that a company's shares are undervalued by the `market relative to its profit performance.

But remember, the true significance of a P/E ratio (like price data and dividends) can only be judged in relation to other companies in the same line of business. If the *median* P/E for a similar group of companies was eight, then the ratio of ten for our particular company might suggest that its shares are in great demand because a rapid growth in earnings was anticipated. Conversely, if the market multiplier was fifteen this might indicate our company has poor growth prospects and is not greatly favoured by investors.

In certain circumstances the P/E ratio also stands alone as a valuation tool. For example, if a company's distribution policy is too erratic as a basis for capitalisation, or it pays little or no dividend. This does not mean the shares are unattractive. On the contrary, the P/E might be high because there is an active market among investors who pay income tax on dividends at higher rates. Such a clientele would be interested in minimising their tax liability *via* future capital gains, because they are usually taxed at lower rates, rather than receive regular income.

Review Activity

We dealt with the mathematical relationship between the earnings yield and P/E ratio in the Review Activity for Chapter Two. But if you are still unsure about this, refer back, paying particular attention to Table 2.1.

You will also recall from Part Two that the P/E ratio can be calculated by dividing the price of a share by the company's latest earnings per share (EPS). Thus, with a total market capitalisation of £100 million and a share price of £2.00 (50 million shares in issue) from our profile for Coldplay:

Confirm that with a P/E of 10, the company's net profit is £10 million, which is equivalent to an EPS of 20 pence.

Summary and Conclusions

The interpretation of stock market data is rather like studying the handicap and form for a horse race. Share price listings also contain a vocabulary all of their own, which can seem like a foreign language to the uninitiated. Fortunately, financial gurus, such as the legendary investors Warren Buffet in the States and Jim Slater in the UK, have long thrown lifelines to investors before they dive into the stock market. Seek out their publications and you will discover investment strategies designed "to beat the system" using public information, such as share price listings, corporate and analyst reports, plus press, media and internet comment. Invariably, their advice explains how to "hedge" your bets in the presence of risk, beginning with a fundamental "stock market law".

The higher the dividend yield, or the lower the P/E ratio, or the lower the dividend cover: then the higher the financial risk and lower the price of an investment (and *vice versa*).

In the latest edition of his best seller, *Beyond the Zulu Principle* (2011) legendary UK investor Jim Slater expands upon his "golden rules for investment" based on analyses of stock market criteria. He likens these criteria to an investor's "quiverful of arrows". They need not be fired all at once, some may miss their target altogether, but hopefully, you will score a substantial number of bull's eyes.

Using his pragmatic approach, the following guide to stock market prices based on this Chapter's analysis is not guaranteed to make you rich. But it should make share trading easier.

- The P/E ratio (earnings yield reciprocal) shows how a company's value is rated in relation to the profit it earns. The higher the P/E ratio, the greater confidence there is that profits are going to rise and the lower the P/E, the greater the concern that it might be unable to sustain profits.
- Conversely, a low P/E ratio could reflect the fact that a company's shares are undervalued by the market relative to its profit performance and thus make it attractive to speculative investors.
- Shares in companies that are expected to produce rapid growth in profits and hence capital gains, offer lower dividend yields, while higher dividend yields are offered by what are regarded as relatively mature, stable "blue chip" businesses with little prospect of increasing profits and dividend.
- Conversely, part of stock market law is "the higher the yield the higher the risk". This applies particularly to shares where a higher dividend yield usually signals uncertainty over whether the dividend can be maintained in future, particularly if earnings cover is low.
- In general, if any investment offers either a higher dividend yield or earnings yield (a low P/E ratio) than similar investments, it is advisable to be cautious, unless the market hits rock bottom, (for example the crash of 1987).

Of course, there have always been exceptions to these rules. A yield may be high (or a P/E ratio low) not because investors pay less for risky dividends (or earnings) but because the company has been overlooked by the market and is genuinely undervalued. This is why Slater developed sophisticated analyses based on the P/E and growth prospects (more of which later). The rules have also broken down spectacularly since the 1980's.

Apart from the 2007 banking fiasco, consider the dot.com-techno crash of 2000-01. With no shortage of naïve investors tracking pure speculation (crowd behaviour) prior to the millennium, many techno-companies reported nil-dividends (zero yields) nil-earnings (no P/E), or alternatively, huge P/E ratios (sky-high prices with miniscule earning earnings) and no cover.

So, familiarise yourself with the financial press and other source material. Use them consistently. But remember, that in an imperfect capital market (which also includes an imperfect market for information) it can sometimes pay to follow your own instincts and not the crowd, as we shall discuss in the next Chapter.

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6 Strategies for Investment (I)

Introduction

Over the past decade, global capital markets have experienced one of the most volatile periods in their entire history. For example, since the millennium, the index of Britain's highest valued companies, the FT-SE 100 (Footsie) has often moved up and down by more than 100 points in a single day, driven by the extreme price fluctuation of risky internet or technology shares, the changing value of blue-chip companies, a global banking and Euro financial crisis, rising oil and commodity prices, all underpinned by increasing geo-political instability.

Leading up to the millennium during the dot.com boom, many I.T. firms never turned a profit, let alone a dividend. Yet, even without yield, cover, or P/E ratios to compare one company with another and its peer group, their share prices soared, fuelled by speculation. Many traditional companies suffered from this tyranny of fashion. Despite creditable financial performance, their values plummeted as investors moved sectors. In March 2000 a radical shakeout of the FT-SE 100 occurred.

FT-SE 100 Adjustments: March 2000

Out of the Index	Into the Index
Allied Domecq	Baltimore Technology
Associated British Foods	Cable and Wireless Communications
Hanson	Capita
Imperial Tobacco	Celltech
Powergen	Emap
Scottish and Newcastle	Freeserve
Thames Water	Nycomed Amersham
Whitbread	Psion
Wolseley	Thus

As the table reveals, out went many UK household names that still provided essential goods, services and utilities to millions of consumers at home and abroad. In came little known firms, valued on hope rather than rational expectation. In terms of trading fundamentals, the nine new entrants only made a total profit of £500 million compared with the £3.73 *billion* earned by the companies they replaced. The new entrants also employed far fewer people. For example, Baltimore's staffing was only 500, compared with Whitbread's 98,000.

However, by 2001 the techno-bubble burst. Five years into the new millennium, Britain's blue-chip companies were also back in favour, as evidenced below by a reversal of fortune for the majority of companies who still survived from the previous table.

The FT-SE 100 Position: August 2005

Out of the Index	Into the Index
Baltimore Technology	Associated British Foods
Celltech	Hanson
Emap	Imperial Tobacco
Freeserve	Scottish and Newcastle
Nycomed Amersham	Whitbread
Psion	Wolseley
Thus	

Throughout 2006, UK plc like other economies appeared to be in good shape, with companies reporting increased sales, profits and dividends (a continuation of the strong results delivered in 2004 and 2005). The Footsie (like the American Dow Jones) was also extremely buoyant, well above the new psychologically important 6,000 barrier, up more than 80 per cent since its low of 3,287 in March 2003.

Yet, history tells us that "bull" markets (like "bear" markets) do not go on forever and sure enough, equity prices were rising for a fall. In 2007 the American sub-prime mortgage scandal fuelled by cheap money and credit facilities became public knowledge and quickly reverberated throughout global stock markets.

You will recall from Chapter One that the classic text by Charles P. Kindleberger on behavioural theory, now in its sixth edition (2011) offers a plausible explanation for what happened next.

At some stage after insiders sold their mortgage books to move into cash, markets generally began to panic and sell, resulting in what Kindleberger terms "revulsion". A period of several months ensued where disillusioned investors refused to participate in the market until prices were low enough to tempt them back.

Since then, governments, banking and financial institutions have all sought to put their house in order with tighter regulation. Many companies world-wide have also undergone a period of introspection. Management has sought to prune unnecessary costs and provide an increasing share of corporate efficiency gains in dividends. Thus, investors, technical, fundamental, or speculative, have received more money to reinvest, which has revived stock markets and particularly, takeover activity. However, with increasing political tension and the Greek Euro crisis, it remains to be seen whether markets can maintain their momentum. Much of the cost cutting is now implemented and future gains will be limited if consumer demand tails off and rising inflation, interest rates, oil and commodity prices squeeze profit margins.

So, without access to insider information what does this mean for investors?

The purpose of this Chapter is to suggest various strategies for buying, selling, or holding shares, when markets are buoyant, even in a climate of geo-political, economic, business and financial uncertainty. To keep the analysis simple, we shall focus on the data contained in share price listings, price, yield, cover and the P/E ratio. In Chapter Six we shall then move on to other sources of information from the press, media, internet and analyst reports to support these trading decisions.

6.1 Dividends as Income

In Part Two we explained why a theoretical share valuation model based on the present value (PV) of a *constant* future dividend stream in perpetuity (using the latest reported dividend per share capitalised by the current dividend yield as a discount rate) underpins stock exchange listings. We then explained how investors focus on the current yield, a company's annual dividend per share expressed as a percentage of its current share price, to compare its own return over time with that of its peers, or the market and establish whether its shares are over or undervalued. So, if a firm pays a 10 pence dividend in one year and its shares are currently trading at £1.00 (100 pence) the yield is 10 percent. If price rises, the yield falls and *vice versa*.

If a stock's yield is low compared with its competitors, it could indicate the company is overvalued, which could be a good time to sell and buy back when share price falls to a more equitable level. On the other hand, there may be sound economic reasons why a share is highly valued that could dictate a policy of "hold and buy". Because the yield is a *ratio* with a numerator and a denominator, falling yields could also indicate that payouts are being cut, suggesting the firm is in difficulties and share price will fall. Investors need to decide whether the cut is a temporary measure, perhaps to finance profitable investment through retention, or is indicative of a fundamental problem.

If one company exhibits a higher yield than its competitors, it could signal that the stock is undervalued, suggesting a "buy" decision. Conversely, it could indicate that the firm is struggling, which has dented share price. Many shares exhibit high yields because their prices have fallen dramatically with little hope of recovery. This is why part of stock market law states that the "higher the yield the higher the risk" and investors seeking regular income assiduously avoid them. Yet high yielding shares can be good value.

Suppose two companies pay a dividend per share of 10 pence that are both valued at £1.00 yielding 10 per cent. The share price of one company then falls to 50 pence, so its yield rises to 20 percent. A speculative investor might buy this "undervalued" share with the higher yield on the chance that its price will rise again. This strategy, termed *value investing* (as opposed to *income investing*) is psychologically difficult for extremely risk-averse investors because the price fall may be the consequence of bad news, which is why you are paying half the price for the same dividend per share.

However, you will also recall that another part of stock market law is "buy low and sell high". Investors who bought into the Footsie at its all time peak of 6,930 in September 1999 (prior to the dot.com. crash) and held on till March 2003 when it plunged to 3,287 suffered 40 per cent losses. But this was the time when value investors pounced, expecting to "beat the market" by benefiting from any upswing, which they did. Naturally, it is a high-risk strategy. So, one way to hedge your bets is to analyse whether a company is sufficiently profitable to continue paying the current level of dividend in the short term.

A convenient measure of dividend risk (published in the Financial Times on Mondays) that we introduced in Chapter Two is the dividend cover. This defines how many times a company can afford to pay its current dividend out of current post-tax earnings. Conventional wisdom dictates twice earnings (cover of two). But again a word of caution: cover can rise if dividends are cut, indicating that profits and price are also about to take a turn for the worse.

Of course, not all shares exhibit low cover or high yields because profits and prices are low in a high-risk sector. Historically, the highest UK dividends tend to be paid on *defensive* stocks, such as food drink, tobacco and utilities. These consistently outperformed the FT-SE-All Share 20 year average yield of 3.3 percent and also the 4 percent high when the market plunged in March 2003. According to research conducted by *motley fool. com* who are regularly reported in the financial press like other financial websites, (see this Chapter's Selected References) buying the five shares with the highest dividend yield drawn from the FTSE-30 index every year and repeating the strategy annually, would produce a higher return, compared with a FTSE-30 average. For example, over the twenty year period from the millennium back through the 1980s (despite the 1987 global crash, Euro and Tiger economy crises of the Nineties) you would have made an average annual return of 26.15 percent, compared with the FT-SE 30's 20.38 percent.

Today, investors are enjoying a boom in dividends. Thus, one game plan to make short-term gains in a climate of financial and geo-political instability is to select shares with the highest yield, perhaps covered twice by earnings. If regular income is your motivating factor, share trading must be timed speedily, so as not to miss out on interim dividend payments, particularly if the political situation deteriorates. Most companies distribute dividends every three or six months. But remember, if you buy a share *ex-div* you are not entitled to the next dividend payment. If you sell *ex-div* you are entitled to the next dividend, but not any subsequently.

6.2 Dividends for Growth

If a company regularly pays a decent dividend, investors don't always expect future capital growth to underpin share price. However, some market participants are much more interested in growth than current income, particularly if their marginal income tax rate exceeds the rate of capital gains tax. They focus on a company's *free cash flow* (yield plus potential dividend growth) associated with a high payout on undervalued stocks, particularly when profits are expected to rise. If dividends move in sympathy with earnings per share (EPS) they represent the bulk of returns. Potential dividend growth is also a key component of the total return from shares when inflation and interest rates are low because their benefits feed into distributable profits.

Historically, dividends account for the majority of a share's total return. For example, between 1950 and 2000, 80 per cent of investors' gains from global markets were represented by dividend distributions. Investors can also increase their wealth by creating "homemade" dividend growth. For example, if you had invested £100 in the Footsie at the start of 1993, held for a decade spending all the dividends and selling when the market fell to its all time low in March 2003, the investment was only worth £101. If you had reinvested the payouts every year, you would have realised £137.50.

Turning to a sectoral analysis, shares in British American Tobacco (BAT) between 2000 and 2010 rose by a massive 383 percent (equivalent to 17 percent per annum). However, with dividends reinvested, shareholders made an incredible 662 percent, or 22.5 percent a year. Over the same period, the FT-SE All-Share only returned 40 percent with dividends.

So today, if you want to invest for the long-term and reinvest dividends, which sector should you pick? There is no definitive answer. Who would have thought that in 2000 when techno-shares were the best-performing shares of the decade, an industry seriously impaired by smoking litigation would ever revive its fortunes so spectacularly?

Growth investors oblivious to the risks of rejecting a "bird in the hand" strategy outlined in Chapter Three can also be disappointed in the short-term. At a scholarly level, throughout the 1950s and 1960s the American academic Myron J. Gordon (*op cit.)* explained how a high dividend pay-out ratio supports current share price generally, particularly if investors express a strong preference for dividends now, rather than later. Conversely, if the payout is cut it could also indicate that a firm is struggling and also hit the share price. But there are flaws in Gordon's argument. Some companies do not pay dividends, or their payout may be erratic, yet their price will rise if the market believes the prospects for the company, however long term, are good.

You will also recall that when a share sells *ex-div*, its price falls by the amount of the dividend. In other words, a dividend received is equivalent to a capital gain lost. But what if the two are not *perfect economic substitutes*, meaning they are not valued equally, even if the rate of income tax equals capital gains tax? Rational investors might prefer the expectation of larger future dividends, rather than smaller ones today; if they believe that the firm can retain and reinvest earnings in projects whose future profitability more than compensates them for the delay. In the interim, investors who cannot afford to wait always have the option of creating *homemade* dividends by selling their shares to gain the wealth amassed by management on their behalf, (Fisher's Separation Theorem *op.cit*).

As we observed in Chapter Four, since the 1960s an impressive body of research initiated by the seminal work of Modigliani and Miller (MM) also suggests that dividends may actually be *irrelevant* to share valuation. All that matters is the "bottom line", based on the riskiness of a firm's profitable investment and not how its earnings are "packaged" for distribution. In the absence of worthwhile projects, according to MM's hypothesis, the sole purpose of a dividend pay-out is the return of capital to shareholders that is surplus to the firm's future investment plans. In otherwords, a high dividend pay-out ratio signals management's failure to satisfy shareholder's expectations and not their success. A high yield can then suggest that share price has fallen and is expected to fall further, as investors sell the stock.

6.3 The Price-Earnings Ratio: Past and Future

If dividends do not drive equity prices, or explain only part of their movement, an alternative strategy for analysing market forces is to focus on earnings.

The simplest selection criterion would be to identify companies that have experienced the largest increase in earnings per share (EPS) over the past year. However, performance is not an *absolute*. It must be related to some standard of comparison. Like dividend per share, EPS ignores *relative* movements in share price that establish whether a stock's EPS delivers an appropriate return commensurate with risk. The return individual investors earn also depends when they buy. If shares are cheap, long-run returns will be higher. But when they are expensive, they will be lower.

To identify these inter-relationships, you will also recall from Chapter Two that the most commonly used indicator is the price-earnings ratio (P/E). If a share costs £1.00 and the EPS is 10 pence, then the P/E ratio is 10 (the *reciprocal* of the earnings yield, which is 10 percent). Like the dividend yield, we then compare the P/E ratio of a company with itself over time, its competitors, or the market, to ascertain whether the stock is correctly priced.

For example, throughout 2004 analyst and press reports suggested that British Petroleum (BP) the highest ranked Footsie company in terms of market capitalisation with a P/E of around 20, was overvalued. The average for the oil sector hovered around 17.5, with Shell only on 13.5. By August 2005, the market responded to this information with a *price correction* and the P/E for BP fell to 17.4. But remember there may be sound economic reasons based on trading fundamentals that explain why a company deserves a higher rating than its peers.

Like dividend yield comparisons, when shares seem expensive it might not always be prudent to sell all of your holding, perhaps only a proportion, reinvesting when price and the P/E falls back to a more reasonable level. To complicate matters further, P/E ratios can rise because earnings fall and *vice versa*, without any compensatory price movement. This often occurs when shares are not actively traded or overlooked by market participants, particularly financial institutions (a phenomenon termed "institutional neglect").

It is also important to note that P/E ratios published in the financial press are "trailing ratios" that divide a company's *current* share price by its *last* reported EPS. They only provide a "snapshot" of recent performance and also ignore future growth

If a company has a ratio that is low compared with its *long-term average*, competitors, or the market, stocks could be cheap. So, it may be a good time to buy. But if the P/E is relatively high it could be a signal to sell. Unfortunately, we have observed that investors do not always behave rationally. Think about 2000, with the tobacco sector trading on a P/E ratio of just seven and a dot.com bubble of sky-high ratios about to burst. If somebody suggested moving out of techno-shares into tobacco, there would have been few takers.

Today with hindsight, a popular valuation multiplier based on stock exchange listings that might have produced a rational decision is the *cyclically adjusted price-earnings ratio* (CAPE). It accounts for the effect of stock market cycles on profits by replacing the *latest* reported EPS in the conventional P/E ratio with an annual *simple average* EPS (say 10 years) adjusted for inflation. The rationale for the CAPE is that irrespective of market volatility and its causation, the market always *reverts* to its long-term average price (what statisticians term *mean-reversion*).The CAPE can also be compared over several years using a *moving average* to look at historical trends and identify the critical point before a current P/E ratio reverts to its mean after a spike or a dip.

So, if future investors were to look back over a decade to 2011-12, which market sector would be undervalued today but promises the best future returns?

To judge by current data, one obvious candidate is healthcare. Compared with an overall long-term average of 15, the global P/E forecast for 2012 is just 10.6. Turning to the American market leader, Johnson and Johnson, since 2000 the company's EPS surged by 186 percent but share price rose by only 13 percent. Its P/E for 2012 was also barely above 10, its lowest level for 20 years. However, analysts are reporting that healthcare in emerging markets, notably China and India, is expected to grow by 500 percent by 2020.

Still focussing on the future, we should also note that current P/E ratios are generally higher for companies with higher growth rates. So, comparisons with non-growth companies can make them appear overvalued. It is also difficult to compare companies with different growth rates.

To overcome these defects, another variant of the current P/E ratio based on stock exchange listings is the *price-earnings growth ratio* (PEG). It measures the trade-off between a stock's current price (P) the EPS generated (E) and analysts' forecast growth rate (G) by dividing the P/E ratio by G:

$$PEG = (P/E) / G$$

Proponents of the measure, such as Jim Slater (*op.cit.)* and Warren Buffett maintain that the P/E of a *fairly* priced stock should equal its growth. Thus, the PEG equals one. Based on the time honoured strategy of "buying low and selling high" investors should therefore:

Seek undervalued shares where: $P/E > G$ and $PEG > 1.0$
Avoid undervalued shares where: $P/E < G$ and $PEG < 1.0$

Summary and Conclusions

Based on the capitalisation of a perpetual annuity, markets have delivered an average annual dividend of six percent over the very long term. Historically, the average P/E for shares listed on western markets has ranged from 10 to 14. However, there is no *correct* dividend yield or P/E ratio. For example, shares in growth companies may trade on very low yields and a high P/E, but these will reflect investors' expectations that profits and hence dividends and price will all rise. Alternatively, a company may be a "castle built on sand" where profits fail to materialise, fail to cover dividends and share price collapses spectacularly, (think dot.com).

History also tells us that markets always revert to their long-term average price. So strategically, a long-run policy of "buy and hold" could limit your returns, even if you bought cheaply, unless you are prepared to sell fast when markets lose momentum (1987, 2000 and 2007). Tactically, you should also take advantage of short-term price movements. To recapitulate part of stock market law:

The higher the dividend yield, the lower the P/E ratio and the lower the dividend cover: then the higher the financial risk and lower the price of an investment (or *vice versa*).

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7 Strategies for Investment (II)

Introduction

The theoretical relationship between dividend and earnings equity valuations explains why a few select statistics published in the press provide a disciplined framework for analysing corporate performance as a guide to future investment. However, as we shall now explain, there is more to buying and selling shares than the interpretation of stock exchange listings.

7.1 Corporate Information

With time to scrutinise company reports, press-media comment and financial websites, anyone can identify market forces (other than yield, growth, EPS and the P/E ratio) which are believed to drive equity prices and market sentiment, that are commonly used by professional analysts, particularly in the short term.

(a) Takeover Activity

Companies grow organically or by acquisition. Speculation that predators are about to pounce on a takeover target can provide investors with instant gains if its share price rises. So, how do you spot a takeover?

If a firm has exhausted its investment potential it may be a target. If it has met the demand for its products or services but is profitable and cash rich, it may be a predator seeking to diversify away from its core technology to maintain growth. Alternatively, consolidation between equal partners (currently in competition) may be the key issue, creating future opportunities for economies of scale.

If we ignore profitable going-concern activities, target companies can also be worth more "dead than alive", particularly if they are sitting on copyrights (which prompted the Chinese takeover of Britain's last major carmaker, the loss making MG-Rover). Another way of identifying vulnerability is to look at a company's *net asset value per share* (NAV). This is measured by the assets owned by the firm, less its liabilities, divided by the number of shares in issue. If the NAV per share is higher than the current share price, asset strippers may be ready to pounce. One of the major attractions for predators is an undervalued property portfolio that can be sold off, or redeveloped. Venture capitalists particularly, seek companies whose shares are infrequently traded with corporate assets they regard as undervalued. So, if consortia or financial institutions start to increase their holdings in such companies, particularly if they take a seat on the Board, it may signal a takeover.

Irrespective of whether markets are volatile or stable, riding on the back of any takeover is a risky strategy that is only advisable for the speculative, short-term investor. As we shall discover in Part Four, even if two companies are a "perfect fit", you may need to buy immediately before a bid and sell quickly before the takeover occurs, because thereafter price invariably falls back. History also tells us that post-takeover, holding shares for the long haul is unwise. Very few acquisitions succeed, usually because of a lack of strategic pre-planning by the predator company.

(b) Profit Warnings

Companies issue profit warnings when their results are likely to be below expectations. Shares in firms that issue warnings usually fall by an average of 20 percent on the day of publication but 30 percent is not unusual. So, should you hold stocks that have plummeted after a warning in the hope of revival?

Part of stock market law is that *profit warnings come in threes*. If investors adhere to the "golden rule" of selling high and buying low, they should therefore sell on the first and buy on the third, particularly if new management is parachuted in to aid recovery.

But there are exceptions to these rules that also defy logic. During the the1990s, many technology firms issued more than three warnings, but their prices continued to rise spectacularly. Some also recovered spectacularly after the bubble burst, notably Marconi (the UK defence contractor) from an all time low of 6 ¾ pence. Although the stock was well below its peak of £12.00 in 2002, the trading high for the twelve months to June 2005 was still a creditable £6.30 when the company became a takeover target. The question to ask (and seek out in your research of press and media comment) is whether profit warnings relate to short-term factors that can be overcome, or fundamental strategic problems that may be insurmountable.

(c) Director's Dealings

Legally, directors in many developed Western economies have to disclose when they buy or sell shares in their companies to avoid accusations of insider trading. Their deals are also published regularly in the financial press drawn from commercial websites such as *digitallook.com* and *hemscott.com*. Because directors have in-depth knowledge of their companies, it therefore pays to track their every move. Dealings are a useful source of information, good as well as bad, particularly if a new product innovation or investment has been announced, or a share issue is in the offering, notably a take-over or management buy-out. A high level of buying often coincides with the start of a rally. In the past, market upswings have been prefaced by as many as fifteen director purchases for one sale.

(d) Employee Ownership Schemes

Firms with wider employee-share ownership tend to be top performers, particularly in bullish markets. Staff that possesses shares obviously has a vested interest in generating new ideas to maintain long-term growth and overcome the competition. Data reported periodically in the financial press reveals that investing in companies where employees hold at least three percent of the equity and 25 percent of the workforce own shares seems to be the key.

(e) Research and Development Expenditure

Companies that continually spend on profitable research and development (R and D) should grow the fastest, even in rising global markets fuelled by irrational expectations. For example, during the dot.com boom, £1,000 invested each year in a fund that tracked the FT-SE 100 over the five years leading up to the millennium would have generated a creditable £6,400. However, if your investment strategy was restricted to the 40 Footsie companies with the highest R and D record, you would have made nearly £26,000.

(f) Analysts Upgrades and Downgrades

In their quest to beat the market, financial services worldwide continually analyse corporate data and produce research reports for their investment fund managers and clients. These expert reports contain profit forecasts for companies and *upgrade* or *downgrade* them when the market changes, typically with a one-word conclusion, *buy, sell* or *hold*.

Those of you with time to dig out past data from websites such as *reuters.com* and *digitallook.com* will often find that professional analysts change their minds, usually when a company's results have exceeded their predictions. Upgraded profit forecasts are termed an *outperform recommendation*. But because many of the original results leave the professionals baffled, their revised forecasts (say from "sell" to "hold") often understate how much they expect the company's future performance to *improve* or *revive*. When the next results emerge, the former is termed an *earnings surprise*, the latter is a *dead cat bounce*. Both often produce a rise in share price.

Thus, investors can profit by acquiring shares in firms that have been upgraded on numerous occasions, say over a twelve-month period. A downgrade can also have a significant, detrimental impact on share price, even from "buy" to "hold". But remember that like profit warnings, downgrades, may be due to short-term factors, rather than trading fundamentals.

7.2 "Beating" the Market

So far, our analysis suggests that you should study short-term price movements and stock market ratios (over a twelve-month period, say) complemented by *qualitative* information in the public domain. Without giving too much away, a successful strategy adopted by the author is to invest in stocks that have exhibited the highest growth rate in the last six months. Hold for a year, and then sell. As always, the key is to time your trade, buying when prices are low and selling high. However, even in a reasonably efficient market this is easier said than done, particularly when stocks rise very little, since all trades entail a cost that can wipe out your dividend or capital gain.

(a) Dealing Fees

In the UK, a typical one-off dealing fee is £25.00 over the phone, although this can drop by as much as 50 percent if you conduct more than 100 trades in a three-month period. It is also cheaper if you deal on-line. A typical internet fee of £18.00 falls to £7.50 if you trade more than 100 times. But beware the administrative costs. Many stockbrokers impose annual standing charges of £60.00, although these may be waived for frequent trades. Brokers also levy a range of extra charges on top of dealing and administration fees. For example, they often charge about £10.00 a stock if you want to close your account.

(b) Buy Everything

Of course, if you want to avoid the costs of managing your own share portfolio, the alternative is to let the professionals do it for you. The simplest and least risky strategy for playing the market and minimising management fees is not to build up a portfolio of *individual* shareholdings, but to diversify across the entire spectrum through *unit trust* funds. One type of fund is termed an *index tracker*, which represents a proportionate investment in every company that comprises the fund's chosen market index. All trackers (global, USA, UK or Japan, say) assume that no combination of shares (or their derivatives), other than the weighted *market portfolio*, can provide a higher return for the same risk. The fund is also *passive*, rather than *active*, based on a policy of "buy and hold" for all the shares in the index, rather than "trading" its constituents at the whim of management. The fund manager is essentially a computer program fed with data to allow for new entrants, or sales when a share is dropped from the index.

Advocates of trackers claim superior performance over any three to five year period than the most actively managed funds because the portfolio is independent of human ingenuity and judgement when selecting which stocks to buy, hold or sell. Long-term you should also turn a profit (the period from the early Eighties until the 2007 banking crisis is usually cited). The rationale is that tracker funds perform well when their chosen market rises. Moreover, if the market collapses, as it did in 1987 and 2000, the fund can only fall as far as its index. Proponents of actively traded portfolios may cite impressive gains, based on the fund manager's perception of rising world markets, but an actively traded portfolio can also plumb the depths. During periods of uncertainty, for example since 2007 with markets repeatedly forecast to maintain little momentum or fall significantly (so the argument goes) an index tracker fund offers downside protection, whilst also retaining exposure to any potential recovery.

However, recalling our observation from the previous Chapter that markets always revert to their long-run average price (valued by CAPE) trackers attract legitimate criticism. Unlike their active competitors, they aspire to an impossible goal, since the only way "to beat the market" is by short-term speculation or access to "insider "information, neither of which represents a realistic basis for long term risk-return management.

In theory, a portfolio strategy of "buy and hold" should work best on the few occasions when markets are *stable* and values are determined by *rational* behaviour, leaving little room for manoeuvre. Between times, in the presence of bull and bear markets or volatility, it cannot predict what proportion of traders operates on fundamental news, as opposed to rumour or speculation. In contrast, funds that actively trade their portfolios based on qualitative judgements can respond quickly to market sentiment fuelled by adaptive expectations, as well as changing intrinsic values in response to fundamental news.

Unfortunately, in a market interspersed by volatile peaks and troughs, historical support for active fund management does not stack up either, unless you select the time period carefully. One explanation is that with so much information floating around it is difficult for a fund manager to spot trends that many others have not already seen. Moreover, aggressive trading not only presupposes that the fund knows what to buy and when, but also which portfolio constituents to sell before events rapidly unfold. For example, if you had bought and held the "best" stocks cheaply in the early Nineties you would have still made money after the techno-bubble burst. But if an active fund had bought in late 1999 it would have made huge losses. Active funds also tend to be caught out when markets rally, trailing a market index following its upswing. On the other hand, tracker funds capture all of the market's returns, *minus* any charges.

So, what does all this conflicting evidence mean for investors?

(c) Fund Fees

Ask financial advisors and there is no definitive answer. You pay your money and take your choice. Like your local stockbroker, active funds justify higher fees compared to trackers because portfolio constituents are frequently researched and traded, which both entail significant costs. This is why shares in companies with a low market capitalisation experience "institutional neglect". They do not interest large active funds because research still needs to be undertaken but the rewards may be minimal. Active funds with the highest share turnover can rack up charges of at least 1.5 per cent per annum, in addition to a typical management fee of 1.5 percent.

Although trackers simply buy the shares (or derivatives) that make up an index, the author's UK analysis reveals that cost-wise, passive funds should also be selected with care. Many schemes have low charges, because they use computer software, rather than employ expensive fund managers. However, not all are cheap and like their actively managed counterparts, high charges can offset returns. Discrepancies between passive funds can also arise due to different management styles. Some managers might buy every share in an index, but many are less sophisticated and only factor in the top 80 or 60 per cent and just sample the remainder to save time and money.

The cheapest have no initial fee and an annual management charge of 0.3 percent. Others have a competitive initial charge of 0.5 percent and an annual fee of 0.5 percent. The most expensive demand a 5 percent initial charge and a one per cent annual fee.

(d) Choosing a fund manager

To rise above all the conflicting evidence for and against different approaches to fund management, the myriad of fees and their variable performance, an alternative investment strategy (whether you require income or growth) is to seek out active fund *manager*s with a successful track record, rather than a *fund* itself. Then stick with them, even if they move on. Successful managers who consistently outperform the market over a five year period are regularly reported in the financial press.

If markets take a turn for the worse, consistent management is important because it reveals how individual fund managers have coped relative to their peer group under stress. Even the best managers will have periods when they trail the market, whilst others may have much greater freedom to invest whenever they see value. Most successful managers who outperform the market over a five-year period also remain with their fund.

To track an individual fund manager's performance, rather than a share, go to a research group that assesses managers, rather than funds, such as Citywire (*citywire.co.uk*) or an independent financial advisor like Bestinvest, (*bestinvest.co.uk*). But remember that consistency does not tell you all you need to know before you invest. Active funds that performed well in the past might have done so because the economic climate suited their managerial style. For example, active funds that invested in undervalued companies since the millennium have done well. Like individual shares, however, there is no guarantee that past portfolio performance is a guide to the future. All we know is that poorly performing individual shares and portfolios usually continue to perform badly.

Summary and Conclusions

The theoretical relationship between dividend and earnings valuation models based on the market price of equity explains why a few select statistics published in the financial press encapsulate a company's current stock market performance and provide a guide to future investment. However, we have observed that there is more to buying and selling shares than assimilating price data. Even the most inexperienced investor can sift through press, media and internet information at little cost to validate their decisions. And in the short run they will "win some and lose some". However, without access to insider information, the academic and analytical consensus is that in the very long-term, playing the stock market is a *zero-sum* game, since one person's loss is another's gain. As the author explains in his *bookboon* series on the subject, no combination of shares (or their derivatives) can provide a higher return for the same risk as the weighted, *global market portfolio*.

So, does all this conflicting evidence mean that investors (institutional, corporate or otherwise) should abandon stock market analyses based on conventional financial models that explain changing share prices and their returns? On the contrary, as we shall discover in Part Four:

> At even the most strategic level of financial decision-making, there is no complete hypothesis to replace the distillation of corporate performance in the form of dividend yields, cover, P/E ratios and the market capitalisation of equity, or its disciplined framework for analysing the signals sent out by the capital market.

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Part IV: Valuation and Takeover

8 A Stock Exchange Valuation

Introduction

Our study is based on the normative assumption of financial theory, namely shareholder wealth maximisation, using share price as a suitable metric. Wealth is measured by movements in price based upon the economic law of supply and demand in a capital market that may not be *perfect* but *reasonably efficient*. Investors respond *rationally* to new information (good, bad or indifferent) and buy, sell, or hold shares in a market without too many barriers to trade.

Theoretical models of share price determination based on the capitalisation of a perpetual annuity, using either current dividends or earnings, underpin practical performance measures published by stock exchanges throughout the world. Yields, cover, P/E ratios and market capitalisation combine to provide current shareholders and prospective investors (whether they are private individuals, companies, or financial institutions acting on their behalf) with a sturdy framework for analysing investment decisions. Any market participant can evaluate the relationship between a company's current share price, its latest reported dividend and earnings per share within the context of their personal risk-return profile.

Having explained a number of universally available measures by which individual investors analyse stock market performance, the remainder of this text is devoted to two practical applications available to corporate management who wish to maximise shareholder wealth. They not only provide an opportunity to reflect upon the relevance of dividend policy and earnings to investment and financial decisions outlined in Part Two but also represent the most important strategic decisions that management is ever likely to encounter.

- The first case concerns an unlisted company coming to the capital market, requiring an aggregate flotation value and "offer for sale" price per share. Particular attention is paid to the dividend yield, dividend cover and price earnings (P/E) ratio required by future shareholders.
- The second evaluates an acceptable bid price based on various methods of valuation that support the motives for acquiring a business as a going concern in the event of a takeover.

By the end of our study, you should be in no doubt that the derivation of a share's price, which utilises a DCF analysis of either prospective earnings or dividends, rather than actual data drawn from published financial accounts, represents the ideal wealth maximisation criterion.

8.1 Coming to the Market

To appreciate why just a few selected measures published in the financial press, such as market price, dividend yield, dividend cover and the P/E ratio are believed to capture the essential features of a company's market performance, let us consider the case of Duran Ltd. It is an unlisted company wishing to finance expansion by having its shares marketed on the Stock Exchange. What management need to determine are:

a) A total market value for the company, (the market capitalisation of equity).
b) A recommendation for the aggregate *flotation value*.
c) Knowledge of how many shares should be issued, and in what denominations, having regard to the dividend yield and dividend cover required by investors.
d) The price at which shares should be offered for sale.

To guide these decisions, comparative financial data relating to Duran and three companies, A, B and C, engaged in the same type of business but already listed on the stock exchange has been prepared (summarised in Table 8.1 for the past three years).

	A	B	C	D
	£000s	£000s	£000s	£000s
Profit after loan interest and before tax:				
Year 1	1,315	734	359	799
Year 2	1,361	734	370	805
Year 3	1,405	736	364	801
Net capital employed, end of Year 3:				
Loan	1,500	390	500	-
Share Capital				4,700
Ordinary share capital (nominal)	2,000	1,540	994	-
Reserves	2,310	4,260	1,656	-
Total	5,810	6,190	3,150	4,700
	£	£	£	£
Nominal value per share	0.10	0.25	0.25	-
Current share price	0.80	1.40	0.90	-
Last dividend %	19.50	17.30	16.00	-

Table 8.1: Primary Data

Duran has a sound financial history with adequate liquid assets. However, profits have made little progress in recent years. Its own forecast before corporation tax at 25 percent for next year (Year 4) is £810,000 although this may be optimistic in view of its track record. Further market research also reveals that:

A: has rising dividends, underpinned by gradual earnings growth.

B: exhibits solid dividends, although earnings have failed to advance.

C: reveals a pattern of dividends and earnings with negligible movement in recent years.

In order to produce a total market valuation and price per share for Duran initially we must determine *valuation and income profiles* of all four companies using accounting data (Table 8.2). Only then can Duran establish a prospective *investment profile* based on comparative stock market ratios which are attractive to potential investors. It is important to realise that as a listed company, the share price of Duran plc will be judged by this structure and also compared with similar firms on the market.

	A	B	C	D	
	£000s	£000s	£000s	£000s	*Notes:*
Equity	4,310	5,800	2,650	4,700	Share capital plus reserves.
Market Value	16,000	8,624	5,578	-	
Earnings	1,100	550	275	605	
Dividend	390	266	159	-	Percentage on ordinary shares
					Profits after tax
Return on equity %	25.5	9.5	10.4	12.9	Capital employed minus loan

Table 8.2: Valuation and Income Profiles

8.2 Calculations and Assumptions

At this stage in our analysis you will note from Table 8.2 that we have no figures for the market value or dividend for Duran, since they still require definition based on a comparative analysis of its competitors performance (A,B and C). Note also that the earnings for all four companies no longer reflect historical accounting convention, but rather a feeling for anticipated events, using calculations based on reasonable assumptions.

(a) *Market Value* is derived by the following two stage procedure:

(i) $\frac{\text{Share Capital}}{\text{Nominal Value}} = \text{Number of shares}$

(ii) Number of Shares x Current share price = Total market value

Company	Share Capital	= Number of shares	x Current share price	= Total market value
A	£2,000,000/0.10	= 20,000,000	x £0.80	= £16,000,000
B	£1,540,000/0.25	= 6,616,000	x £1.40	= £8,624,000
C	£994,000/0.25	= 3,976,000	x £0.90	= £3,578,400

(b) *Earnings* have been approximated using the following assumptions:

A, steadily increasing, to around £1.45 million	=	£1,100,000 after tax
B, stable at £735,000	=	£550,000 after tax
C, stable at £365,000	=	£275,000 after tax
D, stable at £805,000	=	£605,000 after tax

Activity 1

Before proceeding with our case study, you should note that we are already manipulating data to establish inter-relationships between accounting data and comparative stock ratios, which will encourage investors to buy the company's shares when they are launched on the market. If you are unsure about this framework of ratios, refer to the Appendix at the end of the text as a guide for future reference.

So far, so good: Table 8.2 itemises the salient features of the four companies' accounts as a basis for analysis. The "unknown" variables are the required forecast of market value and dividend relating to Duran. However, these may be established by reference to the *investment profiles* of A, B and C that are given in Table 8.3 below. These profiles are simply a reformulation of the financial data contained in Table 8.2 into all the investment ratios (yield, cover and the P/E) with which you are familiar. Perhaps you can confirm this?

Activity 2

Using Table 8.3 and the market ratios in the Appendix, you should now be able to determine the "unknowns" for Duran as basis for its total market valuation, flotation value, share denomination and offer price per share, relative to the dividend policies of its competitors.

	A	B	C	D	
					Notes:
Nominal value	0.10p	0.25p	0.25p	-	Given
Current share price	0.80p	£1.40	0.90p	-	Given
Dividend %	19.3	17.3	16.0	-	Given
Dividend yield	2.4	3.1	4.4	-	Nominal value x Dividend %
					Market value
Dividend cover	2.8	2.1	1.7	-	Profit after tax
					Dividend (gross)
Earnings yield	7.0	6.4	7.7	-	Profit after tax %
					Market value
P/E ratio	14.5	15.7	13.0	-	1
					Earnings Yield

Table 8.3: Investment Ratio Profiles

8.3 A Total Market Valuation

The simplest and typically most conservative valuation to be placed upon all Duran's shares would be based upon its net assets calculated directly from the accounts. On the information available, this would take the form of assets minus liabilities, without any adjustment for current values as either a going concern (net replacement cost), surplus assets (realisable value) or intangible items, producing a figure of £4.7 million.

However, the disparities between nominal (par) and market values for A, B and C suggest that this figure is no more than a lower benchmark. Even if book values were appropriate, a more sophisticated valuation based upon the return on capital employed (ROCE) of similar firms, provides a significantly higher figure. For example, ignoring the anomalously high return of A and taking an average return on capital plus reserves of 11 percent for B, C and Duran from Table 8.2 provides a capitalisation of Duran's post-tax earnings as follows:

£605,000 / 0.11 ≅ £5.5 million

Ignoring book values altogether, a more satisfactory current market valuation may be determined using the P/E ratios from Table 8.3. Clearly, Duran's growth does not match that of A. It is nearer that of Company B. If Duran's earnings are therefore capitalised using the latter's P/E ratio, the following market value would result:

£605,000 x 15.7 ≅ £9.5 million

8.4 An Aggregate Flotation Value

To ensure full subscription, financial prudence dictates that Duran's shares should be offered at a figure below their market value. To ascertain the aggregate flotation value for an offer for sale, a lower P/E ratio would therefore be more appropriate. Taking the figure for C, the following valuation may be determined:

£605,000 x 13.0 ≅ £7.9 million

It therefore seems reasonable to conclude that Duran should be floated on the market at an aggregate value, somewhere in the region of £8 million.

8.5 The Number and Denomination of Shares

With regard to the total number and denomination of shares issued by Duran, the dividend policies of similar companies now come into play. Given the information relating to A, B and C, it appears that the dividend paid by Duran should be covered twice. Thus, the total dividend payout based upon our earlier estimate of its after-tax earnings would be:

£605,000 / 2 = £302,500

Given an aggregate flotation value of £8 million, then the dividend yield on Duran's shares (its "real" rate of return) will be:

£302,000 / £8million ≅ 3.8%

This should prove satisfactory to potential investors since it falls between the forecast yields of 3.1% and 4.4% for B and C respectively.

8.6 A Valuation per Share

Proceeding to the final stage of Duran's analysis, the nominal and market values per share will also be constrained by the data for similar stock currently traded on the market.

The values for B and C in Table 8.3 suggest that an issue made at 25 pence, with a *premium* of 75 pence attached, representing a market value of £1.00 per share, might succeed. Given a total dividend payout of £302,500 on 8 million shares nominally valued at 25 pence each, this would then result in the following *dividend percentage*:

$$\text{Dividend \%} = \frac{\text{Dividend yield x Market value}}{\text{Nominal value}} = (3.8\% \times £1.00) / £0.25 = 15.2\%$$

But would this satisfy potential investors in the new Duran plc?

When compared with the percentages for A, B and C, 15.2 percent might be considered rather on the low side. A nominal value of 22 pence per share with a 78 pence premium would improve this figure and could be justified, particularly if we consider the low par value for A. The revised calculation would produce a figure more in line with Duran's other competitors.

Dividend % = (3.8% x £1.00) / £0.22 = 17 %

Summary and Conclusions

It must be stressed that dividend yields, rather than percentages, are the "real" measure of a share's return and it is the yield of 3.8 per cent on market price which should motivate rational subscribers to take up an offer for sale. However, we cannot ignore the dividend percentage, if only because it is published in company accounts, and might sway the investment decisions of less informed individuals.

To ensure success, it is suggested that Duran should therefore place its shares on the market for £1.00, comprising a 22 pence par value and a 78 pence premium. Table 8.4 sets out the proposed capital structure and investment profile in accordance with this recommendation having regard to the dividend expectations of investors (yield and percentage).

Duran plc	£000s
Ordinary share capital (8 million)	1,760
Reserves (share premium)	6,240
Flotation Value	8,000
Earnings (profits after tax)	605
Dividends	302.5
Dividend cover	Twice
Nominal value per share	£0.22
Premium per share	£0.78
Market value per share	£1.00
Dividend %	17%
Dividend yield	3.8%
Earnings yield	7.6%
Price/Earnings ratio	13

Table 8.4: Capital Structure and Investment Ratio Profile

9 Managerial Motivation and Corporate Takeover

Introduction

If analysts could successfully measure the going-concern value of business assets based on their income potential using data drawn directly from published accounts, the valuation of one company by another for the purpose of takeover would present little difficulty. Unfortunately, even financial information based on GAAP data (generally accepted accounting principles) measures different assets in different ways, so that a value cannot be placed on a company as a whole. With the exception of property, fixed assets may be seen in balance sheets at their *net book value* (historic cost less depreciation) rather than market value. The inventory (stock) components of current assets may be valued at market value or cost, whichever is the lower. Moreover, intangible items, including brand names, and human resources may be ignored altogether. There are also the effects of synergy and the residual value of excess or idle assets to consider.

Fortunately, alternative approaches to share valuation are available to investors, which are not asset based but income driven. These utilise discounted revenue theory and the capitalisation of a perpetual annuity (using dividends or earnings) that can be made operational through a series of investment ratios. As we explained in the Chapter Eight, each may assist the analyst when determining the market capitalisation of equity and a price per share based on the maintainable yield for a company coming to the market for the first time. We shall now develop this concept further, through a series of activities concerning the most important strategic decision that corporate management is ever likely to encounter:

- How to value a business as a going concern in the event that it falls prey to takeover

Whereas companies seeking a stock exchange listing are motivated primarily by the need to finance expansion, which must satisfy the expectations of future shareholders, we shall discover that the rationale for expansion through takeover activity is more varied and complex. So much so, that it may run counter to wealth maximisation criteria and shareholder welfare.

First, we shall present an overview of the motivational factors that underpin the case for composite business entities and the problems which can ensue. The reasons why the majority of takeovers fail to match shareholders' expectations will also become clear.

Armed with this information, in subsequent Chapters we shall evaluate various methodologies for equity valuation once a company has selected another for acquisition. Finally, we shall review the case for managerial takeover activity from a shareholder perspective.

9.1 Objective Motivational Factors

Before a *predator* company pounces on a *target* company with a share bid, it seems reasonable to assume that management's over-arching objective for the takeover should be to:

Maximise current shareholders' wealth through a significant improvement in long-term earnings post-acquisition (the agency principle).

This normative objective should be supported by a comprehensive analysis of a company's strategic *commercial* considerations to satisfy *shareholder* expectations, which embrace:

Business areas
Resource areas
Influence areas

- *Business* areas are those sections of the domestic and global economy that receives the company's output.
- *Resource* relates to the firm's inputs of finance, assets and personnel.
- *Influence* represents those constraints upon the business and resource decisions of the firm which arise from legal limitations, societal pressures and the self-interest of internal and external non-managerial groups.

Given the wealth maximisation criterion of the predator firm and the *influence* constraints imposed upon it, the *business* motives (illustrated in Figure 9.1) commonly advanced by management to justify an acquisition programme are to:

(i) establish a balanced diversified portfolio of investment which will either maximise or stabilise post-tax earnings commensurate with risk

(ii) balance product life cycles

(iii) secure economies of scale and achieve synergy

(iv) avoid barriers to entry

(v) increase or maintain market share

(vi) increase or maintain the rate of growth

(vii) reduce competition

(viii) secure new products or services

(ix) guarantee outlets for existing products and services

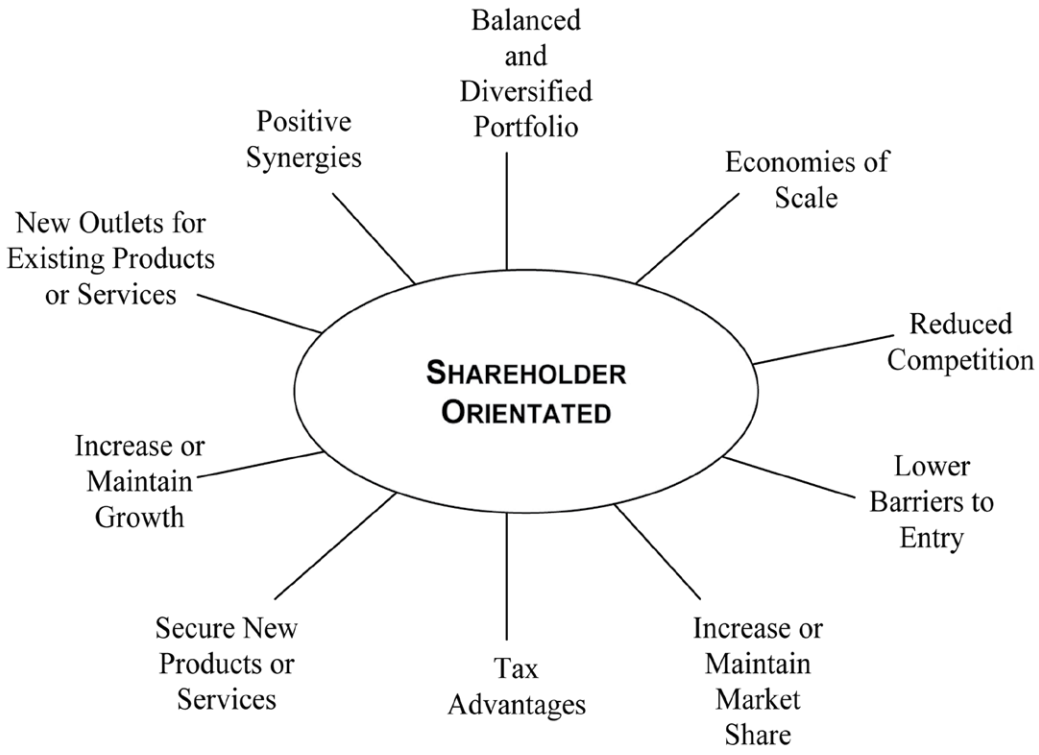

Figure 9.1: Objective Managerial Motives for Acquisition or Takeover

The greatest problem that confronts predatory companies is *resource* risk associated with their inventory supply chain. Three threats can be envisaged depending on the company's degree of market independence. One is a supplier's decision to switch its allegiance to another company. Secondly, a supplier may suffer financial distress because of takeover activity, which necessitates a rescue operation, or even its acquisition. Finally, there might be the possibility of a supplier being acquired by a competitor that requires a pre-emptive strike.

Other resource factors that could also justify an acquisition are the availability of excess funds from reserves, the sale of fixed assets or working capital, the benefits of tax advantages and the procurement of valuable personnel (workforce or management).

Now, assuming that a strategic analysis of corporate wealth maximisation objectives confirms the rationale for expansion, management's options are either an external acquisition, or internal investment. Two economic criteria should favour the former:

- Speed
- Cost

Obviously, there are trade-offs. Time must be compared to cost. Cost must be assessed in relation to benefit and the potential earnings that the takeover delivers.

9.2 Subjective Motivational Factors

If you Google the track record of corporate takeovers world wide, the literature reveals that its failure rate is substantial, characterised by mediocre acquisitions undertaken by inept management. Even at the millennium after a long bull run (before the dot.com and banking crises kicked in) Lane, Stewart and Francis (2001) reveal that post-merger indicators of investment performance, such as the return earned by shareholders from cash dividends and capital gains, are frequently worse than the average performance of other firms in respective industries.

A significant factor in determining the success of acquisitions is the establishment of a corporate strategy and a rigorous acquisition plan. Historically, a lack of pre-planning alongside a reluctance to quantify the benefits expected to be gained from a merger is a common theme throughout the literature.

For these reasons, a prerequisite for any acquisition strategy should be a *rational* consideration of the *objective* motivation based on shareholder wealth maximisation. However, a variety of other managerial motives exist that are not derived from commercial considerations. They are termed *subjective*, yet may be supported by an elaborate rationale

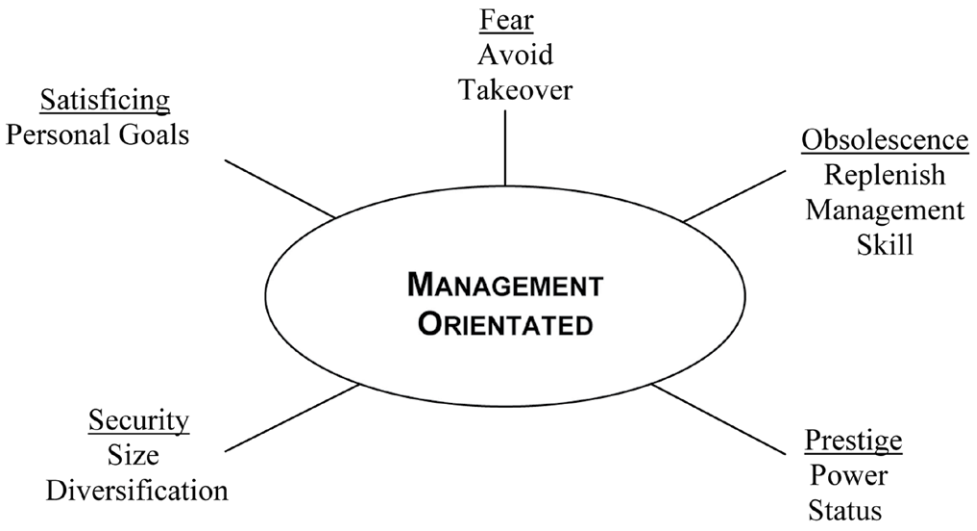

Figure 9.2: Subjective Managerial Motives for Acquisition or Takeover

As Figure 9.2 reveals, two such motives relate to *fear* and *obsolescence*. The former is premised on the belief that unless the company expands or diversifies, larger companies will destroy it. This sets in motion a process of accretion. Obsolescence is connected with ageing organisations that display increasingly rigid and systematised bureaucracies. The scope for individual initiative and spontaneity are stifled, which results in both an obsolescent organisation and an obsolescent management. One solution to the problem that can be traced back over decades is to buy in management through corporate acquisition, if only for its Chief Executive.

Unfortunately, both fear and obsolescence carry with them unconscious underlying attitudes. Fear initially leads to a denial of being afraid and then an attempt to "tighten up" the company and to turn it around. Obsolescence produces a defensive attitude of superiority, typically based on the firm's longevity and to a redoubling of effort. The effect of these underlying attitudes (and the fact that in a merger the acquiring company will be the dominant party) tends to produce a condescending attitude toward the acquired company and efforts to manipulate and to control it.

Controlling behaviour is the pivotal issue. The dominant organisation believes that it must incorporate the same processes and procedures in all of its components. But the imposed control systems may well stifle the very qualities of initiative and spontaneity that lay behind the initial acquisition. What may emerge is resentment, contempt and loss of innovative personnel, all of which necessitates buying in yet another completely new management group. However, the replacement executive might be more bureaucratic, given that their brief will be to re-control the organisation. This control focus on the part of the host organisation is therefore self-defeating.

Of course, fear and obsolescence are only partial explanations of the quest for corporate growth. As causal factors, they only apply to those companies who react to the growth of others. They do not explain the preoccupation with growth for its own sake, characterised by the "fast track" corporate sector associated with global conglomerate mergers, management buy-outs (MBO's) and the leveraged buy-outs (LBO's) of mature public companies by *venture capitalists* since the 1980s. Here, the desire for growth is premised on the belief that "size matters". Diversification through participation in several industries increases the chance of success. However, the downside is that without serious commercial considerations, diversification also increases the possibility of failure.

Given the separation of ownership from control and a lack of corporate governance, takeovers may also be instigated by management without shareholder consultation (a breakdown of the *agent-principle* relationship). Again, predatory management may be motivated primarily by growth for its own sake measured by size criteria (such as sales turnover, assets and number of employees) and a perception of increased *power, prestige and security* which this brings. Their concern for growth in earnings may be secondary or diluted by other personal and group goals, which leads to *satisficing* profit behaviour. On the other hand, responsible management who behave *optimally* should only be interested in shareholder wealth maximisation, evidenced by the growth of corporate stock values through improved earnings and hence dividends and capital gains.

Thus, power, size and prestige are intermingled managerial goals, which may be achieved in the *short-term* by a policy of acquisitions. But they may conflict with the security provided by the pursuit of shareholders' *long-term* financial objectives. Nor is this a recent phenomenon. As Maldanado and Saunders observed way back in 1981, acquisitions often fail because management satisfy their own interests, rather than those of shareholders.

A subject we shall reconsider in our final Chapter.

Summary and Conclusions

Subjective managerial motivational factors may be supported by an elaborate rationale. However, they are no substitute for normative *objective* goals based on a comprehensive analysis of a company's strategic *commercial* considerations. This should precede any acquisition to satisfy shareholder expectations post-takeover.

If a takeover is not part of a carefully conceived strategic corporate plan that reflects commercial factors other than earnings potential (for example *asset stripping*) the predatory company may inherit a poor return on investment, just like takeovers premised upon the *subjective* managerial goals of growth, prestige and security outlined earlier. As a consequence, investor confidence will evaporate rapidly and equity prices will tumble.

Selected References

1) Lane, K., Stewart, R. and Francis, S., "Merger and Acquisitions: What the Stock Market Wants to Know About a Merger", Strategic Merger and Acquisition Practice of Price, Waterhouse and Cooper (Philadelphia) 2001.
2) Maldanado, R. and Saunders, A., "International Portfolio Diversification and the Intemporal Stability of International Stock Market Relationships", *Financial Management*, Autumn, 1981.

10 Acquisition Pricing and Accounting Data

Introduction

Let us assume that a company has completed an objective analysis of its strategic capabilities based on shareholder welfare outlined in Figure 10.1. It has also identified a potential acquisition as the most viable means of achieving its goals. The question now arises as to the most appropriate method of valuation and from where the data should be sourced.

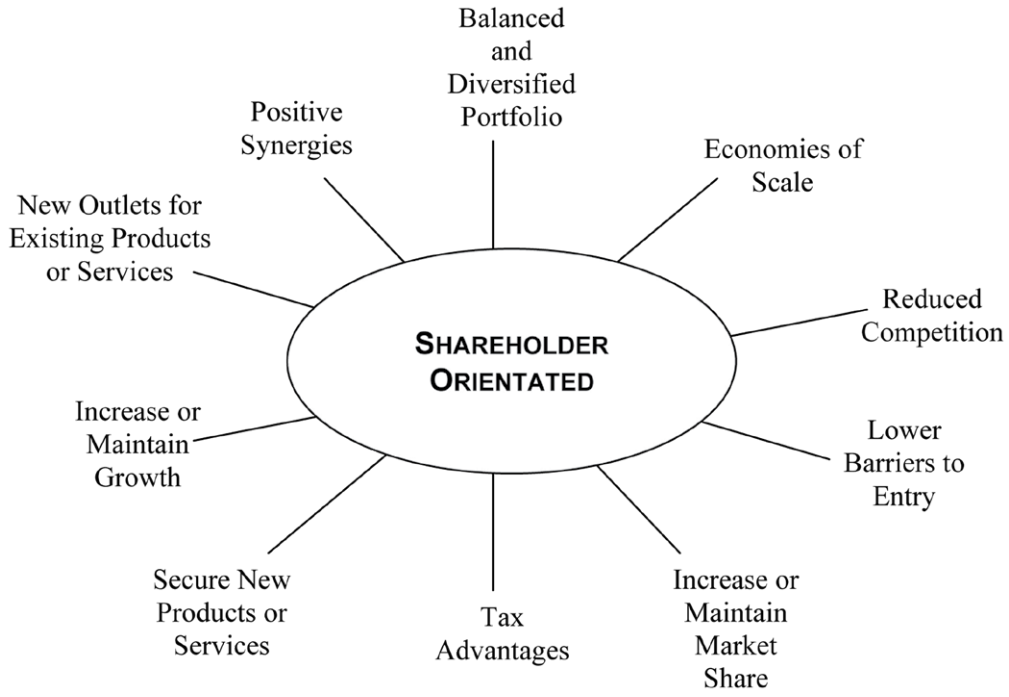

Figure 10.1: Objective Managerial Motives for Acquisition or Takeover

The various going concern valuations available to management (some more sophisticated than others) can be summarised as follows:

1) A net asset valuation incorporating goodwill
2) Income expectations:

(i) a profitability valuation using P/E ratios
(ii) a dividend valuation based upon dividend policy
(iii) a cash flow valuation based on DCF techniques

As we shall discover, no one method is necessarily correct. Rather, they should be used when appropriate to provide a "range" of values for the purposes of negotiation.

To determine a takeover valuation, management must pay careful attention to the past history and present background of the target company. Financial details should be prepared in respect of its latest asset position at the valuation date disclosed by the latest published accounts, together with a review of trading and profit and loss results over a period of years. Equally, the firm's recent stock market performance (yield, cover and the P/E) must be scrutinised, if only to ensure that dividend expectations can be satisfied post-takeover. The worst case scenario is that the target's shares are infrequently traded. There is a history of losses, or erratic profits. Distributions too, may be extremely variable or non-existent. So, there is no reliable basis for deriving a bid price based on market data.

And this is where an asset valuation kicks in.

10.1 Takeover Valuation: The Case for Net Assets

The problem of an *asset* valuation is its evidence of *earning* power. An acquisition at the market value of assets, let alone their book value based on historical cost accounting (HCA) techniques, may be interpreted as a "bargain buy". But as a *going concern* the firm may be worth more "dead than alive". For companies with a stock exchange listing (price) that produces a low market capitalisation of equity relative to the book value of net assets (*i.e.* low *valuation ratio*) the takeover may appear attractive, particularly for venture capitalists if the shares have been *neglected* by the market. But if an acquisition is not part of a carefully conceived corporate plan, reflecting factors other than earnings (for example *asset stripping*) the predator may inherit a negligible return on investment that is not dissimilar to takeovers premised upon the *subjective* managerial goals of growth, prestige and security outlined in the previous Chapter. The merger may also elicit rising expectations on the part of existing shareholders, as well as potential investors. But if these are not fulfilled after the takeover, confidence can evaporate rapidly and equity prices will tumble.

However, we cannot dismiss an asset valuation altogether. Reference to a company's assets is justifiable, if only as a "benchmark" in relation to its current market capitalisation of equity, since their earning power must have a profound effect on share price.

Activity 1
As a basis for takeover, your accounting skills are employed to determine a "going concern" valuation using a record of the latest asset position disclosed by the published financial accounts of a target company. What adjustments to the data do you envisage making?

10.2 Valuing the Assets

Let us assume the worst. The balance sheet is based on HCA convention with few notes or qualifications. A professional analyst would advise the following adjustments.

(a) Fixed Tangible Assets

Whether property prices are rising or not, it is always wise to have land and buildings revalued, irrespective of any professional valuation revealed by the accounts. Items such as plant and machinery, motor vehicles, fixtures and fittings that are shown at their net book value, rather than current cost, may require uplift. Depreciation rates employed during the period of review must also be questioned as evidence of the relationship between net book values and current values. These rates may be quite arbitrary and not produce either a value in use (net replacement cost) for operating assets, or value in exchange (realisable value) if assets are surplus to requirements.

(b) Investments

Listed shares and securities should be valued at their mid-market price for the year but unlisted shares must be the subject of a secondary valuation using methods similar to those used in the main valuation.

It is also important to distinguish between investments that are necessary for the earnings capacity of the business (e.g. trade investments and investments in subsidiaries) which are long-term holdings and those investments that are really "spare cash" items. Although earning interest, the latter should be regarded as "surplus" assets.

(c) Current Assets

If inventory and debtor turnover ratios are rapid, their balance sheet values may be taken without extensive revision. However, some adjustment to current cost may become apparent when the trading results are reviewed, relating to HCA methods of stock valuation and the provision for bad debts.

(d) Intangible Assets

The value of the business beyond "tangible" balance sheet items must also be taken into account by the predator. The value given to "goodwill" will be discussed separately. Suffice it to say that whatever *adds value* by "trade or reputation" must enter into the asset calculation.

If items such as R and D, patents or brand names have either significant usable or saleable values, an independent expert valuation may be necessary and the amount added to the tangible assets.

(e) A Going Concern Value

After appropriate adjustments to balance sheet items it is finally necessary to arrange the assets into the following three groups and then add them together to arrive at a going concern value:

1) *Tangible assets* directly employed in the business that comprise:

a) Net fixed assets, i.e. fixed operating assets at net replacement cost, excluding fixed assets and investments not employed in the business for their earning power, *minus* long-term liabilities.
b) Net current assets, i.e. current assets at their market value, less surplus investments, *minus* current liabilities.

2) *Tangible assets* and financial investments not directly employed in the business, whether fixed or current. These must be included in the final value of the target company at their realisable value because their acquisition and subsequent sale will produce income that is independent of the company's earnings from its trading operations. Excess, idle or "surplus" assets may aid cash flow in the future, either for new investment, working capital or distribution.

3) *Intangible assets*, represented by the value given to the business over and above the sum of the tangible assets, plus other investments.

10.3 How to Value Goodwill

To summarise our position so far:

A going-concern valuation based on a company's net assets may be defined as its net tangible assets (including excess or idle assets) plus intangible assets incorporating goodwill.

Whilst the derivation of the tangible component is not too problematical, the figure for goodwill has concerned analysts for many years, not least because its "real" value is so uncertain and easily destroyed. Ultimately, the price paid for goodwill may be a compromise between buyer and seller, or even ignored altogether. Moreover, the methods for evaluating goodwill are not particularly inspiring, even those standardised by the accounting profession. They are usually a variation of the right-hand term in the following net asset equation (continuing our numbering from Part Two).

(23) $V = A + [(P - rA) / m]$ Subject to $m > r$

Where:

V	=	going concern value of the business
A	=	value of net tangible assets
P	=	expected profits per annum
r	=	normal rate of return
$P - rA$	=	superprofit
m	=	capitalisation rate of surperprofit
$(P - rA) / m$	=	value of goodwill

Superprofit is the profit attributable to goodwill. It is the difference between the total expected profit (P) post-takeover and what economists term "normal" profit, defined as the average return on the net assets (rA) in perpetuity for the industry in question.

The inequality (m>r) reflects the intangible nature of superprofit, relative to normal profit. The higher capitalisation rate for m relates to that proportion of anticipated profit attributable to goodwill. It reflects the increased risk associated with its fragility because goodwill can easily evaporate through inept corporate management or a loss of identity after an acquisition.

The value term for goodwill can also be rewritten from a conventional accounting perspective in terms of its useful life.

(24) $V = A + [(P - rA) / (1/m)]$ Subject to $m > r$

Where:

$(1 /m)$	=	a *number of years purchase* of superprofit

the rationale being that the shorter the term (i.e. the higher the capitalisation rate) the less permanent (more risky) the goodwill.

Activity 2

To illustrate the application of Equations (23) and (24) consider Oasis plc, a target company with tangible assets of £100 million and expected profits of £19 million per annum.

Using assumed values of your choice for m and r (subject to the proviso that m > r) calculate goodwill and going concern values for Oasis.

a) If a reasonable return on capital is 10 percent, then normal economic profit would be £10 million and the superprofit £9 million. Assuming the latter is capitalised at 20 percent, equivalent to a five years purchase of goodwill, we can define:

	£ million
Tangible assets	100
Goodwill (9 / 0.2 or 9 x 5)	45
Going concern value	145

b) If a lower return on the intangible assets is expected because of less risk (say 15 percent) the goodwill would be more valuable (i.e. more permanent) lasting in excess of six years. Thus, the going concern value would be higher:

	£ million
Tangible assets	100
Goodwill (9 / 0.15 or 9 x 6.66)	60
Going concern value	160

c) We can also introduce the time value of money into our calculations. Since the purchase of a number of years superprofits is similar to a *fixed term* annuity, its value can be derived using present value (PV) analysis. Assuming a five year purchase, i.e. a discount rate of 20 percent.

	£ million
Tangible assets	100
Goodwill (PV of £9 million annuity for five years, 9 x 3.7907)	34,117
Going concern value	134,117

Proponents of a going concern valuation incorporating a separate goodwill calculation argue that the method recognises that tangible assets can be sold separately and unlike goodwill are reasonably permanent. However, this may not be true. A piecemeal asset valuation is more appropriate in the event of "asset stripping" and a firm's liquidation, rather than its takeover as a going concern. Moreover, the method cuts across the concept of valuing a business as an *entity* in favour of its component parts. A further practical criticism is that two appropriate rates of return (m and r) have to be assumed. One capitalisation rate may be arbitrary enough. Two may defeat the object of the whole exercise and widen the margin of error.

Despite these defects, the goodwill methodology may produce a valuation that is mutually agreeable to the buyer and seller. Returning to our example, the fact is that Oasis is very profitable and may be more valuable than its total assets of £100 million. This suggests a compromise solution to the valuation of goodwill, which is equivalent to capitalising a perpetual annuity but avoids a separate superprofit calculation.

Assuming that a rate of return of 10 percent is expected from investment in the company, which earns £19 million per annum, it follows that:

	£ million
Going concern value (£19m / 0.1)	190
Tangible assets	100
Goodwill	90

If the goodwill is deemed to be fragile, a lower figure may then be placed upon Oasis. For example, a simple approach could be to use a *mean* value. Thus, we have:

		£ million	£ million
Tangible assets			100
Goodwill:	Profits capitalised at 10%		190
	Less tangible assets	100	
Mean value of:		90	45
Going concern value			145

Needless to say, even these methods do not necessarily give an intrinsic valuation for the business but rather suggest a figure for the purposes of negotiation between the predator and its target. Besides, as we shall discover in Chapter Eleven we can dispense with a goodwill computation altogether.

Review Activity

There is more to financial analysis than the interpretation of historical data contained in company accounts. Accountants, auditors, the tax authorities and even management may defend such information by proclaiming that the price paid for assets and the income they generate are *accountable* facts. In this sense, accounting statements are *objective*. They are composed of "real" figures, which purport to represent a "true and fair" view. Whether such data has utility for investors, however, is questionable.

Suppose Osbourne plc, with a turnover of €25 million and profits of €5 million, records the following figures in its latest balance sheet for which you have additional information (in parenthesis).

	€000s	
Land	20,000	(Bought 5 years ago)
Buildings	80,000	(60,000 spent 5 years ago, the balance representing the cost of subsequent additions at various dates)
Plant	40,000	(Various equipment bought on average 2 years ago)
Stock	5,000	(Many different items, bought on average 3 months ago)
Debtors	4,000	(All expected to be good and to repay on average 3 months hence)
Cash	2,000	(Held for 2 months)
	151,000	

For the purpose of a takeover valuation, evaluate this data.

Summary and Conclusions

Most data published by companies in financial accounts throughout the world is *subjective*. Invariably, the figures are *biased* toward GAAP concepts and conventions that comprise a regulatory framework. Even factual *historical* costs that fail to reflect *current* economic reality are dependent on forecasts. For example, net book values and by definition profits depend upon estimates of the useful lives of assets, appropriate methods of depreciation and residual values.

From the table above, at least four significant points emerge:

1. Each item in the list is *factual* (a record of transactions, which have actually taken place). Every one represents actual money, or money paid and receivable. Except to the extent that there might been fraud or error (for example, equipment might have been bought and charged against current revenue, thus reducing profit and the asset figure below total cost) the list is a factual statement of assets owned and prices paid.

2) However, the total of €151 million has no real meaning. It is a summation of euro's at different values (now, five years ago, three months hence, and so on) that equals the nominal value of authorised and issued share capital plus the historical cost of reserves, loan stocks and other liabilities. It says nothing about market value and has about as much validity as saying that four apples and three pears equal seven fruit.
3) Even if the figures were adjusted for inflation (an average price change) the list of assets provides no indication of their specific worth. The land might be in a development area and saleable for €50 million. The specific cost of replacing the buildings and equipment in their present form might be €250 million. Moreover, the assets might have a high or low current market value compared with a year ago. As a consequence, a significant disparity may exist between the nominal and market value of equity plus reserves, as well as debt. Yet none of this is revealed by the accounts.
4) Similarly, but to opposite effect, the €5 million profit is an *accrual-based* subtraction of various historical costs from current revenue which does not correspond to the net inflow of cash (to the extent that goods and services have been bought and sold on credit and the figure also includes depreciation which is a *non-cash* expense).

In the long run, a company's wealth is the amount it can first earn and subsequently distribute. However, if we adopt this criterion of value as a basis for takeover, there is a conflict between a tangible asset figure, net of all liabilities (even based on current cost) and either a profitability or a dividend valuation that reflect the market price of equity based on discounted revenue theory. The former ignores intangible items that incorporate goodwill and brand names. The latter are forward looking and embrace the whole structure of the firm based upon present value (PV) analyses of projected cash flows, relative to a company's desired rate of return (which may bear no relation to the return on capital employed derived from the accounts).

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)**			
Balance Sheet for Year One				**Balance Sheet for Year One**			
Share Capital	100	Assets	100	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			
Balance Sheet for Year Five				**Balance Sheet for Year Five**			
Share Capital	100	Assets (cost)	100	Share Capital	100	Assets (cost)	100
		Depreciation	80			Depreciation	40
		Net book value	20			Net book value	60
		Cash	80			Cash	40
	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
Π	=	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) $V = [\Pi (1-t)] (1 + g) / K_e - g$ subject to the proviso that $K_e > g$ for V to be finite.

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) Cover = Net asset valuation / Profitability valuation = 0.83

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

(29) Valuation ratio = Profitability valuation / 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	*Bilbo*	*Frodo*	*Pippin*
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 = Going concern valuation = 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 = Bid price per share = market capitalisation / 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.

With all this information we can calculate:

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

(i) V = Market capitalisation = Post-tax earnings x P/E = £20m (1 – 0.25) x 6.66 = £100m

(ii) P = Price per share = Market capitalisation / Number of shares = £100m / £5m = £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 million x 6% = £3 million

So, the predator company can define:

V = Forecast total value = (Actual dividend / Expected dividend) x Market capitalisation

= £3.0 million / £3.0 million x £100 million = £100 million

P = Forecast value per share = Forecast total value / Number of shares

= £100 million / 5 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_o) 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 million / 0.03 = £15 million / 0.15 = £100 million

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

V = (Actual dividend / Expected dividend) x Market capitalisation

= 1 x £100 million = £100 million

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 = Forecast total value = (Actual dividend / Expected dividend) x Market capitalisation

= £3.0 million / £2.5 million x £100 million = £120 million

Thus, the market price per share is defined as follows

P = Forecast value per share = Forecast total value / Number of shares

= £120 million / 5 million = £24

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.

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

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

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

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) $PV_0 = C_1 / K_e - g$ subject to the proviso that $K_e > g$ for PV_0 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,

Total market value = £100 million Bid price per share = £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 Ke > g for PV_0 to be finite.

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

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:

£125 million x 0.03 = £3.75 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_e). 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) $PV_0 = D_1 / K_e - g$

£125 million = 3.75 million / (K_e - 0.02)

Rearranging terms and solving for K_e:

(37) $K_e = (D_1 / P_0) + g$

$= 5\%$

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 (Ke) 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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12 Takeover Activity, Investor Behaviour and Stock Market Data

Introduction

Like any investment, corporate takeover activity should be premised on shareholder wealth maximisation underpinned by *rational* profit motives. Before moving in on its *prey*, what the *predator* requires is a *bid price* per share. An *offer* based upon a comprehensive market valuation of the *target* company.

The following *objective* strategies based on long-run future earnings potential should be considered prior to takeover.

Business; Resource; Influence.

All too often, however, short-term *subjective* managerial motives determine acquisitions that frustrate the pursuit of shareholders' wealth, notably *satisficing* behaviour based on:

Growth; Prestige; Security.

History reveals that takeovers also have a tendency to destroy future returns and hence value. So much so, that it usually pays investors to cash in any price gain on a target company's shares, once the deal is completed, if not before. Predator firms often take a price-hit after acquisition from which they may never recover.

So, why is their a resurgence in takeover activity when so many indicators suggest that rational companies should not be empire building? Geo-political uncertainty, commodity prices (notably oil) unemployment, interest rates and inflation are all rising.

12.1 The Current Takeover Scene

One answer is that acquisitions were so few after the 2007 financial crisis. Companies adopted policies of introspection, shedding labour, reducing debt, cutting costs and dividends wherever possible. However, with a recent revival in trading fundamentals many are now awash with cash, which can be supplemented by new share issues or borrowing. With costs of borrowing (real interest rates) still so low, debt-financed takeovers of listed companies by overseas rivals are both cheap and much less risky than any other form of expansion. But is this good for a country's economy and sovereignty?

Many governments around the world (with France leading the way) protect their corporate sector from foreign predators through strong legislation on "public interest" grounds. However, in 2002 the UK rejected this policy, except for monopoly considerations. Since then it has been a free market for overseas investment, which is instructive to analyse.

Figures published in October 2006 by the United Nations Conference on Trade and Development (Unctad) revealed that Britain was the preferred global location by far for foreign investors. Moreover, their takeover targets were not small obscure companies "neglected" by the market but large "blue chips". Throughout 2004-5 you could identify UK household names listed on the London Stock Exchange that fell into foreign hands. Leading up to the 2007 financial meltdown, half the top UK 100 companies were vulnerable to acquisition, which meant the FT-SE100 (Footsie) would polarise between "the big six" headed by BP and the remainder.

Of course, British companies were also searching for investment opportunities. The London Stock Exchange itself bid for the Borsa Italiana. Barclays and the Royal Bank of Scotland (RBS) were also in competition for the Dutch bank ABN Amro (with RBS winning, thereby ensuring its downfall and government rescue post-2007). However, much activity was *domestic* with UK companies pursued by UK predators.

Today, many global analysts believe that the deregulated UK stock market (where cash is king) should be the first to experience a rise in share prices, driven by a takeover spree. However, opinions vary on the likely outcome.

Being a preferred destination for investment may have a beneficial effect on UK employment, job skills and growth. On the other hand, the ongoing takeover of UK plc may be catastrophic.

Apart from the political implications (loss of control) and economic consequences of essential and iconic interests disappearing, the opportunities for *sterling* investors (private and institutional) to avoid risk through a diversified portfolio of investments will be constrained.

At home: many utility companies and most top brewers are under foreign ownership. In the wake of the Pilkington takeover, when ICI came under Dutch ownership half of the UK paint market was monopolised, leaving little choice of shares in building and related materials, or several other domestic sectors.

Abroad: foreign bids that targeted UK companies with valuable international networks, such as O_2 and P&O, deprived UK stock market participants of global, low-risk investments in telecommunications and shipping. Cadbury, hardly a significant component of the domestic infrastructure but a global brand name nevertheless, is the latest in a long line of confectioners to fall into foreign hands.

Of course, global takeover activity is still not one way. Unfortunately, by 2011, UK predators were still spending less than twice overseas than their foreign counterparts were investing in Britain.

Overall: there is no shortage of acquisition specialists who advocate globalisation through corporate takeover. But it can affect the domestic capital market adversely by restricting the supply of shares (unlike new issues that expand the supply). If stock prices rise as a consequence of restricted supply and increased demand, this may also camouflage underlying fundamental, domestic economic problems until it is too late.

In financially difficult times, overseas companies are also more protective towards their own domestic market, when it comes to efficiency savings, cost cutting, shedding labour and factory closures. They may well depart the host country as quickly as they entered it. This is why in 2010 the UK's regulatory body, the Takeover Panel, began introducing new rules designed to restrict hostile foreign predators targeting British companies.

12.2 Investor Behaviour

In an ideal world, predator firms prefer to take advantage of low share prices in a depressed *bear* market to acquire businesses on the cheap that are ripe for takeover. This may be good news for existing shareholders and potential investors, if share price rises when a company is targeted.

However, irrespective of the state of the market (*bear*, *bull* or *stable*) individual investors must tread carefully. If a company is an obvious takeover target, any likely bid may already be reflected in its share price. If the bid fails, the price may fall. Companies can also be "virtual bid" targets where predators express an interest but never make a formal offer, a practice that has increased significantly over the past decade.

So, how do we identify a potential takeover target?

Companies grow organically, or through acquisition. Once they have reached saturation point in terms of their products or services but remain profitable and cash rich, they may need to diversify to maintain growth. Conversely, once a company has gone as far as it can without further investment, it may become a target.

In general terms, one of the best "buy" strategies for investors is to ride on the back of predator firms, particularly venture capitalists who seek out companies with valuable assets (including cash) whose share price is low. These can always be sold off, if the takeover goes wrong.

One method of spotting a potential target is to calculate the current *net asset value per share* (NAV) based on the asset backing (cover) and valuation ratios, which we discussed in Chapter Eleven. This measures the assets owned by the target company, less its liabilities. If the NAV per share is higher than the current share price (i.e. the ratio is greater than one) then asset strippers may be ready to pounce.

It is also worth tracking erratic share price movements, changes in shareholdings and executive management. If a company or consortium increases their stake, or acquires a seat on the board, it may signal a potential takeover.

Of course, you also need to consider when to sell shares. It may be necessary to get out quickly, particularly if the price is peaking. One profitable strategy may be to sell soon after a bid. However, you should always analyse any factors that could push the price further, such as the predator's intention to turn the business around, or a bidding war.

Overall, trying to spot a takeover and buying in is high risk. So, it is only advisable for the most active private investor who is not prepared to hold speculative shares for too long because:

- Very few takeovers go through, even if a bid is made.
- If there is a merger, the share price often takes time to recuperate.
- As mentioned earlier, history is also littered with takeovers that have failed to produce long term gains.

12.3 The "Golden Rules" of Investment

Activity 1

Whether investors wish to acquire a small number of shares for inclusion in their market portfolio, or the entire market capitalisation of equity to gain control of the company, a number of "golden rules" outlined in Chapter Five should underpin their decision.

Can you summarise them?

- The P/E ratio (earnings yield reciprocal) shows how a company's value is rated by the market in relation to the profit it earns. The higher the P/E, the greater the confidence that profits should rise. The lower the P/E, the greater the concern that profits are unsustainable.
- Alternatively, a low P/E ratio could reflect that a company's shares are undervalued by the market relative to its profit performance and be attractive to speculative investors.
- Shares in companies expected to produce rapid growth in profits and hence capital gains may offer low dividend yields. Higher dividend yields are usually offered by relatively mature, stable businesses with little prospects of increasing profits and dividend.
- Conversely, part of stock market law is "the higher the yield, the higher the risk". This applies particularly to shares where a higher dividend yield usually signals greater uncertainty over whether the dividend can be maintained in future, particularly if dividend cover is low.

As a general rule, if any investment offers a higher dividend yield or earnings yield (a low P/E ratio) with lower cover than similar investments, it is advisable to be cautious.

According to the legendary UK investor Jim Slater (who you also encountered in Chapter Five) it also pays to specialise in *growth shares* for long-term reward. In his text *Beyond the Zulu Principle* published in 1996 and still in print, the following investment criteria are specified.

(i) Mandatory criteria

a) A prospective P/E ratio no larger than 20 (an earnings yield of 5 percent).
b) For large investments, a prospective P/E ratio that is less than a company's future EPS growth. For smaller investments, a maximum P/E ratio that is 75 percent of growth rate.
c) Avoid speculative shares, namely those with the highest P/E growth factor (PEG), calculated by dividing the prospective P/E ratio by the estimated future growth rate in earnings per share (EPS). These are the ones to sell to improve the average safety margin of an investment portfolio.
d) Strong cash flow in terms of cash per share in excess of EPS for the last reported year and the average of the previous five years.

e) Low gearing (the proportion of debt in the firm's financial structure) preferably below 50 percent or, better still, positive cash balances.
f) High strength relative to the market in the previous twelve months coupled with strength in the preceding month or three months. Avoid shares that are flagging.
g) A strong competitive advantage.
h) No active selling of a company's shares by its directors.

(ii) Highly desirable criteria

a) Accelerating EPS preferably linked to a company's ability to replicate its successful activities.
b) A number of directors buying shares.
c) A market capitalisation in excess of £30 million.

(iii) Bonus criteria

a) A low price-to-sales ratio (PSR).
b) Something innovative.
c) A low price-to-research ratio (PRR).
d) A reasonable asset position (cover)

According to Slater:

"These criteria may be looked on as an investor's quiver full of arrows. They need not all be fired and some may miss their targets, but you do need to score a substantial number of bull's-eyes."

They may also be refined and extended by experience and new ideas.

Applied to takeover activity, the lesson to be learned from Slater's approach to investment confirms our earlier point. The likely rewards from an acquisition are determined by the analysis which precedes it. A company that selects another for the purpose of long-term growth by utilising a rigorous disciplined approach with in-built safety margins, such as asset backing, supported by strong financial criteria has little to fear. If the composite entity continues to grow profitably, patient investment will eventually be rewarded by an efficient stock market, which reflects its progress.

Conversely, our earlier discussion of the motives for acquisition drew attention to the dangers associated with company takeovers for short-term gain, merely because the target's shares were priced low by the stock market. Even though the predator may be purchasing at less than book value (negative goodwill) the acquisition may be worth more "dead than alive" since the realisable assets are worth less than this figure.

You will also recall that *subjective* reasons for takeovers, based on managerial growth, prestige and security, may be supported by an elaborate rationale without an *objective* analysis of the commercial factors involved. However, like any other investment:

An acquisition strategy is the art of the specific, where preparation meets opportunity. In the absence of luck, let alone judgement, the likely consequence of takeovers motivated by factors which exclude the growth of shareholders' earnings from the equation is that equity prices may collapse after the acquisition.

12.4 Acquisition Strategy and Stock Market Data

To illustrate how a predator firm can misinterpret the effects of an acquisition strategy concerning its own market performance, consider Table 12.1 that compares two takeovers.

	Noel plc		**Liam plc**	
	Pre – acquisition	Post – acquisition	Pre – acquisition	Post - acquisition
Target Company				
Number of shares	50,000		250,000	
Post-tax earnings	£500,000		£500,000	
Sale price	£5,000,000		£5,000,000	
Share price	£10		£20	
EPS	£1		£2	
Earnings yield	10%		10%	
P/E	10		10	
Predator Company				
Number of shares	1,000,000	1,500,000	1,000,000	1,250,000
Post-tax earnings	£1,000,000	£1,500,000	£1,000,000	£1,500,000
Market Capitalisation	£10,000,000	£15,000,000	£20,000,000	£25,000,000
Share price	£10	£10	£20	£20
EPS	£1	£1	£1	£1.20
Earnings yield	10%	10%	5%	6%
P/E	10	10	20	16.66

Table 12.1: Acquisitions and Stock Market Data

In Liam's case, with lower-priced shares and identical financial indicators, the stock market data of the composite entity obviously remains unchanged post-acquisition. In Noel's situation, all else is equal except that half the number of shares are purchased for twice the price, which also corresponds to that for the predator company. As a consequence, the acquirer benefits from a 20 pence (20 percent) increase in EPS. Thus, the earnings yield rises from 5 percent to 6 percent. In other words, the P/E ratio falls from 20 to 16.66. However, all this presupposes is that the share price remains constant after the acquisition, just like Liam.

First, it seems reasonable to assume that with a 20 percent improvement in EPS, share price will rise by a similar proportion, *i.e.* £4.00. Therefore, an increase in share price from £20.00 to £24.00 would produce a P/E uplift from 16.66 back to 20 (yielding 5 percent). Second, it is conceivable that price will rise even further, unsubstantiated by earnings or any other trading fundamentals but from *general* buying pressure (think dot.com and the nineties techno boom).

The psychology behind such "crowd" behaviour applied to capital markets is explained in classic texts by Mackay (1841), Shiller (2005) and Kindleberger and Aliber (2011) documented in Chapter One. The driving forces are either fear or, in this case, greed. The combined impact of increased EPS and a proportionally sharper increase in the price of equity produces a much higher P/E ratio than that which existed prior to takeover. Assuming share price stabilises at £28.00, you may care to verify that the P/E ratio will rise from 20 (pre- acquisition) to 28. This is equivalent to an earnings yield of approximately 3.57 percent.

Now visualise the composite entity making another acquisition, this time with a share price of £28.00 as opposed £20.00, with similar economic gains and then others, each with similar results. It would appear that a successful acquisition programme elicits vast capital gains for shareholders plus the growth, security and prestige which corporate management so desire.

Unfortunately, an element of what Mackay termed "delusion" is involved here. This stems from the confidence required on behalf of shareholders to sustain a high share price and therefore, a high P/E ratio premised not only on a rising earnings trend but extra buying pressure fed by the mania of eager investors. However, any factor that undermines this confidence can break the upward spiral and share price will fall. It may also precipitate a selling panic termed "revulsion" by Kindleberger and Aliber. Stock price reaches a bargain basement level and the predator company itself falls prey to takeover.

At least three factors can be identified. The first is the shareholders' perception of their individual positions in the spiral. Was equity received upon acquisition or purchased subsequently? If the former, the shareholder might still gain; if much later, the shareholder loses. The second factor arises because each subsequent acquisition must have a favourable impact upon the EPS of the composite entity. Since the company is not growing organically but by takeover, then either the size or the number of acquisitions must perpetually increase. Whichever applies, the strain on commercial competence grows and the probability of making uneconomic decisions increases. This final factor is crucial in the longer term.

Activity 2

We have explained how the combined impact of increased EPS and a proportionally sharper increase in the price of equity produce a much higher P/E ratio than that which existed prior to takeover. Both theory and evidence, based on the pioneering study by Myers (1976), have long suggested that acquisitions are therefore drawn from a limited spectrum; namely those companies with low P/E ratios.

Can you explain briefly why this is so, given our "golden rules" for investment?

What are the pitfalls of such an acquisition strategy?

You will recall that a low P/E ratio could reflect an undervaluation of equity by the market relative to profit performance, thus making a company an attractive investment proposition. Equally, however, the commercial viability of the merged entity may be dubious, in as much as a low P/E ratio can also reflect investor concern that a company might be unable to maintain its profits. But in order to sustain the P/E ratios, EPS must be sustained year after year. What Myers terms the *bootstrap* game. Consequently, an entity acquired for essentially non-commercial reasons must produce profitable performance for an extended period, a requirement that may prove impossible.

So, shareholder panic, a bad acquisition, or declining financial performance may break the spiral. This is not to say that all spirals will break, but even composite entities, which survive to acquire again and again, can be accused of short-termism, which is eventually doomed to failure.

Recalling Liam plc in the previous numerical example, the predator might be using a higher P/E ratio as leverage in relation to that of the acquisition merely to secure an immediate improvement in EPS. If this subsequently attracts speculative investors, share price may be *climbing a wall of worry*, which is not supported by trading fundamentals. The company will then find it difficult to discontinue its periodic addition of relatively low P/E candidates, even to provide an illusion of EPS growth, which justifies its share price.

Review Activity

The various approaches to takeover valuation using published financial data can be summarised as follows:

- **Balance sheet values** (relating to net assets).
- **Expectations** (relating to accounting income) in the form of:

(i) A going concern value using a normal rate of return on net assets, plus a goodwill calculation based on the capitalisation of super profits.
(ii) A profitability valuation using a P/E ratio applied to post-tax earnings.
(iii) A capitalised dividend valuation based upon dividend yield.
(iv) A present value (PV) calculation using a cash flow yield.

No one method is necessarily correct; rather they should be used when appropriate to provide a range of values for the purposes of negotiation. So, as a final illustration, let us evaluate a range of bid prices per share using the following information prepared by Blur plc for the acquisition of Gallagher plc.

Balance Sheet Revaluation	($m)
Share capital plus reserves	
(Comprising 80 million shares)	?
Liabilities	550
	?
Represented by:	
Fixed assets	1000
Current assets	600
	1,600

(i) Future profits after tax are estimated at $200 million
(ii) Future dividends cannot fall below $120 million per annum.
(iii) The normal rate of return on net operating assets for the industry is 12.5 percent.
(iv) Goodwill, if any, should be assimilated within four years.
(v) The market price of shares in companies doing an equally uncertain trade, financed by ordinary share capital (common stock) suggests that an appropriate P/E ratio is 7 (which is equivalent to a 14.5 percent return) and that dividend yield is 10 percent.

If we assume that the acquisition is premised on a rational strategic manoeuvre based on long-term profitability, a range of prices per share offered for Gallagher depends on four factors researched by Blur's management. Note that we have no cash flow data

- The minimum purchase price for the net tangible assets
- Evidence of goodwill
- Future profitability
- Dividend policy

1. Minimum valuation (net assets)

Net assets: $1,600 million minus $550 million = $1,050 million

Per share valuation: $1,050 million / 80 million = $13.125

2. Expectations

(a) Going concern (goodwill)

Using Equation (23) from Chapter Ten where V = A + [(P - rA) / m] subject to m > r

	Profits $m	Capital equivalent $m
Expected profits	200	
But a normal return (say 12.5% on assets of £1,050 million)	131.125	1,050
Superprofits (excess of expected profit over "normal" profit)	68.875	
Capitalised value of superprofits at 25%		
(i.e. four years purchase of goodwill)	68,875	
	0.25	
	or 68.875 x 4	275
Going concern value		1,325
Per share valuation:	$1,325 million / 80 million	= $16.56

(b) Profitability (P/E ratio)

Gallagher's anticipated post-tax profits are $200 million per annum and the expected P/E ratio is 7. If Blur's management assume that profits are constant in perpetuity, value may be defined using the following equations from Chapter Eleven.

(25) $V = \Pi(1 - t) \times P/E$ = Profits after tax x P/E ratio = Total market capitalisation

= $200 million x 7 = $1,400 million

Per share valuation: $1,400 million / 80 million = $17.50

(c) Dividend Policy (yield)

If expected dividends are $120 million and the maintainable yield is 10%, then using the formula for capitalising a perpetual annuity:

$$V = D / K_e = \$120 \text{ million} / 0.1 = \$1,200 \text{ million}$$

Per share valuation: $1,200 million / 80 million = $15.00

Recalling Activity 2 in Chapter Eleven, however, it is important to note that if the bid price per share is to accord with an earnings valuation of $1,400 million based on the Modigliani Miller (MM) law of one price, then the *actual* dividend after takeover should be $140 million with a corresponding uplift to the per share valuation. This is confirmed by solving for D in the following equation

$$V = D / K_e = \$1,400 \text{ million} = D / 0.1$$

Per share valuation: $1,400 million / 80 million = $17.50

Since this dividend uplift is still covered by after-tax profits it shouldn't be problematic, provided that Blur has adequate funding for future reinvestment post-takeover.

3. A Risk Assessment

The predator company has certainly done its research. There is an ideal "domino effect" that should minimise risk. Gallagher's earnings valuation exceeds its goodwill valuation, which is higher than the asset revaluation. As we discovered in Chapter Eleven, the assets are an important benchmark in any risk assessment since they can be sold-off piecemeal if the acquisition proves to be uneconomic. The risk associated with takeover can be measured by:

The purchase value of the tangible assets relative to the profitability valuation (asset backing) termed *cover*.

(28) Cover = Net asset valuation /Profitability valuation = \$1,050 million / \$1,400 million

= 0.75

Or alternatively, the reciprocal of cover, using the *valuation ratio*

(29) Valuation ratio = Profitability valuation / Net asset valuation = 1.33

The tangible net asset value provides substantial cover (asset backing) for the company as a profitable going concern. Likewise, its profit earning capacity exceeds the asset valuation, which confirms the existence of goodwill, evidenced by the valuation ratio.

4. Conclusions

Blur plc should make an initial bid of around \$13.20 for Gallagher's shares based upon a *minimum* net tangible asset value. A *fairer* price might be \$17.00, reflecting an allowance for goodwill, dividend policy and the earning power of the assets capitalised at a reasonable rate of return, as evidenced by appropriate P/E ratios. In order to ensure success, particularly in the event of a competitive bid (when price might rise further) a *maximum* offer of \$17.50 would seem realistic.

Finally, whilst Blur's original analysis excluded actual cash flow data, as a parting shot consider the following information.

If surplus assets with an immediate realisable value of $150 million had also been identified, over and above the net operating assets of $1,050 million, you may care to verify that the previous going concern values and share prices would have to be uplifted as follows:

Valuation	Net assets	Goodwill	Profitability	Dividends
Total Value	$1,200 million	$1,475 million	$1,550 million	$1,350 million
Per share	$15.00	$18.44	$19.37	$16.87

What this also reaffirms is that the sale of excess or idle assets (which provides a once-only benefit) can only enter into the calculation after annually recurring operating profits or dividends have been capitalised. And needless to say, if realisation is delayed, the eventual proceeds from the sale would have to be discounted back to a present value at an appropriate rate of return, in order to bring it in line with the main valuation date.

Summary and Conclusions

Given the normative wealth maximisation objective that underpins financial theory, we began our study by observing that in an efficient capital market:

> The prime determinant of any company's long-run performance and wealth is the amount it can first earn and subsequently retain for reinvestment or distribute to the providers of capital.

However, if we apply these criteria to corporate equity valuation relating to market listings or takeover targets, there is a methodological conflict between a tangible asset figure revealed in the balance sheet (even based on current costs) and the market price of shares derived from a capitalisation of earning, dividends, or cash flows, using stock market data. The former ignores so many *intangible* and *external* factors, i.e. goodwill, brands, the quality of management and workforce, government policy, changing social, economic and political conditions at home and abroad, speculation and rumour. The latter methods are *entity* based, more inclusive and forward looking.

Irrespective of the valuation method, without perfect information, market participants wishing to invest in companies seeking a stock exchange listing or prey to takeover should also be aware of the dubious managerial motives that often underpin them. Each motive may be *rationalised* but highly *subjective*. Not necessarily based on long-term corporate profitability but managerial short-termism or satisficing behaviour, leading to a catastrophic breakdown of the agency principle and a fall in share price.

Suffice it to say that in an ideal world with a free flow of information, a present value (PV) analysis based upon a risk-adjusted estimation of all projected cash flows, discounted at the company's opportunity cost of capital, is the most sophisticated technique for valuing a company as a going concern. Relax this assumption and at a practical level, the valuation of market placements and takeovers can only be confirmed using publicly available information, financial reports and stock market data.

Selected References

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Appendix: Stock Market Ratios

1. Ordinary Share Values

$$\text{Nominal value (or Par value)} = \frac{\text{Dividend yield x Market value}}{\text{Dividend \%}}$$

$$\text{Market Value} = \frac{\text{Nominal value x Dividend \%}}{\text{Dividend yield}}$$

2. Dividend measures (before deduction of income tax)

$$\text{Dividend per share} = \frac{\text{Total dividend (gross)}}{\text{Number of shares}}$$

Or

$$\text{Nominal value x Dividend \%}$$

$$\text{Dividend percentage} = \frac{\text{Dividend yield x Market value}}{\text{Nominal value}}$$

Or

$$\frac{\text{Dividend per share}}{\text{Nominal value of an ordinary share}}$$

Or

$$\frac{\text{Total dividends (gross)}}{\text{Total nominal value of issued ordinary shares}}$$

$$\text{Dividend Yield} = \frac{\text{Nominal value x Dividend \%}}{\text{Market value}}$$

$$\text{Or} \quad \frac{\text{Dividend per share x 100}}{\text{Market value of an ordinary share}}$$

$$\text{Or} \quad \frac{\text{Total dividend x 100}}{\text{Total market value of ordinary shares (i.e. market capitalisation)}}$$

3. Earning Measures (net of corporation tax)

$$\text{Return on capital employed (ROCE)} = \frac{\text{Profits after tax minus preference dividend (gross) x 100}}{\text{Balance sheet value of ordinary shares plus reserves}}$$

$$\text{Earnings per share (EPS)} = \frac{\text{Profits after tax and preference dividend (gross)}}{\text{Number of shares}}$$

$$\text{Earnings Yield} = \frac{\text{Earnings per share x 100}}{\text{Market value of an ordinary share}}$$

$$\text{Or} \quad \frac{\text{Profits after tax and preference dividends (gross) x 100}}{\text{Market capitalisation}}$$

$$\text{Price/ Earnings ratio (P/E)} = \frac{1}{\text{Earnings yield}}$$

$$\text{Or} \quad \frac{\text{Market value of an ordinary share}}{\text{Earning per share}}$$

$$\text{Or} \quad \frac{\text{Market capitalisation}}{\text{Profits after tax and preference dividend (gross)}}$$

4. The Relationship Between Dividends and Earnings

$$\text{Dividend cover} = \frac{\text{EPS}}{\text{Dividend per share}}$$

$$\text{Or} \quad \frac{\text{Profits after tax and preference dividends (gross)}}{\text{Total dividend}}$$

$$\text{Dividend payout ratio} = \frac{1}{\text{Dividend cover}} \text{ x 100}$$

$$\text{Or} \quad \frac{\text{Dividend per share}}{\text{EPS}} \text{ x 100}$$

$$\text{Or} \quad \frac{\text{Total dividends}}{\text{Profit after tax and preference Dividends (gross)}} \text{ x 100}$$