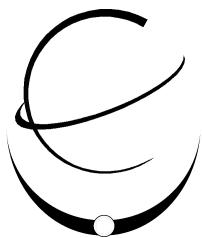


EMPIRE

Investing



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February 2010

Valuing a Company by Tim Savill-Inns

What is an investment worth? As investors we should always purchase investment assets at or below their *value* and then profit from the income they produce and/or the capital gains upon their sale. This profit should exceed a required level of return on our capital, or we should have left the money in a term deposit.

So what is *value* and how does one calculate it to ensure an adequate return?

In this month's newsletter I'll discuss the quantitative concept of company valuation and how Empire Investing determines the value of listed shares.¹

Value vs. Price – What's the Difference?

Before I even begin about how to value a company and derive a suitable purchase or sale price, I must clear up the notion of *value* versus *price*.

The vast majority of the investment industry and the mainstream financial media believe that the current market price of any stock **is its value**. When a share gains \$1 during the day it is said to have *increased* in value, similarly, if it drops \$1, it has *lost* value. Nothing could be further from the truth.

Price is what you pay, value is what you get.

Never forget this maxim. The price you paid for a stock is only relevant to you (and the seller of course). It is almost never the value of the underlying company.

If a stock you bought yesterday for a \$1 now sells for 80c have you *lost* money? Of course not – you still own the stock. Only a small fraction of listed shares transfer ownership each day on any exchange. If such a large drop occurs because of market pricing does it mean that 100% of that company's shares have *lost* value? The same can be said when prices appreciate – are you any "richer"?

The only thing that matters is your purchase and sale price – not the prices in between. What you should look at first and foremost is the increase or decrease in *equity per share and Return on Equity*. Has the company increased its value and is it making a good return on your money?

Value is what the company is worth as a going concern, an indication of its ability to increase shareholder's equity. Forget the marketplace as a barometer of value. It is only a place to conduct the *transfer* of ownership.

¹ **Apologies in Advance** – there are a few numbers, several acronyms and a good amount of financial jargon in this newsletter, but none of it is difficult. If you can get through it and understand the principles, you will be better equipped to value shares than most of your investing peers!

Return on Equity (ROE)

The single most important factor in determining a value of a company is Return on Equity (ROE). In accountant-speak, equity is a companies assets minus its liabilities. In human-speak, equity is the part of the business owned by the shareholders.

For example, consider a business that owns \$100 worth of office supplies (assets) and took out a \$75 loan (liability) to purchase most of the supplies. Equity in this case is $\$100 - \$75 = \$25$.

If this company's net profit (after paying its interest bill, staff wages, expenses and tax) is \$5 in the first year, then the ROE will equal $\$5/\$25 = 20\%$. Pretty simple really.

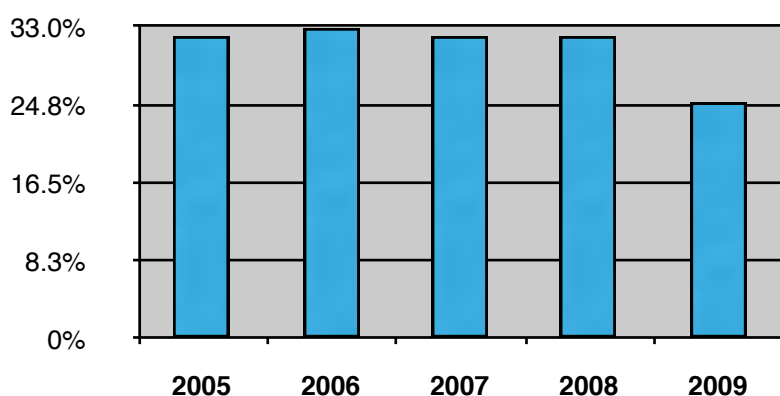
Of course with ASX-listed companies the numbers are a lot larger and many more items make up assets and liabilities. However, the concept is identical and ROE can be determined for any company from the data in the financial statements. It is sometimes calculated by trading platforms (although check exactly what the program uses to calculate ROE to ensure it gives the figure you're looking for).²

What Does ROE tell us?

In a nutshell, ROE tells us how good a company is at turning equity (i.e. shareholder money) into profit - the higher the ROE the better. The company in the example above will turn \$25 of initial equity into \$30 after the first year, or 20% ROE. A stellar company like Cochlear has ROE exceeding 50%.

In our previous letter, where Chris examined the quality aspects of company valuation, we stipulated that companies **must consistently produce ROE over 15%** to be considered for investment by Empire. If you want to take a quick check before jumping into a share purchase, examine the ROE. If it is below 5-8% you've got a company that is good at taking shareholder money but not much else.

Reece (REH) Return on Equity



Determining a value for ROE is important as it is used to estimate the future earnings of a company. Typically you should review the last 5 years worth of ROE data to get an understanding on the consistency of the company's profits.

Generally speaking, the more *consistent* the ROE history, the *better* the company is run and the easier it is to assign probability of

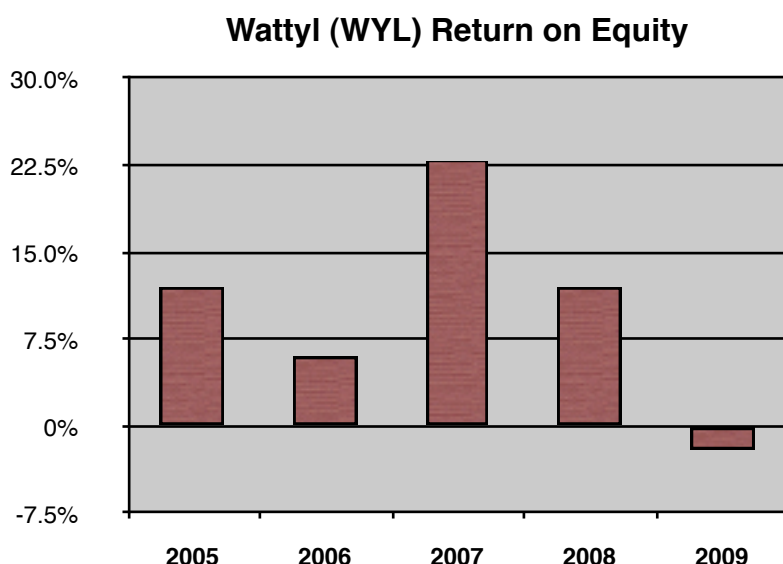
future performance. Companies which swing between big losses and big returns are difficult to predict and more often than not make poor investments.

The ROE for Reece is nice and steady and dropped slightly during the GFC – you could say there is a good probability it should return 20-25% into the future. Compare it with the graph below–Wattyl the ROE be next year??

² It's simple enough to do yourself. ROE equals Net Profit after Tax divided by Equity. Both of these figures are easily discernible in the Income and Balance Sheet Statements.

At Empire, we like to have some conservatism when assigning a probable ROE to any company. Generally, the better quality the company, the smaller this conservatism.

Woolworth's for example has almost clock like consistent ROE at 38%. We assign a ROE of 35% in our calculations, the difference being the uncertainty in its expansion into DIY Hardware.



Profit – Reinvest or Dividend?

So, now we know how much a company earns from it's equity but what does it do with it and why is this distinction important? .

A company has three options when it comes to distributing net profits – return it to the shareholders in the form of a dividend, retain it within the company (and thereby increase equity) to fund business growth, or a combination thereof.

Let's examine three companies over a five year period, each having the same ROE of 30%, an identical initial purchase price but differing rates of profit reinvestment and dividend payout ratios.

Company A – nothing reinvested, all profits paid as dividends

Year	1	2	3	4	5	Total
Equity	\$100	\$100	\$100	\$100	\$100	\$100
Profit	\$30	\$30	\$30	\$30	\$30	
Reinvested	\$0	\$0	\$0	\$0	\$0	
Dividend	\$30	\$30	\$30	\$30	\$30	\$150
					Total	\$250

Company B – 50% dividends, 50% reinvested

Year	1	2	3	4	5	Total
Equity	\$100	\$115	\$132.25	\$152.09	\$174.90	\$174.90
Profit	\$30	\$34.50	\$39.68	\$45.63	\$52.47	
Reinvested	\$15	\$17.25	\$19.84	\$22.81	\$26.24	
Dividend	\$15	\$17.25	\$19.84	\$22.81	\$26.24	\$101.14
					Total	\$276.04

Company C – All profits reinvested

Year	1	2	3	4	5	Total
Equity	\$100	\$130	\$169	\$219.70	\$285.61	\$285.61
Profit	\$30	\$39	\$50.70	\$65.91	\$85.68	
Reinvested	\$30	\$39	\$50.70	\$65.91	\$85.68	
Dividend	\$0	\$0	\$0	\$0	\$0	\$0
					Total	\$285.61

Despite having the same ROE the outcomes are considerably different. If each company started with the same share price, wouldn't you rather own shares in Company C – even though it paid no dividend?

If you had chosen Company A, you may have \$150 in dividends, but its final equity and earnings power is now only **a third the size of Company C**.

This translates *directly* into the final share price, which is a function of that equity. Would you pay the same for Company A as Company C at the end of the five years?

In summarising, the above example clearly shows:

1. Dividends are not everything and dividend yields³ do not indicate value at all– Company A has the highest dividend yield but the worst investing outcome
2. As the initial share price in year one was the same for all three companies the P/E (price to earnings) ratio was also the same.⁴ Given that we have three different investing outcomes, PE ratios are **NOT** an indicator of value or “cheapness” of a stock (despite what the market analysts say)

To determine your selected company's reinvestment ratio you simply subtract the dividend payout ratio. E.g. if a company paid out 70% of its profit, the reinvestment ratio is 30%. Again, this figure is available on most broker platforms, or can be ascertained via the Profit and Loss and Equity statements in financial reports.

Required Return – What do you want?

What do we want from our investment? This is the third piece in the value puzzle - our required rate of return (RR). We compare our RR with the investments expected return over a period of time, that is the company's ROE and rate of reinvestment and the end result. So what is an appropriate RR?

In the business world, a 12.5% return is considered prudent for new projects. For the individual investor, a similar return should also be considered, because of the following:

³ Dividend Yield is the dividend per share divided by the share price. If the dividend is fully franked (i.e has a franking credit at 30%), multiply this yield by 1.42 to get your total or gross yield.

⁴ The Price Earnings Ratio (P/E or PER) is the steadfast metric used by market analysts, commentators and “investors” in solely determining value. It is calculated by dividing the share price by the earnings per share or EPS. EPS is simply the total profit after tax divided by the number of shares on issue.

1. You are investing, not saving, so your return must at least equal that of the most secure savings instrument available – in our case, the 10 year Australian government bond, which yields **approx. 5%** per annum.
2. You must be compensated for the rate of inflation – the value of your money depreciates each year by at least **4%**.
3. Taxation – capital gains and dividends are taxed at marginal rates usually exceeding that of a company although discounts and franking credits may be applicable. We consider **40%** of any income or gain lost through taxation to be an unfortunate, but prudent calculation.

This can be determined as follows: $RR = (\text{risk free rate \%} + \text{average inflation \%}) / (1 - \text{tax rate \%})$

A minimum RR using the above is approx. 15%. Investors with a more lenient tax consideration (or better accountant) may adopt a lower RR.

Valuing Shares – putting it all together!

So, we have the ROE, the company reinvestment rate and a suitable RR. This last step determines a suitable purchase price by putting it all together.

The last variable is determining your timeframe of investment. You may or may not ascribe to the buy and hold theory, but you do need to select a suitable timeframe. Empire uses 5 years as a minimum to calculate value, based on the notion that markets have cycles – booms and busts – and most shares purchased at a discount to value usually trade at a significant premium at least once in that 5 year cycle.

The Empire valuation steps are:

1. Adopting a suitable ROE, we estimate the net profits (earnings) for the next 5 years
2. Calculating a reinvestment ratio, we determine the amount of profits to be paid as dividends and the amount to be reinvested back into the company (i.e. added to equity)
3. Calculate the subsequent cashflow over 5 years (initial purchase, dividends, sale of investment at year 5)
4. Calculate the internal rate of return (IRR) from the cashflow
5. Vary the initial purchase price until the IRR equals the RR – this price is our **valuation**

Sound complicated? It's not really - let's use Company D as an example.

Let's assume instead of buying its shares at the market price the very generous owners said we can purchase them at their equity per share value⁵. We've estimated its ROE to be 25%, determined it reinvests 50% of its profits and we require a 15% return (RR).

If it starts with \$10.00 of equity per share – remember this is our purchase price as well - the investment cash flows will be as follows:

⁵ Almost all shares listed on exchanges trade at a multiple to equity. Remember our office supply company? Usually you can't just buy that company for \$25 – the average company trades at a 3-5 times multiple. Occasionally you can purchase companies at a discount to equity – this was Ben Graham's, Warren Buffet's mentor, main strategy in a post-Depression era.

Year	Start	1	2	3	4	5
Equity per share	\$10	\$10	\$11.25	\$12.66	\$14.24	\$16.02
Profit		\$2.50	\$2.81	\$3.16	\$3.56	\$4.00
Dividend		\$1.25	\$1.41	\$1.58	\$1.78	\$2.00
Reinvested		\$1.25	\$1.41	\$1.58	\$1.78	\$2.00
Cashflow	-\$10	\$1.25	\$1.41	\$1.58	\$1.78	\$18.02

We pay for the equity in Year zero (shown as a negative in the cashflow line), then we obtain the dividends throughout the five years. In year five we obtain both the dividend as well as the value of the equity upon sale, which has increased to \$16.02 (the result of 5 years of reinvesting 50% of all net profits).

We can calculate that these cash flows provide us an annualised return of 23% using the IRR function in Excel – which is great because it is above our RR of 15%. However, in order to calculate *value*, we want to know what cashflow will give us an IRR equal to our RR (15%).

The variable that changes the IRR will be the initial cost of the investment. If we had to pay \$13.13 per share for the company, which is more than the “cost” price of equity we have the following cashflow:

Year	0	1	2	3	4	5
Cashflow	-\$13.13	\$1.25	\$1.41	\$1.58	\$1.78	\$18.02

This last step shows that if we pay up to \$13.13 for a share in Company D our expected return should be 15% over a five year period. In other words, the **valuation** of Company D in Year 0 to investors requiring a 15% return is no more than \$13.13. If shares are available at or below this price, you should invest!⁶

There, we’ve done it – we’ve calculated the value which shows the maximum price you should pay for a share.

The P/E Strikes Back

But wait!

As non-institutional investors we do indeed purchase and sell at the market price for shares, not their equity value. We can easily determine what the share price is in Year 0 (that’s the price today), but what price will we receive upon sale in Year 5? This variable will have a very large impact on our valuation results.

It is the major variable that is not mentioned by most so-called value investors - who assume that the market will pay exactly the same multiple of equity per share when you purchased five years ago....

⁶ How much you should invest in each investment is a subject we shall leave to a future newsletter on Portfolio Construction and Management.

So we need to know how to predict future share prices....If we could do this we would not be writing this newsletter and if anyone else can do it, they would never sell you a “program”, trading course or tickets to an “investment” seminar!

You can only make a judgement, based on past history on what events in the future will likely transpire. These are not predictions or forecasts, this is merely trying to wade through the fog of uncertainty with the compass of the past.

Going back to Graham

Empire’s method is to use a combination of the 10 year cyclically adjusted average P/E ratio (CAPE) and our estimated earnings in Year 5.⁷

We multiply the PE ratio by the earnings calculated for year five to arrive at a price estimate upon sale. In our opinion this is both the simplest and most valid method of estimating a sale price into the future.

Why use the P/E? All the figures and calculations that I have just described to ascertain an *intrinsic* value of a company are known and easily formulated. Yet the market is neither rational or efficient – it may or may not like an increased dividend payout, or it prefers to price a near bankrupt mineral exploration company above a very profitable plumbing fixture manufacturer.

What we can go upon is past behaviour – not what the market *should do* – but what it *has done*. This is our fundamental empiric⁸ difference with the mainstream financial industry, who try to make their theories *fit* the market. We just observe what the market does and act accordingly.

So, finally, let’s work out an example.

If the PE ratio of Company D has a 10 year average of 15, then the estimated share price at year 5 is calculated as:

Price/Earnings Ratio 10 Year Average MULTIPLIED by Year 5 Earnings = Estimated Share Price

In this case, $15 \times \$4.00 = \60 . Running our valuation calculations again assuming the price of the share in Year 0 is \$10, our new cashflow calculations will look like this:

Year	0	1	2	3	4	5
Equity per share	\$10	\$10	\$11.25	\$12.66	\$14.24	\$16.02
Profit		\$2.50	\$2.81	\$3.16	\$3.56	\$4.00
Dividend		\$1.25	\$1.41	\$1.58	\$1.78	\$2.00
Reinvested		\$1.25	\$1.41	\$1.58	\$1.78	\$2.00
Share Price	\$10					\$60.07
Cashflow	-\$10	\$1.25	\$1.41	\$1.58	\$1.78	\$62.07

⁷ CAPE adjusts the average earnings (and hence the P/E) of the last ten years for inflation to smooth out the effects of the business cycle and was originally developed by Ben Graham, the father of value investing.

⁸ See <http://www.empireinvesting.com.au/aboutus.html>

This provides an IRR of 52% - well above our RR of 15%. Again, using Excel and the IRR function, we can determine the maximum purchase price in Year 0 that gives us an IRR of 15% (i.e. equal to our RR). The answer (and hence the value of the share) is \$35.02. Here is the new cashflow from the investment.

Year	0	1	2	3	4	5
Cashflow	-\$35.02	\$1.25	\$1.41	\$1.58	\$1.78	\$62.07

If we require a 15% return we should pay no more than \$35 for this share.

I have included an historical example using real world data on Cochlear (COH) from 2005 to 2010, included as an appendix to this newsletter.

The Margin of Error

So, that's the Empire Investing valuation method in a nutshell. Of course it is not an exact science – we need to make educated guesses at ROE, reinvestment rates and the final share price over a 5 year period. Any chance of such predictions being accurate over such a timeframe is remote at best. However, in lieu of a crystal ball, the only things we can use to value shares are the figures we have at hand and the observed experience of how markets act and react. We try and increase our accuracy by examining historical data to find out the company's performance during different market conditions. But in the end, we are only estimating. Is there any way to compensate for this?

Empire tries to account for any over-optimistic assumptions (or future underperformance) by being conservative with future ROE and reinvestment rates during our calculations and then applying a Margin of Safety (MoS) when it comes to the actual purchase.

If we subsequently valued a share at \$15.00, we would consider a purchase if the share price was below this price, but with an additional MoS depending on the quality⁹ of the underlying investment.

If we determined it to be a Wonderful company¹⁰, we desire a 25% MoS and only purchase it for \$12 or less. If the company was "Very Good", we'd want at least a 33% MoS and only purchase at \$11.25. Finally, a "Good" company requires at least a 50% MoS - or \$10.

This may seem to be more than prudent, but we prefer to be approximately right than precisely wrong.

Summary

Price is what you pay, Value is what you get.

Hopefully this maxim is a little easier to understand now. The quantitative value of an investment is first determined by the cashflow it creates over a given period of time and the comparison of this with your required return.

⁹ Refer to our January 2010 Newsletter for an explanation of the difference between Wonderful, Very Good and Good.

¹⁰ Most of the time a Wonderful company never attains such a level, if it does, purchase as much as you can! We have only identified six such creatures amongst over 2200 listings on the Australian market.

Price is then what you pay – and is usually determined by “the market” – a disparate collection and interaction of faceless computer algorithms, fund managers following the herd or Mum and Dad investors following expert advice from the analyst pages of “Hot Resource Stocks” monthly.

The benefit of these individual market participants exchanging the ownership of these shares is twofold: for the most part, their actions can be ignored, but importantly they occasionally sell for far too little - in which case we buy – or far too much, in which case we sell.

Good investing and good luck!



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APPENDIX.

Valuation using an Historic Example - Cochlear (COH)

Let's go back in time and use COH and February 2005 as a starting point. We will assume that we are considering an investment at that time and have the latest five years worth of data.

Calculations

We calculate a ROE of 56% from the 2005 Annual Report, and that the average ROE for the last five years has been 75%. We will adopt 50% going forward, given that the company is growing at a huge clip, is retaining less profit each year and had just undertaken a very large capital raising.

We adopt a reinvestment ratio of 18%, which is the 5 year historical average.

Assuming a 15% Required rate of return, matching the Internal rate of return to 15% and calculating a CAPE of 30, the following cashflow is calculated:

Year	Start	1	2	3	4	5
Equity per share	\$2.70	\$2.94	\$3.21	\$3.50	\$3.81	\$4.15
Profit (EPS)		\$1.47	\$1.60	\$1.75	\$1.91	\$2.08
Dividend		\$1.11	\$1.21	\$1.32	\$1.43	\$1.56
Reinvested		\$0.36	\$0.39	\$0.43	\$0.48	\$0.52
Share Price	\$35.29	\$44.15	\$48.12	\$52.45	\$57.17	\$62.31
Cashflow	-\$35.29	\$1.11	\$1.21	\$1.32	\$1.43	\$63.87

Therefore, in February 2005, our valuation of Cochlear is \$35.29. If we purchase it now for this price, we should receive \$6.63 in dividends and a sale price of \$62.31 over the next five years.

If we consider Cochlear a "Very Good" company (based on its quality), then we should also apply a Margin of Safety of 33% or more - i.e. Pay no more than approx. \$26.53.

Given that we can purchase COH at \$26.30 in February 2005, this represents good value.

The Results

Year	Feb 2005	Feb 2006	Feb 2007	Feb 2008	Feb 2009	Feb 2010
Equity per share	\$2.70	\$3.06	\$3.87	\$4.77	\$5.74	\$6.50
Profit (EPS)		\$1.50	\$1.79	\$2.45	\$2.82	\$2.82
Dividend		\$1.26	\$1.42	\$1.78	\$2.13	\$2.27
Reinvested		\$0.24	\$0.37	\$0.68	\$0.69	\$0.55
Share Price	\$26.30	\$46.57	\$55.52	\$70.69	\$58.98	\$62.30
Cashflow	-\$26.30	\$1.26	\$1.42	\$1.78	\$2.13	\$64.57

