Our guiding principles:

- **Transparency & alignment of best interests with our fellow shareholders**
- **Independence of thought in order to avoid the market herd**
- **Adherence to our investment philosophy and process**
- **Focus on costs: management fees capped, low stock turnover**

Investing using Mental Models
Behavioural Finance: Avoiding the traps by developing a different way

Dear fellow shareholders,
This letter is the third in our series looking at Investing using Mental Models. As we mentioned in our first letter of this series, we use mental models in our daily lives to help us make decisions. 'Rules of Thumb' were mentioned as providing short cuts and we highlighted both their uses and their dangers. The study of many such biases has given birth to a whole new discipline in finance and investing—**behavioural finance**. It is towards this fascinating discipline that we would like to turn now. There are many sub-categories within Behavioural Finance, too many to cover all at once. However, we would like to highlight two important ones in this letter: **Over-confidence and Anchoring.**

Over-confidence: Ask a room full of fund managers if they are better drivers than average and the result will see virtually all raise their hands. For clarity, long hours over several years are spent developing the skills required to become 'threshold competent' as a professional investment manager. Developing one's driving skills, however, is not part of the remit! Therefore, such an answer to the question of driving competency points to one of the most dangerous biases in investing—over-confidence. This outlines a fascinating tension within the fund management community. On the assumption that to succeed in the investing profession, it is important to do something different and better than the competition, investors must retain a certain confidence in their abilities—separating them from the crowd. Yet, this has to be set against the knowledge that as humans we are fallible and therefore make mistakes. It is an interesting dichotomy.

One area where over-confidence is often observed in our industry, to much detriment, is in the valuation of companies. One of the most common tools used is the **Discounted Cash Flow model** (DCF model). It is based on the logical premise that the worth of a business is the sum of all its future cashflows to the end of its life, discounted back to the present day, at an 'appropriate' discount rate. Over-confidence manifests itself in two main ways here.

Firstly, there is over-confidence in the forecasts as to what the future cashflows of any given business is going to be, decades into the future. Once this impossible task has been completed, then a discount rate must be created—by combining the cost of debt with the cost of equity. I could spend the next long while opining the many shortcomings of the Capital Asset Pricing Model (or CAPM for short) which is used to calculate the cost of equity; suffice it to say that an artificially low discount rate is often employed to elevate valuations and thereby prospective investment returns.

The **second** main aspect of over-confidence is the excessive faith placed in these DCF valuations. Many times in my early career sell-side analysts would send their discounted cash flow valuations and their price targets, posted on their research to two decimal places! Such accuracy is not only impossible, but also misleading. **Caveat emtpor**—let the buyer beware, rings particularly true in this instance. So how do we try to guard against the dangers of DCF valuations and the over-confidence they can draw out?

Rather than try to compute a DCF model we use the mental model of **Inversion** to try and solve this issue. We invert the DCF by creating a **reverse discounted cash flow valuation**. We ask, what annualised return do we require as an investor? We then subtract the dividend yield from our required return, as this is a cash return in relation to market value. This allows us to determine the likelihood of earnings and cashflow growth delivering the balance of our required return. For further information, this approach was covered at some length in our **q4 Investor letter of 2018** in our analysis of **AstraZeneca's valuation.**

Most importantly, it allows us to reduce greatly our reliance on forecasting and instead focus on analysing what has happened to our businesses in the past. We believe this changes the investment risk materially in our favour. In order to try and combat over-confidence further, we start from the assumption that 'we know less than we think we do.' Accuracy doesn't necessarily increase with more information, it often just enhances one's misleading level of confidence. As the always excellent commentator, James Montier, wrote in his 2002 paper 'Part man, part monkey', "the illusion of knowledge is the tendency for people to believe that the accuracy of their forecasts increases with more information." What we do with the available new information is much more important. So often it appears that the illusion of control and the illusion of knowledge lead to greater over-confidence and disappointing investment returns.

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'Anchoring' & Recent Activity

Anchoring

The anchoring effect occurs often when we are faced with uncertainty. Many experiments have been conducted which show the prevalence of anchoring. Two well-known economists, known as the founding fathers of Behavioural Finance, Amos Tversky and Daniel Kahneman, conducted a classic experiment in 1972. In it they spun a wheel of fortune which numbered 1 to 100. However, the wheel was rigged so that either 10 or 65 were the only possible two outcomes. Next participants were asked a totally unrelated question—the percentage of the UN made up of African nations. The median response from the group who saw the '10' was 25% and the for the '65' group it was 45%! People were reaching for totally irrelevant anchors when forming their opinions.

In the context of investment valuation, past prices are likely to act as an anchor to current prices, as well as analysts' future price targets being anchored to current prices. The average price target of analysts sits around 30% above the current market price. Given what these valuations purport to represent, it suggests that most analysts are anchoring their price targets to the current share prices and not fully representing their considered fundamental views.

It has been known for analysts to be concerned that their stand alone valuations are too far away from current prices and adjust them accordingly. In over two decades involved in the investment community, I can't recall analysts producing DCF valuations and price targets for medium and large sized companies that implied 100% upside to current prices. Such is the strength of anchoring to current share prices, it is deemed outlandish to make such a target. Yet, take Compass Group as an example. Five years ago its share price was trading at £10. The most positive price target from a broker with an 'outperform' rating, was £13.26. This fits in with what was mentioned above—average price targets around 30% above the share price. However, most of the other analysts in 2014 had DCF valuations that produced price targets around £11, only a 10% increase. Fast forward five years to 2019 and what is the current share price as of writing? Compass Group: £20.28!

Is this phenomenon due simply to Anchoring? We would argue that it is not. We have talked much about the power of incentives in previous letters. Could it be that the flow of transactions, through which brokers make their money, would dry up if only fundamental valuations were produced? Anchoring both 'buy' and 'sell' recommendations around the current share prices, creates more impetus to trade. In this gold rush the brokers are selling the spades promising quick riches for the prospecting investors. This is one reason why we generate our own research at Castlebay and don't rely on external brokers. We don't create price targets which could lead us to anchor our thoughts in an unhelpful way. Instead, we evaluate the potential annual returns our companies are likely to deliver, based largely on the fundamental returns they have made in the past.

Being aware of these behavioural biases does not necessarily provide a cure. However, in our bid to continue to improve at Castlebay, we have developed frameworks such as our investment checklists and reverse DCF valuations in order to try to mitigate these behavioural shortcomings. We also eschew relative valuations and market prices and instead determine the likely investment returns on offer for our businesses. This allows us to focus on whether our companies are allocating capital well, reinvesting at high incremental rates of return that will compound shareholder equity value at rates we deem appropriate.

Over the page we talk about a divestment and a further investment, both made during the last quarter. Once again we would like to thank you for your continued interest and support.

The value of investments can fall as well as rise & you may not get back what you invest.
Past performance cannot be relied upon as a guide to future returns. This newsletter should not be construed as investment advice.

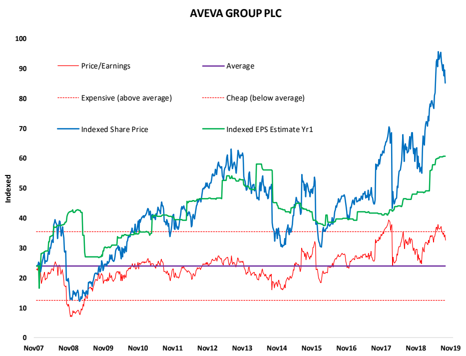
In Focus & Portfolio activity

Castlebay Investment Partners

AVEVA

Is the market falling in love with the Aveva story?

We sold our remaining position in Aveva in mid-August. The valuation margin of peril stood at c50% following the deal with Schneider Electric. We had maintained our position from the initial reduction (5% to 2%) which was made a year earlier in August 2018. From a share price performance this has been the correct thing to do as the shares have risen from £26.82 to £38 (briefly touching £40). The two main reasons for selling the remaining holding are due to Operational Margin of Safety and Valuation Margin of Safety considerations.



Since the deal, incremental; accruals and cash returns on equity have declined, significantly. Historically, returns (for this unleveraged business) exceeded our 20% target level. However, they have now fallen to below 10%. This means that with a valuation margin of peril of 50%, 35 years' earnings compared to the average of 24 years, there is a large de-rating risk.

This might be precipitated by concerns over a slowing global economic environment, with government yield curves inverting both in the US and UK recently. However, our sell case is not based on this. Rather, the operational declines in returns and valuation premium suggests that the market has fallen too much in love with the 'digital twin' story. On a Retained Return on Equity basis, given the fall in ROE, the shares are more than 7 years expensive!

Craneware®

Some bumps in the road for Craneware

Craneware has developed its business well since our initial purchase of the shares back in November 2016. In some respects they are at the most exciting stage of their development now as they have launched their Trisus Cloud platform. This seeks to bring several of their key analytics together such as Chargemaster Toolkit; Trisus Claims Informatics and their Pricing Analyser in order to enhance further the value they can create for their customers. This Trisus platform will allow them to develop a network effect which will feed off itself, thereby leading to a step change in revenues and cashflows generated for the business. At our initial investment, Craneware was in 1 in 4 US hospitals, now they are in 1 in 3.

However, the company's development has not been without a bump in the road, resulting in a profits warning in June. The Chief Executive and founder, Keith Neilson has held his hands up and taken responsibility for this largely self-inflicted issue. It was due mainly to the Trisus and other product launches overlapping, which resulted in too much choice for customers and a short-term drop off in sales.

As we endeavour to do, we like management teams who are able to admit to their mistakes and the lessons learned from them. These teething issues should not mask the fact that once the full network effect of the Trisus platform is established, with Craneware's customer base, the additional products will be utilised and revenues should increase.

The weakness in the share price resulted in a spot Owner Earnings' Yield of 4.7% and we used the opportunity to add to our position at the end of July. As we expect growth in cashflows to return following the hiatus at the interim results, this should produce a double digit ERIR (Expected Real Investment Return) of 12-15% annually.

Quality Table

The fund's ROE remains near its high of 43% and the free cash flow yield is in excess of the market. Also worthy of note is the decline in cash conversion of the market. Previously, this was nearly 100% as some cyclical sectors were enjoying good cash generation near the peak of their cycles. We are beginning to see this effect reduce and cash conversion for the market return towards more normal levels. The free cash flow yield of our fund is more attractive than the market (excluding financials) suggesting that we are not overpaying for the higher quality businesses in our fund.

Quality Table	Castlebay Fund	Market
Return on Equity	42%	24%
Op profit margin	23%	15%
Net debt to equity	52%	89%
Cash conversion	105%	94%
Free Cash Flow yield	4.3%	3.9%

Source: Bloomberg as at 30/09/22019

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