Intrinsic value

By Michael Kemp (Presented at the Annual AIA Conference Sydney Saturday 3 September 2011)

The derivation of intrinsic values for listed companies relies as much on informed subjective judgment as it does on objective mathematical calculation. However many investors maintain a focus upon financial accounts and mathematical calculation to the detriment of other important factors. This paper considers the valuation process from a broader conceptual basis.

Firstly a definition of Intrinsic Value – and there are many. A useful definition has been proposed by the Chartered Financial Analyst Institute (CFA). It states that intrinsic value is:

"The value that, an investor considers on the basis of an evaluation of available facts, to be the true or real value that will become the market value when other investors reach the same conclusion."

There are 2 important points to be taken from this definition. Firstly intrinsic value is derived by Socratic process – that is the value so calculated is specific to the individual performing the calculation. Secondly the definition assumes that value can and often does differ from the market price.

So the fundamental premise of intrinsic value is that the prices quoted on stock exchanges around the world don't necessarily reflect the true value of the underlying businesses. The calculation of intrinsic value lies at the heart of Value Investing – enabling value investors to buy listed assets for less than they believe they are really worth.

Whilst there have been many techniques proposed for determining intrinsic value most rely on the application of a discount rate to estimates of future income. Because future income will be received at different future times the application of a discount rate aims to bring each to a common value – i.e. today's dollars. These adjusted income flows can then be added together to arrive at a current value for the asset in question. This value is then compared to its current market price in order to determine whether a buying or selling opportunity exists. That discounting is a central concept in the derivation of intrinsic values is reinforced in this definition from Warren Buffett:

"Intrinsic value is the discounted value of the cash that can be taken out of a business during its remaining life."

Whilst mathematics is central to the determination of intrinsic value consider this quote from John Maynard Keynes. It is taken from his classic 1936 book, "The General Theory of Employment Interest and Money."

"Human decisions affecting the future, whether personal or political or economic, cannot depend on strict mathematical expectation, since the basis for making such calculations does not exist."

If Keynes is correct then we must question attempts to determine value that rely solely upon the application of mathematics.

History of intrinsic value calculation

An early reference to attempts to determine the fair value for exchange traded equities can be found in Joseph de la Vega's 1688 book, "Confusion de Confusiones". De la Vega tells us that he based his investment decisions upon "calculations" and as input to these calculations he used "prospective dividends". Thus De la Vega, who traded shares on the Amsterdam Exchange over 320 years ago, was giving consideration to a potential difference between market price and fair value. But De la Vega's book was written in Spanish. In order to find early reference to the English word "Intrinsic" (or Intrinsick as it was then spelt) we must turn to English writings. And specific reference to the intrinsic value of publicly traded equities can be found in books written as early as the late 17th Century.

The concept of discounted cash flow, which underpins the methodology of most intrinsic value calculations, significantly predates trading in publicly listed shares. The first listed company, The Dutch East India Company, was floated in 1602. But it was exactly 400 years earlier, in 1202, that we find the first written reference to discounted cash flow calculations. They were described in Leonardo Pisano's book, "Liber Abaci" – its title translates to "A Book of Calculation".

Pisano meant for his mathematics to be applied to annuities, bonds and other contractual cash flows. But in attempts to determine the intrinsic values of shares analysts have subsequently applied his mathematics to the less quantifiable forecasts of future company earnings.

Hurdles faced in calculating intrinsic value

As stated Warren Buffett defines intrinsic value as the discounted value of the cash that can be taken out of the business during its remaining life. Whilst Buffett's definition is succinct this should not be misinterpreted as conveying a sense of reliability or certainty. To illustrate let's look at the 3 variables in his definition; that is the discount rate, business life and cash.

We have no way of accurately deriving an appropriate discount rate. We can't anticipate the remaining life of the business so in the absence of contrary evidence we assume perpetuity. And we can't reliably define either a concept or an absolute figure for "cash".

Several different interpretations of cash are used in intrinsic value calculation. Each has its drawbacks. The popular concept of using dividends as the measure for cash was given a boost in 1938 with the release of "The Theory of Investment Value" by John Burr Williams. Support for the use of dividends stems from the fact that, short of capital returns, dividends often represent the only tangible benefit that share ownership bestows. Even in acknowledging that shares are transferable, and that money will be received upon their sale, the argument still holds true. The new owner should be prepared to pay what the future dividend stream offers him thus estimates of prospective dividends should still establish the transfer price. Whilst the use of dividends as input to the discounting model is intuitively appealing it clearly has several limitations. They are principally:

- The company might not pay dividends

- Dividend policy might not reflect underlying earnings
- The task of discounting estimated dividends from now to eternity is an onerous one for the analyst
- How can future dividends actually be predicted anyway?

The first two of the concerns listed above can be addressed by applying an alternative definition of cash. That is by using earnings instead of dividends. But we now face a new problem – what figure for earnings should be used? Net profit after tax, as taken from the company reports, is usually inappropriate. The inappropriateness of generally accepted accounting principles combined with the vagaries of corporate interpretation of these principles mean that reported profit usually differs from the economic benefit flowing to shareholders. As Buffett reminds us the appropriate concept of earnings is that cash which can be taken out of the business without compromising its economic performance.

Two commonly applied concepts of earnings for intrinsic value calculation are Free Cash Flow to the Firm (FCF) and Free Cash Flow to Equity (FCE). Free cash flow to the firm is that cash generated by the company's operations that can be withdrawn by both the bondholders and shareholders without economically impairing the firm. Free cash flow to equity is that part of the cash generated by the company's operations that can be withdrawn by shareholders without economically impairing the firm. Which you select as input to the discount formula depends upon whether you are taking the perspective of valuing the whole company or simply the shareholders' equity. FCF and FCE are usually derived by making adjustments to the information provided in the financial accounts. This means that not only is their derivation open to interpretation, but it requires an understanding of how the financial statements have been constructed.

But whether it is dividends or earnings that we choose as input to the discount formula we still cannot avoid the onerous and dubious task of making long term forecasts. And this remains the biggest hurdle of all in the determination of intrinsic value. Quoting Keynes again:

"We have to admit that our basis for knowledge for estimating the yield ten years hence of a railway, a copper mine, a textile factory, the goodwill of a patent medicine, an Atlantic liner, a building in the City of London amounts to little and sometimes to nothing."

Not everyone would seem to agree with Keynes or should I say not everyone wants Keynes to be believed. There remains an army of forecasters out there. The more responsible ones are conscious of the limitations of forecasting and cast their predictions accordingly. However some forecasters are at best irresponsible and at worst nothing less than fraudulent. Their forecasts are often deliberately exaggerated and made with the aim of extracting money through sales of newsletters, books or other forms of service from an unwitting public. Indeed the most fraudulent don't even appear to go through the process of calculation – they simply make outrageous forecasts.

Residual income valuation

Two discounting models have been discussed – namely discounting dividends and discounting free cash flow. A third discounting model has become increasingly popular over the last 10-15 years. Termed Residual Income Valuation, its popularity increased following the publication, in 1995, of 2 articles by James Ohlson from New York University's Business School.

In considering how Residual Income Valuation is applied to the valuation process it is helpful to remind ourselves that businesses are usually financed by a mix of debt and equity. Despite there being a cost associated with both the typical income statement shows net profit after only taking into consideration the cost of debt. The cost of equity is not considered. The principal reason for this is the Income Statement is typically a report to shareholders. It is left up to each shareholder to then make their own assessment as to whether the reported profit represents a satisfactory return on their equity. Residual Income Valuation applies a charge for equity. The reported income which remains following the application of this charge is termed residual income.

Consider the hypothetical situation where the company's ability to generate a return on equity exactly matches the shareholder's required return on equity.

That is ROE = RRR. In this situation the residual income would be zero. However the investment would have value. Since the shareholder is just achieving the required return on equity the investment would have a value equivalent to its book value (shareholders equity). Consider then a second investment that generates a ROE > RRR. The intrinsic value of this investment would be greater than its book value. The amount by which it exceeds book value is calculated by discounting, back to present value, the anticipated residual income for all future years.

The formula for doing this is:

$$V_0 = B_0 + \sum_{t=1}^{\infty} \frac{E_t - r\,B_{t-1}}{(1+r)^t}$$

where:

V_0 = Intrinsic Value

B_0 = Current Shareholders Equity also termed the Book value

E_t = Earnings for period t

r = Discount Rate also termed the Required Rate of Return

Thus intrinsic value is determined by adding the discounted value of all future residual income to the current book value. A simplified formula can be derived from the above formula by making the assumption of constant earnings growth:

$$V_0 = B_0 + \frac{(ROE - r)}{(r - g)} B_0$$

where:

g= Growth in Earnings

Interestingly the assumption of constant earnings growth is also made in deriving the Gordon Model, a simplification of the Dividend Discount Model.

The simplified Residual Income formula requires very few inputs:

- Book Value (shareholders equity) is taken straight from the Balance Sheet.
- Cost of Equity can be calculated by using the Capital Asset Pricing Model but commonly it represents a desired rate as chosen by the investor.
- Growth in earnings. This is commonly equated to the product of ROE and dividend retention.

Thus the only 2 estimated inputs are those of dividend retention and Return on Equity. However the word "only" should not be used too lightly. Except for a company which pays no dividend at all there is no such thing as a company which has a constant retention. And there is no such thing as a company with a constant Return on Equity. These are important considerations when using any valuation model which requires these inputs.

Despite the discussion in this paper outlining the limitations of applying mathematical models to the valuation process it don't mean that they should be discarded. They remain central to the intrinsic valuation process. But it is important to stress that the models are only as useful as the assumptions that generate the inputs. And since the assumptions are often tenuous so too must you consider the numbers that the models deliver.

Particular care needs to be applied when valuing and investing in companies with high Price to Book Ratios (P/B). The following formula demonstrates the theoretical considerations underpinning the P/B ratio.

$$\frac{P}{B} = \frac{ROE - g}{r - g}$$

As you can see a major factor underpinning a high P/B ratio is the maintenance of high return on equity. In deriving a ROE figure as input to an intrinsic value formula reliance should not be placed on blindly using historical ROE figures. Dechow, Hutton and Sloan published a research paper in the Journal of Accounting and Economics (1999) looking at the tendency for high ROE's to persist. They found there to be, on average, a 38% decay rate per year in the difference between the ROE and the cost of equity. Assuming a cost of equity of 10% this would mean a company with a current ROE of 40% would have one slightly less than 29% the following year. But this is an average figure and clearly, persistence varies from company to company.

This should not be taken as a contraindication to investing in companies with high returns on equity. On the contrary these are the very companies that should be sought out. However it is those which are characterised by enduring return on equity and can be purchased at either a cheap or fair price which will generate wealth. Those which don't possess these qualities have the potential to destroy wealth.

How then does one identify companies with enduring return on equity? Warren Buffett uses the all-encompassing term – the possession of a moat. More specifically this refers to an enduring competitive advantage with respect to factors such as strong market leadership, consumer brand loyalty, lower operating costs or the possession of advantageous licensing agreements. Where these don't exist the barrier is low for competitors to enter that business space. Competitors who perceive a business opportunity will continue to be attracted as long as the anticipated ROE exceeds their required rate of return. However as new entrants continue to enter a particular business space prices will be cut, margins will be reduced, revenues will thin and ROE will fall.

Thus a thorough understanding of the dynamics of the industry within which a company operates is a very important factor in forecasting it's ROE and earnings growth. This reinforces the point that the determination of intrinsic value is as much a subjective process as it is an objective process.

Conceptualising intrinsic value

Many investors have difficulty in coming to grips with conceptualising intrinsic value. To assist I recommend undertaking the following process. As a starting point develop an understanding of the principles underlying the various discounting formulae. That is, understand both how the formulae are constructed and the various assumptions incorporated within them. The principal discounting methods to review are:

- Discounted dividend model
- Discounting free cash flow
- Residual income valuation

Next appreciate that the inputs to these models are largely subjectively derived. This derivation must come from a base of informed knowledge. Selecting for analysis companies within stable industries has the potential to reduce error as does the review of companies which have some control over the prices that they charge for the goods or services they supply. Companies in particular industries - for example mining and energy companies - are exposed to the dual vagaries of price volatility (they are price receivers) and demand variability (due to the economic cycle). Consequently future revenues are often difficult to anticipate with the potential for increasingly unreliable determinations of intrinsic value.

Summary

- Intrinsic value, whilst distilled analytically into a single number, should not be interpreted as a precise representation of value. It is a concept masquerading as a number.

- There is no single method of intrinsic value determination that suits all circumstances.

- The determination of intrinsic value is both an art and a science. The inputs are based on judgment and the process is far more subjective than many people acknowledge.

- It is the ultimate irony that not only is it behavioural biases that derail the valuation process but it is also differing powers of subjective judgment that distinguish skilled analysts from the also–rans.

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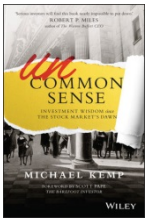

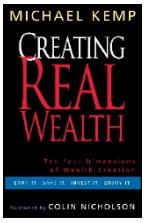

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Michael Kemp is the chief analyst for the Barefoot Blueprint and author of "Uncommon Sense". Published under the Wiley label "Uncommon Sense" delivers a deeply considered and logical approach to the otherwise complex world of investing.