How Morningstar estimates a stock's intrinsic value

Australia and New Zealand director of equity and credit research Adam Fleck explains the methodology behind Morningstar's cornerstone moat ratings, fair value estimates, and star ratings, all of which are available to Morningstar premium subscribers.

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If stock prices always reflected the true intrinsic values of the underlying businesses, there would be no point to stock picking. You might as well invest in an index fund and call it a day.

However, the reality is that stock prices often deviate from fair value, sometimes by a wide margin. Ben Graham--generally considered the father of value investing--provided a great analogy. Graham said that in the short run, the market is a voting machine, but in the long run, it is a weighing machine.

At any given time, a stock's price reflects its current popularity and the market's whims. Sooner or later, though, a stock's price converges toward the intrinsic value of the underlying business.

Intrinsic value, in turn, is determined by the cash a company can generate. We assign fair value estimates to each of 200-plus companies in our Australian and New Zealand coverage universe.

Our analysts consider valuation from a variety of angles, but their primary valuation tool is discounted cash flow, or DCF, analysis.

Discounting cash flows

DCF analysis is based on the premise that a company is worth the sum of its future free cash flows, discounted back to the present at a rate that provides an adequate return on investors' capital.

Therefore, Morningstar's analysts must forecast the future level of cash flows, as well as make assumptions about an appropriate discount rate.

The discount rate used is the weighted average cost of capital, or WACC, which consists of both a cost of debt and a cost of equity. We assume a long-term nominal interest rate, and consider a company's credit quality, to arrive at a cost of debt.

However, the cost of equity is a more difficult assumption to make--what level of return do investors require in owning a particular stock?

This is one of the most hotly debated topics in finance, and there is no easy answer. The most common tool for estimating cost of equity in practice is the capital asset pricing model, or CAPM.

However, CAPM has several drawbacks, including the fact it replaces one unobservable input (cost of equity) with three (the risk-free rate, beta, and the equity risk premium). There is also a dubious assumption that share price volatility is a valid measure of risk, as it can give false, lagging signals.

Morningstar has adopted a simplified methodology based on the idea of CAPM, but without the false precision. For companies with a primary business is in Australia, we assign a cost of equity of 7.5 per cent, 9.0 per cent, 11.0 per cent, or 13.5 per cent.

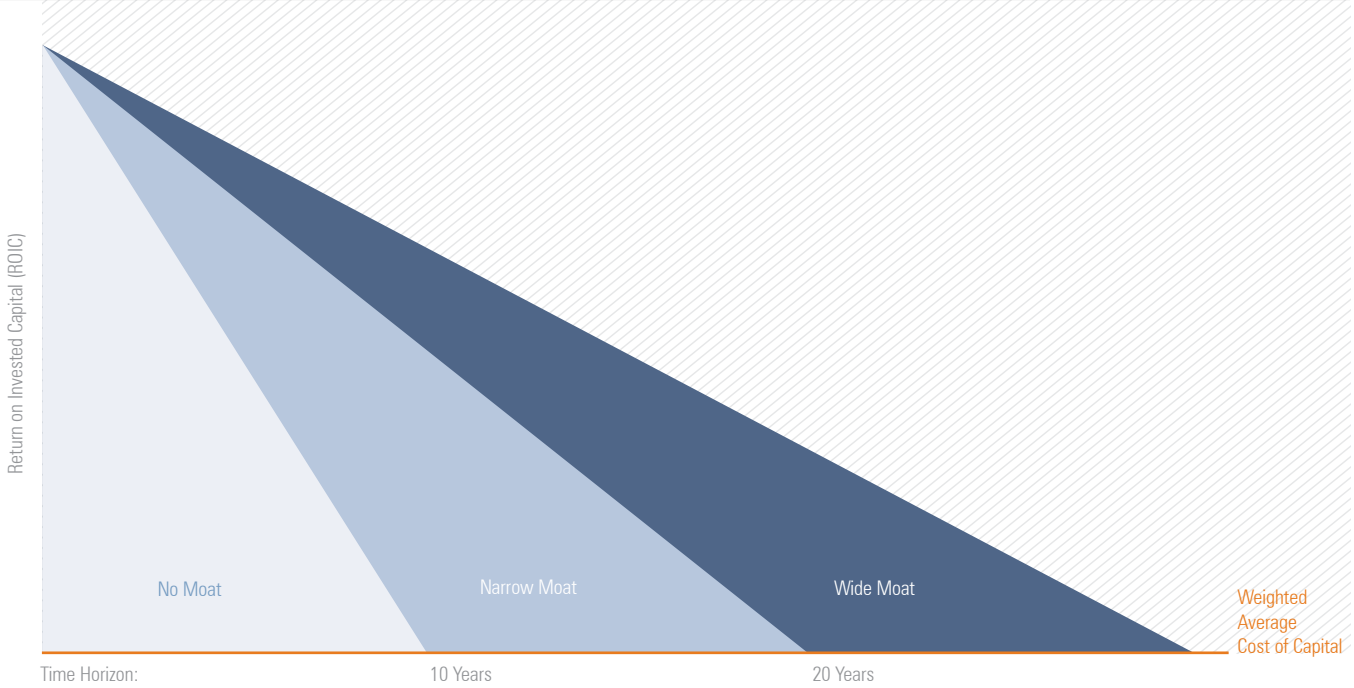
The choice of a cost of equity depends on a company's level of systematic risk--risk that is correlated with the overall market, and thus can't be eliminated through diversification.

The most common cost of equity across Morningstar's coverage universe is 9.0 per cent, about in line with the long-run return on Australian stocks.

Companies with above-average systematic risk (such as certain economically sensitive financial and industrial companies or cyclical resource stocks) receive an 11.0 per cent or 13.5 per cent cost of equity, while those with low systematic risk, such as infrastructure companies like **Transurban** (ASX: TCL) or REITs like **Dexus** (ASX: DXS), receive a 7.5 per cent cost of equity.

A premium is added to the base of equity for some international markets. This elevates the required rate of return, and reduces the fair value estimates, for companies with meaningful exposure to countries with additional sovereign risk such as South Africa or Indonesia.

Exhibit 1: Companies with economic moats can generate excess ROICs for longer



Forecasting future cash flows

It is easy to waste time massaging the cost of capital. Our approach of broad cost of equity buckets means we focus on getting the cost of capital roughly right, rather than exactly wrong, and changes to the cost of capital are relatively infrequent.

This leaves more time for the much greater, and more important, challenge of forecasting cash flows. There is plenty of room for differences of opinion on what future cash flows will be.

We've found that it's often easier to predict the future cash flows of wide- and narrow-moat companies. It is much harder to pin down a valuation for a no-moat company.

Companies with moats also tend to compound their intrinsic values more quickly and reliably than companies without moats. Strong franchises generally provide more opportunities to add value through reinvestment.

However, predicting the future is difficult. Many assumptions go into Morningstar's cash-flow forecasts--estimates of volumes and prices, gross profit margins, operating costs, capital expenditures, investments in working capital, and so on.

Any of these forecasts could prove to be either too optimistic or too pessimistic. Investment diversification is critical to offset this risk.

A three-stage DCF model

Morningstar's DCF model has three distinct stages. In Stage 1, analysts make specific predictions about individual financial statement line items, such as revenue, operating costs, and capital expenditures. This stage covers the first five to 10 years.

In Stage 2, analysts only need to make assumptions about earnings growth, the return on new invested capital (which determines how much incremental investment is required to achieve that level of growth), and how long Stage 2 will last.

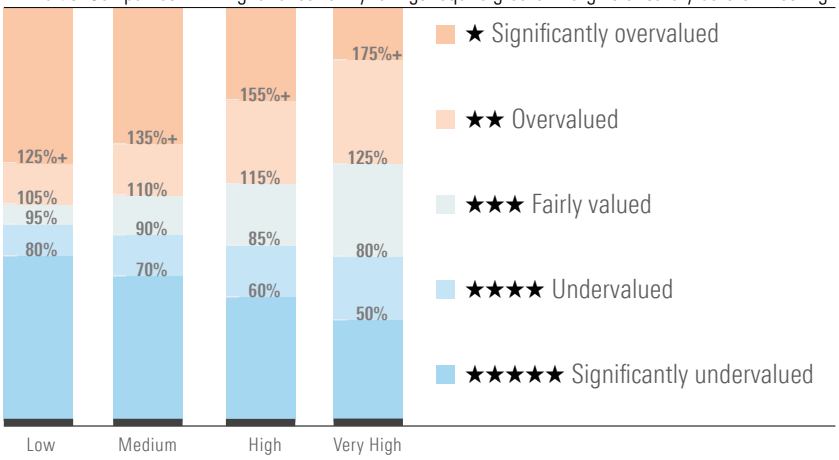
This is where economic moat ratings are explicitly quantified in Morningstar's valuations. The wider a company's moat, the longer it should be able to earn returns on new invested capital in excess of its cost of capital.

As seen in Exhibit 1, we believe companies with a narrow moat are likely to achieve normalised excess returns beyond 10 years, while wide-moat companies are likely to sustain excess returns beyond 20 years.

In Stage 3, Morningstar assumes every company's return on new invested capital has converged to its

Exhibit 2: A lower Price/Fair Value Estimate ratio reflects undervaluation

Exhibit 3: Companies with higher uncertainty ratings require greater margins of safety before investing



cost of capital. In other words, no economic moat lasts forever. Sooner or later, competition will catch up with a company and prevent it from creating value through ongoing investment.

Assuming a company is currently earning excess returns, the longer it can put off Stage 3, the better.

Theoretically, once a company reaches Stage 3, we would expect a fairly priced stock to deliver annual returns--dividends plus capital appreciation--in line with its cost of equity.

Star ratings and uncertainty

We ultimately let the market dictate when a security is trading at an attractive discount or premium, and our price/fair value ratios are a useful way to rank available investment opportunities.

We view stocks trading below our fair value estimate, or a price/fair value estimate ratio less than one, as undervalued.

However, not all price/fair value estimate ratios are created equal. Morningstar analysts also assign uncertainty ratings to every company, which reflect how confident the analysts are in their fair value estimates.

Uncertainty can be low, medium, high or very high. Each of the uncertainty ratings is associated with a suggested margin of safety.

For example, a company with low uncertainty only needs to be trading at a 20 per cent discount to fair value to receive a 5-star rating. With high uncertainty, the company needs to trade at a 40 per cent discount to earn a 5-star rating.

The relationship between star ratings, uncertainty, and the price/fair value ratio can be seen in Exhibit 3.

A 5-star rating indicates our belief that appreciation beyond a cost-of-equity-like return is highly likely over a multiyear timeframe, generally within three years--although it is impossible to predict the exact timeframe in which market prices may adjust.

A 3-star rating indicates our belief investors are likely to receive fair (or near cost of equity) annual returns over a multiyear period, while a 1-star rating indicates a high probability of undesirable returns over a multiyear timeframe, and exposure to potential capital loss.

Long term matters most

The most important thing to know about DCF analysis is that assumptions for the long term matter much more than short-term results.

This is the opposite of the "price targets" commonly published by Wall Street analysts, which are frequently calculated by applying a price/earnings multiple to next year's earnings.

As the highest-quality businesses can stick around for a century or more, missing earnings estimates by a few per cent in any single period is trivial. Indeed, short-term earnings are subject to significant management influence.

For example, **Dulux** (ASX: DLX) could slash its research and marketing budget and short-term earnings would rise. However, the long-run value of the business would probably decline with a narrowing of the intangibles-driven moat, due to a lack of investment in the brand.

Again, our fair value estimate focuses on the present value of future cash flows. It's not a target price, but the value we believe offers a fair return for investors.

Because the fair value estimate represents our valuation as of today, this estimate should rise over time, at an appropriate rate of return (which we define as the cost of equity), minus any dividends paid to shareholders (which, of course, are part of the total return).

After all, if we think a stock is fairly valued today at $100, and our cash flow forecast is accurate, it should be worth $109 a year from now, assuming a 9 per cent cost of equity and no dividends. We refer to this steady increase as the time value of money.

That's not to say investors can afford to ignore short-term developments. Short-term earnings can provide important clues about whether a company's competitive position is strengthening or weakening over time, which in turn determines its future market share, margins, and returns on capital.

Some of the best opportunities can arise when other investors become overly fearful about a short-term headwind that will turn into a long-term positive.

In decision-making, it's a normal human bias to weight near-term information highly, but excessively discount distant events and trends.

Go to www.morningstar.com.au/video/star-ratings/2699 to hear more from Adam Fleck on the Morningstar rating for equities.

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