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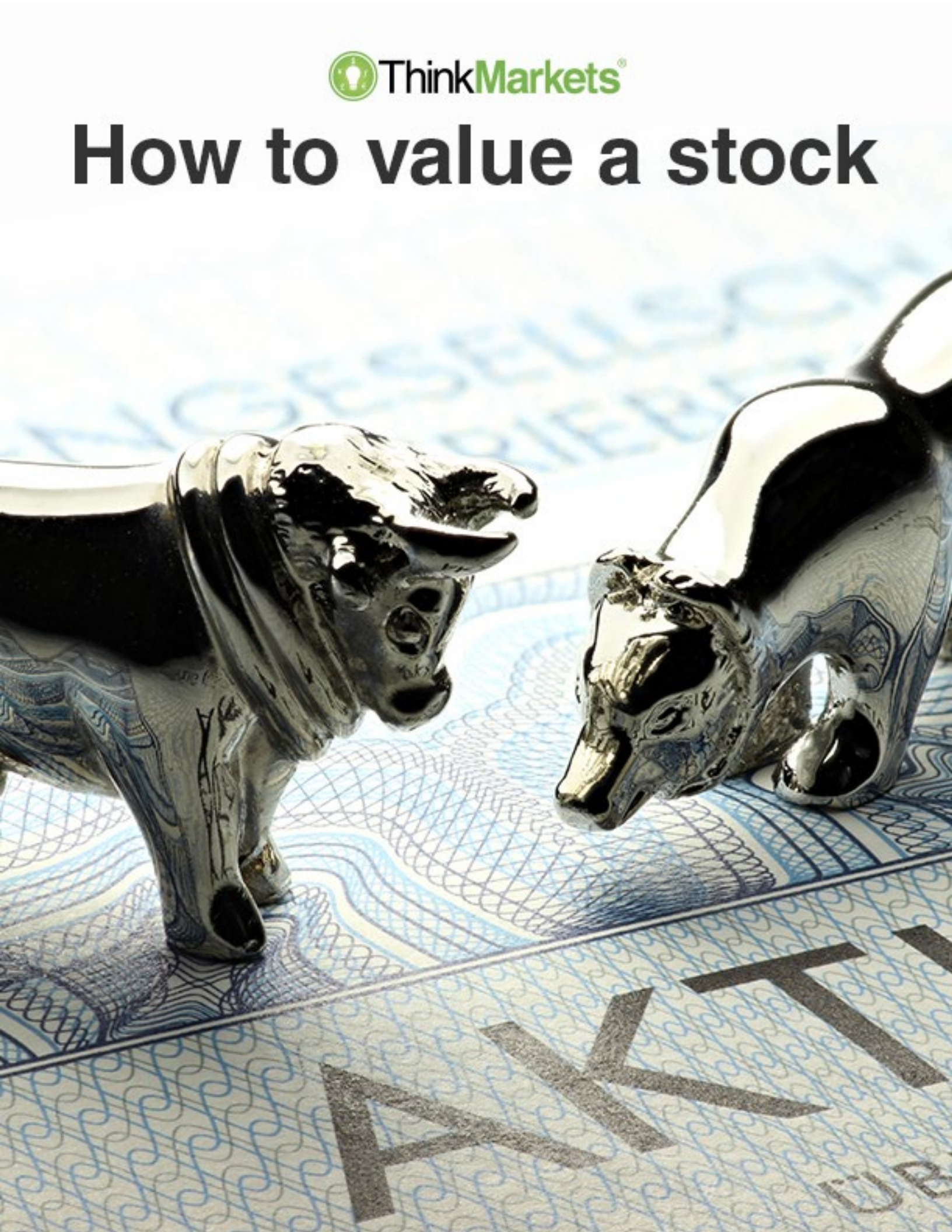
How to value a stock



How to value a stock

I Introduction

Valuing a stock correctly will help you identify the best value-for-money investment opportunities on the stock market. In this Guide we aim to help you better understand the importance of stock valuation, and to show you how to correctly value a stock. By equipping you with the necessary knowledge on how to value a stock, we hope that you will be able to make confident and well-informed investment decisions.

Why value a stock?

Imagine walking into a car dealership intending to buy a car. You'd want to take someone with you who's perhaps more versed in cars, and who will help you get the best car to suit your needs at the right price. The stock market is no different. The goal of investing is to place your money into assets that are consistent with your investing goals, and that are priced attractively in order to facilitate growing your wealth over time.

Learning about stock valuation and different valuation concepts has two potential benefits. Firstly, you should have a better understanding of which stocks are too expensive, that is, they are trading at a higher market price than their intrinsic value. Just as importantly, you should be able to identify which stocks are cheap, that is, they are trading at a lower market price than their intrinsic value.

II Valuing a stock

Fundamental vs technical approach

Before we discuss different stock valuation methods, it is important to learn more about the two major schools of thought when it comes to approaching stock analysis. Both methodologies have the same goal: determining the most opportune time to enter an investment, and equally, when to avoid a potentially poor one. However, they differ in the concepts and tools they each use to reach this goal.

The first methodology, fundamental analysis, aims to determine the inherent value of the asset. With respect to stock valuation, it is focused on the business, the industry, and the environment in which a company operates. As such, fundamental analysis looks at every element that has an impact on the overall value of stock. For example, fundamental analysts pay particular attention to a company's financial

factors such as earnings and expenses, assets and liabilities, and cash flow; non-financial factors such as management; and external factors such as competitors, industry dynamics, and the broader macro economy.
On the other hand, technical analysis aims to determine the most opportune buy and sell points for a company's shares based upon the way its price has behaved in the past. To find attractive trading opportunities, technical analysts asses factors such as short, medium, and long-term trends, momentum indicators, and volume/value metrics. Many technical analysts believe that the market price always represents the intrinsic value of a stock, and by definition, the concepts of overvaluation and undervaluation do not exist.

Even though these two schools of thought are completely different, both can work together in a complementary manner. For example, you might choose to use fundamental analysis to provide the answer to the question: *"In which stock should I invest my capital?"*, and then turn to technical analysis to determine at what price you should enter these shortlisted stocks. The only issue with this strategy is the time it will likely take to conduct fundamental analysis on enough stocks to identify the highest quality prospects. For this reason, many investors prefer to use technical analysis to scan markets for stocks with superior trend direction and momentum, and then to drill down into the fundamentals of only these shortlisted stocks.

Looking at the above examples, there are clearly benefits and drawbacks of each approach. In the first instance, one is trading off significant time required to analyse the fundamentals of every stock first, compared to the ease and speed of running technical analysis scans first. The drawback of improved speed however, is the possibility that you potentially overlook stocks which have outstanding fundamentals simply because they did not appear in your scans. In summary, one needs to decide at the outset where their skills lie with respect to the alternative analysis methodologies, and whether they are prepared to trade speed and ease of analysis for thoroughness and accuracy.

Market value vs intrinsic value

A stock's market value is simply the current market price times the number of shares outstanding. For example, if a company has 1 million shares outstanding and its current share price is $40, then it has a market value, or 'market capitalisation', of $40M. The terms market value and market price are often used interchangeably by investors, as via the above calculation, they are essentially referring to the same thing.

Whilst market value is an explicable concept (i.e., the last trade price and number of shares outstanding are both inputs which are not open to interpretation), intrinsic value varies from investor to investor. This is because each investor is likely to interpret the fundamentals of a company differently. For example, what are the risks associated with a company's earnings? For an oil company, what will be the average selling price for a barrel of oil over the next 12 months? There are many more examples we can provide, but clearly, each analyst will likely have a different opinion of a company's fundamental

inputs and drivers, and therefore each is likely to ascertain a different intrinsic value for the company's shares.

A handy real life example to illustrate the subjectivity involved in determining a stock's intrinsic value comes from the legendary mutual fund manager Peter Lynch. In his book *One Up on Wall Street*, on pages 164-165, Peter notes that *"A quick way to tell if a stock is overpriced is to compare the price line to the earnings line"*. To summarise this method, one should try to purchase a stock when it is well below its value line, and to sell it when it rises substantially above it. Mr. Lynch's choice of value line is the price which represents a price to earnings ratio of 15.

The 'PE Ratio' (PER) as it is more commonly known, is a widely used measure of a stock's value. It is calculated by dividing a stock's price by its earnings per share (EPS). In practical terms, it represents the time it will take to recoup one's investment assuming current earnings remain the same. So for example, if a stock has earnings per share of $1, and a price of $10, it's PER is 10, and it will take 10 years at current earnings to recoup an investment in the stock.

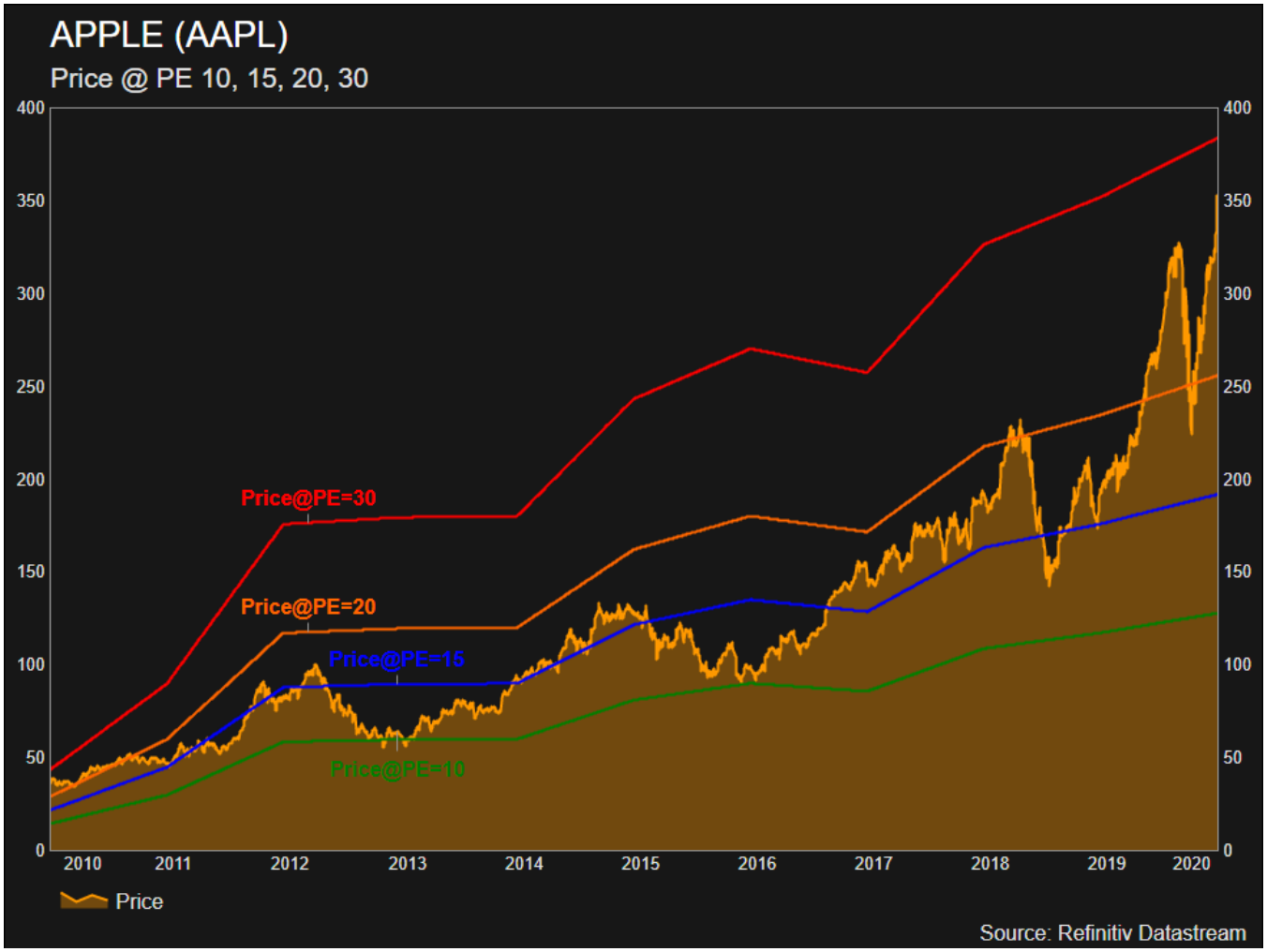


Figure 1: Case Study, Using Price at PE to determine intrinsic value

Let's analyse Apple (AAPL) over the last 10 years. Apple has been one of the best performing stocks in the world over this time, but could you have determined at any time if it was undervalued? Well, let's use Mr. Lynch's approach. If you assume a stock has EPS of $1, its price at a PE of 15 is $15. If it has EPS of $1.50, its price at a PE of 15 is $22.50, and so on. In the chart above, the blue line represents Apple's price at a PE of 15. For interest's sake we've also included the price at a PE of 10, 20, and 30.

Many professional investors would consider a growth stock like Apple to be very cheap if they could purchase it at a PE of less than 10, good value between 10-20, fairly valued between 20-30, and expensive above 30. Using Mr. Lynch's approach, and focusing on a price at PE of 15, one would be looking to buy Apple shares in late 2012-ealy 2013 around $60, and again in late 2015 just below $100. Really, it's only until very recently with Apple smashing through the $350 mark that one would start to be really concerned that Apple is becoming excessively overvalued.

It is important to note here that different analysts are likely to have different opinions on what value represents. Some may consider that only a price at PE of 10 is undervalued, and some might be comfortable with 20. Also, analysts typically have different perceptions around the definition of value for growth stocks compared to income or value stocks, often given growth stocks greater leeway when it comes to PER. So, value is in the eye of the beholder, and you will get a better feeling for where you sit within the spectrum with experience.

Absolute & relative valuation

Before we move on to the most popular methods of how to value a stock, it is important to note that the following valuation methods fall into two main categories: absolute and relative valuation. Absolute valuation refers to stock-specific valuation, that is, *"What is the value of BHP?"*, whereas relative valuation goes further and asks the question *"What is the value of BHP compared to Rio Tinto…or compared to rest of the mining sector…or compared to the rest of the ASX?"*

When you think about it, you can’t really determine relative valuation without first determining absolute valuation, so let's take a closer look at some of the most widely used absolute valuation tools first.

Earnings Per Share (EPS)

We've already talked about this a little. Earnings per share is probably the most basic valuation method. Its popularity lies in its simplicity, as all you need to do is take the company's profit and divide it by the number of outstanding shares of its common stock. In layperson terms, the EPS shows you how many dollars are earned by each share.

$$\text{Earnings Per Share (EPS)} = \frac{\text{End-of-Period Common Shares Outstanding}}{\text{Net Income} - \text{Preferred Dividends}}$$

The EPS method is focused on profitability. The higher the EPS the more profitable the company has been.

Price to earnings (PER)

$$\text{PE Ratio (PER)} = \frac{\text{Stock Price}}{\text{Earnings Per Share (EPS)}}$$

We discussed this one earlier too. The PER is arguably the most popular valuation metric for investors. The success of this method lies in its simplicity and the fact that one can use it to compare stocks on a like for like basis (so it's also handy for *relative* valuation). For example, just considering EPS only for a moment, assume that BHP's EPS is $4, and Rio Tinto's EPS is $8. Which stock offers better value?

One might ordinarily assume that Rio Tinto with its superior EPS is the better pick. Now consider that BHP shares are currently trading at $40 and Rio Tinto shares are currently trading at $100. Now which stock offers better value?

Hopefully this demonstrates the crux of using the PER to compare stocks. In the above example, BHP has a PER of 10, and Rio Tinto has a PER of 12.5. Remember, a stock's PER also represents it's payback time at current earnings. So in this example, BHP has a payback period of 10 years, and Rio Tinto of 12.5 years. Would you rather get your money back on an investment in 10 years, or 12.5 years? I thought so! So, in this example BHP offers a better value proposition than Rio Tinto.

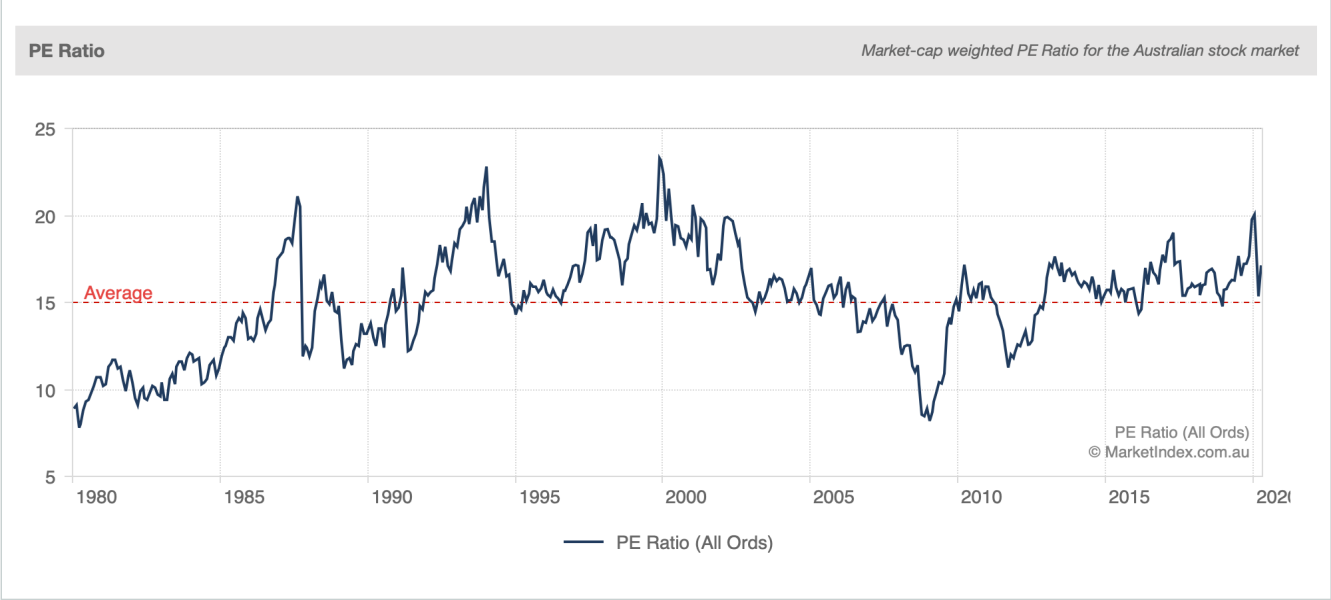


Figure 2: P/E ratio for the Australian stock market (ASX) (Source: Marketindex.com.au)

The PER shows its versatility even more when you start to compare a stock's PER to its sector's PER, or perhaps even the whole market's PER. This is an example of relative valuation.

In Figure 2 above, we display the PER for the S&P ASX 200 over the last 30 years. A fairly typical rule of thumb for the market's PER is that it is good value around 10, fair value around 15, and overvalued above 20. Certainly, if you look at the 1987 stock market crash, and the 1999-2000 Dot-Com Bubble peak, these were associated with market PER's well in excess of 20. Similarly, at the depths of the GFC, it plunged below 10 flagging a potential buy signal.

Referring back to our earlier hypothetical BHP/Rio Tinto example, one could argue that if the market PER is approximately 15 as suggested in Figure 2, then both stocks would represent good *relative value* to the broader stock market in general.

There are a number of potential traps hidden in PER values that investors need to be aware of. For example, a company with a very low PER may be in financial distress - hence it has a very low 'E' component dragging the PER down. If a company has a low PER because it is in financial distress, it is not undervalued, it is simply riskier. Similarly, a stock with a very high PER should not automatically be assumed to be expensive. Remember, analysts are always looking forward. It is possible that next year's earnings will be double this year's earnings. If you do the math, this means that the company's 'forward PE' is half of its current, or 'trailing PE'.

Discounted Cash Flow (DCF)

DCF is a sophisticated valuation method generally used by professional investors. When conducting a DCF analysis on a company, the investor considers all of the possible factors that may impact on the company's cash flow over a number of forward periods. Cash flows could be positive, such as revenue, or negative, such as expenses and tax. Once all of the cash flows have been projected, the investor then 'discounts' these back to a present value using a 'discount rate'. The discount rate is typically the investor's required rate of return.

The formula applied to determine the DCF is as follows:

$$DCF = CF_1/(1+r)^1 + CF_2/(1+r)^2 + CF_n/(1+r)^n$$

Where:

- CF = the cash flow for the given year. CF_1 is for year one, CF_2 is for year two, CF_n is for additional years
- r = the discount rate

Once applied, a DCF valuation provides an investor with an explicit value that reflects how much you would be willing to pay for a stock now in order to receive exactly the discount rate of return over the projected period.

So, in practical terms, if the DCF value per share of a certain company is greater than its current market price, it is undervalued. By investing in the company, the investor will exceed their required rate of return. Likewise, if the DCF value per share of a certain company is less than its current market price, it is overvalued. By investing in the company, the investor will fail to meet their required rate of return.

The biggest limitation of this method is that it is highly complex, and also highly dependent on the quality of the investor's financial forecasts and analysis. Therefore it is probably best to leave DCF analysis to the professionals.

Price to Book Ratio (P/BR)

The price to book ratio is another popular valuation method widely used to determine the value of company. A company's 'book value' is calculated by subtracting its total liabilities and intangible assets (i.e., assets that lack physical substance e.g. copyright, patents, trademarks etc.) from its total assets.

The company's 'book value per share' (BVPS) is simply the book value divided by the number of shares outstanding. The company's price to book ratio (P/BR) is then the market price per share divided by the BVPS.

$$\text{Price to Book Ratio (P/BR)} = \frac{\text{Market price per share}}{\text{Book value per share}}$$

The P/BR is widely used when it comes to buying and selling whole companies. It gives investors an insight in to today's value of the company if all of its assets were sold and its debts were repaid.

Price earnings to Growth (PEG)

A stock's PEG Ratio is based on its PER ratio and the rate of growth in its EPS. It is calculated by dividing a stock's PER by the growth rate of its earnings per share for a certain period of time. Analysts usually measure the PEG ratio over a one year, three year, and five year periods. The formula for calculating the PEG is as follows:

$$\text{Price earnings grow ratio (PEG)} = \frac{\text{Price / EPS}}{\text{EPS growth\%}}$$

As with PER, it is worth making a distinction between forward PEG and trailing PEG. Analysts tend to be forward looking, so they will project earnings growth into the future to determine PEG. The idea behind PEG is to paint a more complete picture of the stock's valuation, as it represents its future value proposition and not just its current value proposition. Still, for the average investor who is unable to make accurate projections of a stock's future EPS growth, using trailing PEG still allows for a better insight into its value than using PER alone.

It might be interesting to revisit our BHP vs Rio Tinto case study from earlier on. Remember, in this hypothetical example, BHP was trading at $40, had EPS for the current period of $4, and therefore a PER of 10. Rio Tinto on the other hand had a share price of $100, an EPS for the current period of $8, and therefore a PER of 12.5. On this first pass, just comparing PER's demonstrated that BHP was the better value of the pair.

Now, what if we were to assume that last financial year, BHP's EPS was $3, and Rio Tinto's EPS was $5? Further, that after looking at some broker reports, we evaluate that BHP's projected earnings for next financial year are likely to be $5, and Rio Tinto's $12?

Which stock represents better value now? It is exactly this sort of question you should be able to answer as a stock analyst! Let's go to the PEG formula for each stock:

$$\text{BHP trailing PEG} = \frac{\$40 / \$4}{((\$4 / \$3) - 1) \times 100} = 0.3$$

$$\text{RIO trailing PEG} = \frac{\$100 / \$8}{((\$8 / \$5) - 1) \times 100} = 0.21$$

$$\text{BHP forward PEG} = \frac{\$4 / \$1}{((\$5 / \$4) - 1) \times 100} = 0.4$$

$$\text{RIO forward PEG} = \frac{\$4 / \$1}{((\$12 / \$8) - 1) \times 100} = 0.3$$

Note, if a stock's PEG is positive and less than 1, it is generally considered to be an indication of strong earnings growth and value. Alternatively, if a stock's PEG is increasingly greater than 1, it is still demonstrating earnings growth but is generally considered to be of less attractive value.

Doing the math, we find that BHP has a trailing PEG of 0.3 and a forward PEG of 0.4, and Rio Tinto has a trailing PEG of 0.21 and a forward PEG of 0.3. Whilst it is reassuring that each company has a sound trailing PEG, as analysts we prefer to look forward. As such, we place far less emphasis on this data than the data for forward PEG. In this regard, Rio Tinto (despite its inferior PER) appears to be the better value proposition.

We'll make one last point here regarding PEG, and why it is a better valuation metric than PER alone. Remember from our earlier discussion about PER, we talked about a potential valuation trap where an investor might be fooled into thinking that a stock with a very low PER represents excellent value. Using the PEG instead of PER to conduct our analysis should confirm or deny this.

For example, assume that stock ZYX has a current period EPS of $1 and a market price of $4. This implies a PER of 4 - very low indeed. Does this mean ZYX is a fantastic buy? Possibly, but what if I told you that ZYX's EPS in the previous period was $2, and based upon a number of broker estimates, its expected EPS for next period is just $0.20?

$$\text{ZYX forward PEG} = \frac{\$4 / \$1}{((\$0.20 / \$1) - 1) \times 100}$$

Well hopefully, you didn't start working out ZYX's *trailing* PEG! Whilst it's not a good sign that the company's EPS shrunk last period, remember, analysts prefer to look *forward*. So, after doing the math, we discover that ZYX's forward PEG is -0.05. A negative PEG in this case confirms that the stock's earnings are shrinking, and is generally considered to be an indication that a stock is overvalued. So the PEG has shown us that ZYX is not cheap after all.

III Stock valuation and price movements

Investors will likely use a range of stock valuation methods to identify attractive investment opportunities. Regardless of the chosen approach, output values change constantly as inputs such as price, earnings, and growth rates are amended on an almost daily basis. Companies tend to report results on a quarterly or bi-annual basis, which feeds analysts with fresh data, for example changes in net income, changes in cash flows, changes in dividends etc.

As such, stock valuation methods are updated in real time. The result is that investors regularly adjust their portfolios to reflect changes in valuations, as they look to decrease holdings in stocks that now demonstrate lesser value, and increase their holdings in stocks that now demonstrate greater value. It is this order flow that moves the market up and down on a daily basis, and in this way, market prices are often referred as the only 'true' value any investor can profess to know.

IV Summary

Investing in the stock market is arguably the best way to grow your capital. However, before you decide to invest, you should familiarise yourself with a number of different methods of stock valuation. We've

covered some useful ones here, but do not expect that any one of these valuation methods used in isolation is going to be appropriate in all circumstances. One size rarely fits all, and the best approach is to use different methods to build up as much evidence as possible that a stock represents compelling value.

As with anything in life, practice makes perfect. This Guide should only be a starting point from which to launch further into the field of stock valuation. There are a number of terrific courses and resources available online, and many of them are free. No doubt, the more knowledgeable and proficient you become in this endeavour, the better your portfolio will perform. After all, as the legendary investor Warren Buffet once said, to be successful in investing: *"Just buy something for less than it's worth".*

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