**Morningstar
Equity and
Credit Research**

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Introduction to Morningstar and Our Equity and Credit Research

Morningstar is one of the most recognised and trusted names in the global investment industry, serving approximately 250,000 financial advisors, 1,400 asset management firms, 27 retirement plan providers, 300,000 retirement plan sponsors, and 10.9 million individual investors around the world. Our investors first approach has led to a strong reputation for independence and objectivity, as our interests are well aligned with those of our clients.

In Australia and New Zealand, Morningstar helps individual, adviser, and institutional investors achieve their long-term investment goals by providing insightful, differentiated, independent, and actionable equity and credit research, and portfolio management services.

Morningstar has more than 100 equity analysts globally, covering approximately 1,500 stocks, making us one of the largest independent research teams in the world. A team of about 20 analysts and strategists based in Australia cover about 200 Australian and New Zealand stocks and approximately 35 credit securities.

Morningstar's analysts apply a consistent, rigorous, and proven global methodology which focuses on long-term fundamental valuation, competitive advantages (economic moats), risk, financial health, and stewardship. Each equity research analyst covers 15 to 20 companies and research is reviewed on an ongoing basis (and at least quarterly) to ensure our investment ideas are always relevant. Local analysts exchange insights with global sector teams in the United States, Europe, and Asia resulting in an enriched product and ensuring global consistency. Site visits and frequent interaction with company management and other industry participants foster deeper analytical insight.

Morningstar's equity research independence means we do not offer issuer-paid coverage. In other words, we do not receive commissions for providing research in Australasia and we do not charge companies to be covered; instead our investor clients pay a subscription fee for ongoing service. We take an investors first approach to choosing coverage companies which is detailed later in this report.

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Exhibit 1 Morningstar Global Equity Research

Brazil	Denmark	Australia
Canada	Finland	China
Chile	France	Dubai
Mexico	Germany	Hong Kong
United States	Italy	India
	Luxembourg	Japan
	The Netherlands	Korea
	Norway	Singapore
	South Africa	Taiwan
	Spain	Thailand
	Sweden	
	Switzerland	
	United Kingdom	

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Equity and Credit Research Coverage

Documentation detailing Morningstar's coverage and coverage changes is reviewed and updated monthly then published on our corporate and product websites. Morningstar's equity and credit coverage universe is based on our assessment of a security's investment attractiveness, including a strong bias to companies with economic moats. This approach aligns with our position of independence and, we believe, puts investors first.

Australian Equity Coverage Guidelines

► Nearly all companies in the S&P/ASX 100 Index.
► Companies in the S&P/ASX 200 Index which are deemed to have an economic moat and/or cash flow is at least mildly predictable (generally not possessing "extreme" uncertainty in our framework). As a rough guide, Morningstar will cover at least 80% of S&P/ASX 200 Index companies (equating to approximately 95% of the index by market capitalisation). Companies in this index which are not covered by Morningstar are usually unattractive for most portfolios, in our opinion.
► About 30 ex-S&P/ASX 200 stocks are selected on Morningstar's judgment of the security's investment merit – very strong bias toward high-quality companies (those with moats).

New Zealand Equity Coverage Guidelines

► The majority of the NZX20 Index.
► Up to 10 ex-NZX20 Index stocks selected on our judgment of the security's investment merit.
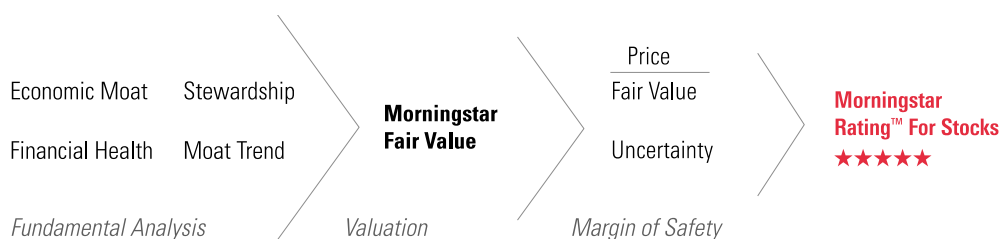
Credit Coverage Criteria

Morningstar covers approximately 35 listed credit securities. Morningstar operates an independent non-issuer-paid model in all areas of its Australasian research, and determines coverage of securities based on investor demand and investment attractiveness. We use the following guidelines to determine credit securities coverage:

► Whether the underlying corporate entity, or its listed parent, is covered by Morningstar's equity research team, leveraging the depth of expertise.
► Morningstar's judgment on the investment merit of the security, such as non-standard structure and the liquidity of the issue.
► The strength of existing, and likely, demand from our retail investor, broker, financial adviser, and institutional clients.

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Equity Research Methodology

We believe that a company's intrinsic worth results from the future cash flows it can generate. The Morningstar Rating for stocks identifies stocks trading at a discount or premium to their intrinsic worth — or fair value estimate, in Morningstar terminology. Five-star, or Buy-rated, stocks sell for the biggest risk-adjusted discount to their fair values, whereas 1-star, or Sell-rated, stocks trade at premiums to their intrinsic worth. Four key components drive the Morningstar rating: our assessment of the firm's economic moat, our estimate of the stock's fair value, our uncertainty around that fair value estimate and the current market price. This process ultimately culminates in our single-point recommendation, or star rating. Underlying this rating is a fundamentally focused methodology and a robust, standardized set of procedures and core valuation tools used by Morningstar's equity analysts. In this document, we provide a detailed overview of how the Morningstar Rating for stocks is derived, and also outline the analytical work that feeds into our coverage of stocks.

**Exhibit 2** Morningstar Research Methodology

Economic Moat	Stewardship			Price	
Financial Health	Moat Trend	**Morningstar Fair Value**		Fair Value	**Morningstar Rating™ For Stocks**
				Uncertainty	★★★★★
Fundamental Analysis		*Valuation*		*Margin of Safety*	

Source: Morningstar.

Morningstar's Economic Moat™ Rating

The concept of an economic moat plays a vital role not only in our qualitative assessment of a firm's long-term investment potential, but also in the actual calculation of our fair value estimates. An economic moat is a structural feature that allows a firm to sustain excess profits over a long period of time. We define excess profits as returns on invested capital, or ROICS, above our estimate of a firm's cost of capital, or WACC (weighted average cost of capital). Without a moat, profits are more susceptible to competition. Companies with a narrow moat are those we believe are more likely than not to achieve normalized excess returns for at least the next 10 years. Wide-moat companies are those in which we have very high confidence that excess returns will remain for 10 years, with excess returns more likely than not to remain for at least 20 years. The longer a firm generates economic profits, the higher its intrinsic value. We believe low-quality, no-moat companies will see their normalized returns gravitate toward the firm's cost of capital more quickly than companies with moats. We have identified five sources of economic moats: intangible assets, switching costs, network effect, cost advantage, and efficient scale.

Because of the global nature of the equities market and business competition, and its importance to our valuation process and its use in many of the products and services that Morningstar provides, analysts must vet proposed changes to the economic moat ratings with senior members in Morningstar's equity research department.

Exhibit 3 Measuring a Moat
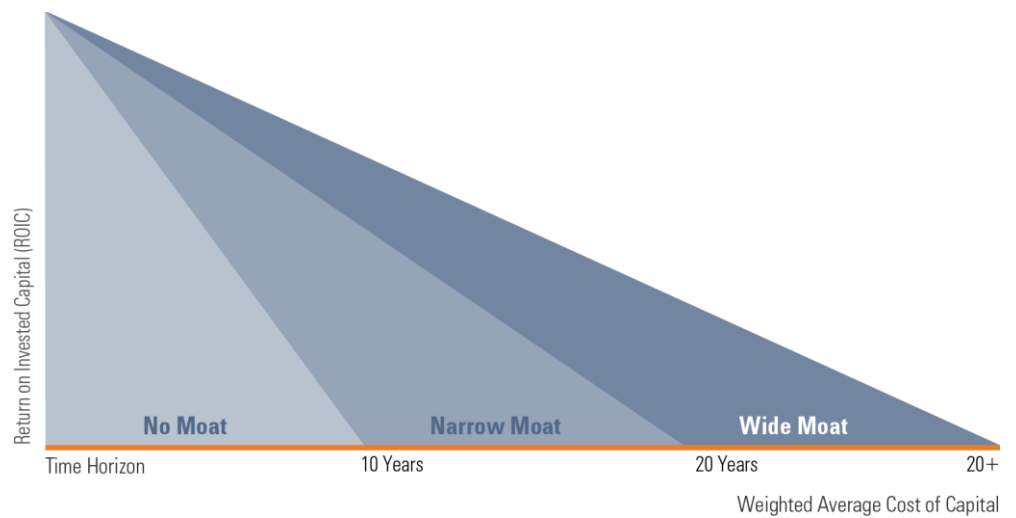
Source: Morningstar.

Determining Fair Value

At the heart of our valuation system is a detailed projection of a company's future cash flows, resulting from our analysts' independent primary research. Analysts create custom industry and company assumptions to feed income statement, balance sheet, and capital investment assumptions into our globally standardized, proprietary discounted cash flow, or DCF, modeling templates. We use scenario analysis, in-depth competitive advantage analysis, and a variety of other analytical tools to augment this process.

We believe this bottom-up, long-term, fundamentally based approach offers several advantages over other valuation techniques. The granularity in a multiyear, cash-flow forecast with many key inputs allows for more-detailed scenario analysis. It also helps us to identify potential future trends, and presents an opportunity to closely analyze returns on invested capital—all critical tenets to our economic moat framework and uncertainty ratings. Furthermore, it focuses analyst efforts on long-term business drivers, which have the greatest valuation impact, rather than short-term market noise that has little impact on intrinsic value.

Moreover, we think analyzing valuation through discounted cash flows presents a better lens for viewing cyclical companies, high-growth firms, businesses with finite lives (such as mines), or companies expected to generate negative earnings over the next few years. That said, we don't dismiss multiples altogether but rather use them as supporting cross-checks for our DCF-based fair value estimates. We also acknowledge that DCF models offer their own challenges (including a potential proliferation of estimated inputs and the possibility that the method may miss short-term market-price movements), but we believe these negatives are mitigated by deep analysis and our long-term approach.

By applying the same valuation framework across our entire global coverage universe in a consistent manner, we are able to compare investment opportunities across industries and around the globe on an apples-to-apples basis. Combining our analysts' financial forecasts with the moat rating helps us determine how long returns on invested capital are likely to exceed the firm's cost of capital. Returns of firms with a wide economic moat rating are assumed to fade to the perpetuity period over a longer period of time than the returns of narrow-moat firms, and both will fade slower than no-moat firms, increasing our estimate of their intrinsic value.

As a result of this methodology, our model is divided into three distinct stages. Here is how the system works in practice for operating companies:

Stage I: Explicit Forecast
In the first stage, which can last five to 10 years, analysts make full financial statement forecasts, including items such as revenue, profit margins, tax rates, changes in working-capital accounts, and capital spending. Based on these projections, we calculate earnings before interest, after taxes (EBI) and the net new investment (NNI) to derive our annual free cash flow forecast.

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Stage II: Fade

We define the second stage of our model as the period it will take the company's return on new invested capital—the return on capital of the next dollar invested ("RONIC")—to decline (or rise) to its cost of capital. During the Stage II period, we use a formula to approximate cash flows in lieu of explicitly modeling the income statement, balance sheet, and cash flow statement as we do in Stage I.

The length of the second stage depends on the strength of the company's economic moat. We forecast this period to last anywhere from one year (for companies with no economic moat) to 10–15 years or more (for wide-moat companies). During this period, cash flows are forecast using four assumptions: an average growth rate for EBI over the period, a normalized investment rate, average return on new invested capital (RONIC), and the number of years until perpetuity, when excess returns cease. The investment rate and return on new invested capital decline until a perpetuity value is calculated. In the case of firms that do not earn their cost of capital, we assume marginal ROICs rise to the firm's cost of capital (usually attributable to less reinvestment), and we may truncate the second stage.

Stage III: Perpetuity

Once a company's marginal ROIC hits its cost of capital, we calculate a continuing value, using a standard perpetuity formula. At perpetuity, we assume that any growth or decline in revenue is an NPV = 0 proposition. Stated differently, in the perpetuity period, we assume that any growth or decline or investment in the business neither creates nor destroys value and that any new investment provides a return in line with estimated WACC.

Discount Rates

Because a dollar earned today is worth more than a dollar earned tomorrow, we discount our projections of cash flows in stages I, II, and III to arrive at a total present value of expected future cash flows.

Because we are modeling free cash flow to the firm—representing cash available to provide a return to all capital providers—we discount future cash flows using the WACC, which is a weighted average of the costs of equity, debt, and preferred stock (and any other funding sources), using expected future proportionate long-term, market-value weights. For mainly financial companies, we use a fee cash flow to equity model and discount free cash flows by the company's cost of equity.

Cost of Equity

A company's cost of equity (COE) represents the average, annualized, nominal total return expected by shareholders. For most companies, COE is the dominant factor in the company's WACC and therefore holds sizable influence in the valuation process. However, in contrast to fixed-rate forms of capital, the COE is not a contractual return. It cannot be observed directly, and considerable controversy persists in theoretical finance as to how the COE is best estimated.

Morningstar's process for estimating COE is inspired and informed by the logic of the capital asset pricing model (CAPM) even as we take a largely qualitative and forward-looking approach. Our goal is to provide reasonable distinctions between the risk characteristics and expected returns of different companies while minimizing the effects of recency bias, false precision, and market noise.

We use a building block approach to derive COE estimates for individual companies:

Cost of Equity = Market Average Real Return Expectation
(6.5%–7.0% based on what we observe as a mean-reverting real return of the S&P 500 over long rolling time horizons—this is not a forecast, but rather what we believe shapes investor expectations)

+ Inflation Expectation (2.0%–2.5% based principally on stable 10- to 30-year inflation expectations derived from TIPS spreads as well as actual CPI over the last decade)

+/− Country Risk Premium (for non-USD reporting firms; this will reflect differentials in inflation and real risk-free rate expectations outside the U.S. as well as political risks)

+/− Systematic Risk Premium (four categories; ranges from -1.5% to +4.5%)

Exhibit 4 Systematic Risk Premium Categories

Category	Equity Risk Premium (%)	X Implied Beta	Risk-Free + Rate (%)	= Total COE (%)	− Average COE	Systematic Risk = Premium (%)
Below Average	4.50	0.67	4.50	7.50	9.00	-1.50
Average	4.50	1.00	4.50	9.00	9.00	—
Above Average	4.50	1.44	4.50	11.00	9.00	2.00
Very High	4.50	2.00	4.50	13.50	9.00	4.50

Source: Morningstar.

Importantly, because the fair value estimate reflects the present value of expected future cash flows, it should rise by the company's estimated cost of equity (net of the shareholder return allocated to dividends) over time, all else equal.

Cost of Debt

In estimating the cost of debt, we use a similar building-block approach as our cost of equity. We use the same assumed risk-free rate and level of inflation, while layering on a corporate credit spread, which varies according to the company's credit risk. We also adjust for the tax benefit of the deductibility of interest expenses.

Once we have these inputs, we weight them in terms of the implied value of each as a proportion of total estimated enterprise value to come up with our overall WACC estimate.

A significant percentage of our coverage includes firms domiciled outside the United States, and there are those that call the U.S. home but have considerable non-U.S. operations. Depending on the systematic risk of a country relative to the U.S., we may incorporate a country risk premium into our discount rate. Some characteristics that we consider are differences in local real risk free rate, expected inflation, financial disclosure, and other specific operating-market differences that could cause equivalent businesses to be more or less risky in one national economy versus another. In assigning country risk premia, we have developed a set of country-specific standardized scores that are reviewed at least once annually.

Hidden Assets/Liabilities

Once we have an estimated present value of expected future cash flows, we must also consider any other items that affect value not specifically included within our cash-flow projections. We refer to these special items as hidden assets and hidden liabilities, and they might include items that occur frequently across our coverage universe, such as the estimated value of outstanding option grants or underfunded/overfunded pensions, or items that tend to be very company-specific in nature, such as minority ownership positions in other companies, underutilized land or other balance sheet assets that could be sold without changing the cash-flow prospects of the business, or an expected future litigation settlement. It is impractical to list all the possible hidden assets and liabilities we find across our coverage, but we think about these hidden assets and liabilities as anything that affects value that is handled outside of our cash-flow forecasts.

	PV of Stage I Estimated Cash Flows
+	PV of Stage II Estimated Cash Flows
+	PV of Stage III Estimated Cash Flows (i.e., Residual Value)
+	Estimated Value of Excess Balance Sheet Cash Average

	Enterprise Value
–	Estimated Value of Debt, Preferred, and Any Other Funding Sources
+/ –	Estimated Value of Hidden Assets/Liabilities

	Estimated Value of Equity
	Divided by # of shares

	Estimated Equity Value per Share or Fair Value Estimate

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The Uncertainty Rating

Morningstar's Uncertainty Rating captures a range of likely potential intrinsic values for a company and uses it to assign the margin of safety required before investing, which in turn explicitly drives our recommendation system. The Uncertainty Rating represents the analysts' ability to bound the estimated value of the shares in a company around the Fair Value Estimate, based on the characteristics of the business underlying the stock, including operating and financial leverage, sales sensitivity to the overall economy, product concentration, pricing power, and other company-specific factors.

Analysts consider at least two scenarios in addition to their base case: a bull case and a bear case. Assumptions are chosen such that the analyst believes there is a 25% probability that the company will perform better than the bull case, and a 25% probability that the company will perform worse than the bear case. The distance between the bull and bear cases is an important indicator of the uncertainty underlying the fair value estimate. Our recommended margin of safety — the discount to fair value demanded before we'd recommend buying or selling the stock — widens as our uncertainty of the estimated value of the equity increases. The more uncertain we are about the estimated value of the equity, the greater the discount we require relative to our estimate of the value of the firm before we would recommend the purchase of the shares. In addition, the uncertainty rating provides guidance in portfolio construction based on risk tolerance.

Exhibit 5 Morningstar Equity Research Star Rating Methodology

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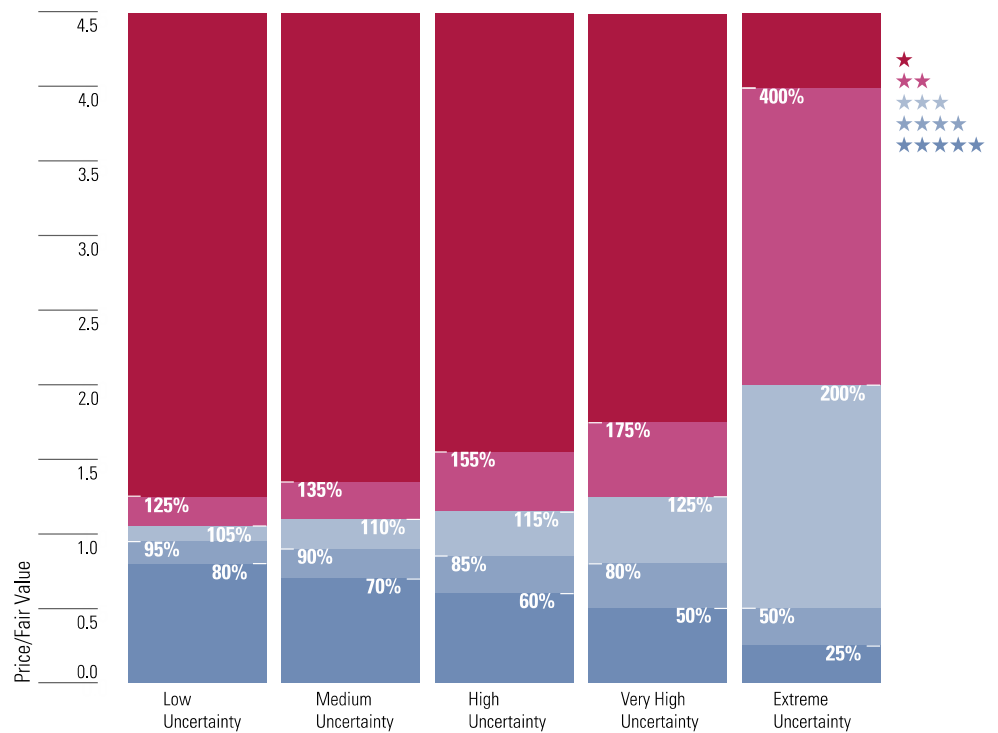
Our uncertainty ratings are low, medium, high, very high, and extreme. With each uncertainty rating is a corresponding set of price/fair value ratios that we use to assign star ratings, as shown in the graph.

The actual price/fair value cutoffs are determined using a combination of a) empirical data from the historical performance of our uncertainty rating, and b) option pricing theory based on the implied volatility of stocks with commonly agreed-upon uncertainty characteristics. Our empirical data show that appropriate Sell/1-star and Buy/5-star prices fall approximately at the midpoint between a log-normal relationship and a symmetrical relationship. A log-normal relationship would mean that a stock would post the same return between the Buy/5-star price and the fair value as it would between the fair value and the Sell/1-star price, while a symmetrical relationship would mean that the same percentage discount to a stock price for a Buy/5-star rating would be assigned as a premium to the stock price for a Sell/1-star rating. For low-, medium-, high-, and very-high-uncertainty stocks we formally assign our Sell/1-star prices as the midpoint between the symmetrical and the log-normal relationship. We then round these prices to fair value relationships to the nearest 5 percentage points for simplicity. For extreme uncertainty stocks we assign the Sell/1-star price using the log-normal relationship only. Typically, a significant portion of an extreme uncertainty company's capital structure is composed of debt. Using the lognormal relationship to set the Sell/1-star price accounts for the fact that a small improvement in the forecast for free cash flows will have an outsized upside impact to the equity value for any highly-indebted company.

Generating the Morningstar Recommendation/Star Rating
Once we determine the fair value estimate of a stock, we compare it with the stock's current market price on a daily basis, and the recommendation, or star rating, is automatically re-calculated at the market close on every day the market is open.

Our analysts keep close tabs on the companies they follow, and, based on thorough and ongoing analysis, raise or lower their fair value estimates as warranted. Furthermore, as mentioned earlier, we would expect our fair value estimates to generally rise over time, due to the time value of money. Specifically, over the course of a year, barring major changes to analyst assumptions, we would expect our fair value estimates to increase at the level of our estimate of a firm's cost of equity (net of shareholder returns attributed to dividends). So, for a stock that pays no dividends with a $100 fair value estimate today and an estimated 10% cost of equity, we would expect our fair value estimate to rise to $110 in 12 months, all else equal.

It is also worth noting that there is no predefined distribution of our recommendations. That is, the percentage of stocks that earn a Buy rating can fluctuate daily, so the recommendations, in the aggregate, can serve as a gauge of the broader market's valuation. When there are many Buy-rated stocks, the stock market as a whole is more undervalued, in our opinion, than when very few companies garner our highest rating.

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We expect that if our base-case assumptions are true the market price will converge on our fair value estimate over time, generally within three years (although it is impossible to predict the exact time frame in which market prices may adjust). If you bought a company's stock at exactly our fair value estimate today, we would expect that you should achieve total returns in line with our assumed cost of equity for the next three years, absent a change in business prospects relative to our base-case expectations. A stock price lower than our fair value estimate suggests that there is a higher probability than not that investors should expect returns at a greater rate than COE over a three-year period (i.e., we would expect the investment to produce abnormal returns or alpha). Conversely, a price above our fair value estimate implies lower-than-COE expected returns (or negative alpha). In some cases, we believe investors should expect negative absolute returns, if the price/fair value estimate ratio is sufficiently high.

Our recommendations/star ratings are guideposts to a broad audience and individuals must consider their own specific investment goals, risk tolerance, tax situation, time horizon, income needs, and complete investment portfolio, among other factors.

★★★★★ (Buy): We believe appreciation beyond a fair risk-adjusted return is highly likely over a multiyear time frame. Scenario analysis developed by our analysts indicates that the current market price represents an excessively pessimistic outlook, limiting downside risk and maximizing upside potential. This rating encourages investors to consider an overweight position in the security relative to the appropriate benchmark.

★★★★ (Accumulate): Appreciation beyond a fair risk-adjusted return is likely, in our opinion. This rating encourages investors to own the firm's shares, possibly overweight relative to the appropriate benchmark after fully considering more attractively priced alternatives, such as our Buy recommendations.

★★★ (Hold): Indicates that we believe investors are likely to receive a fair risk-adjusted return (approximately cost of equity). Concentrated portfolios might consider exiting these positions if more attractively priced alternatives are available.

★★ (Reduce): We believe investors are likely to receive a less than fair risk-adjusted return and should consider directing their capital elsewhere. Securities with this recommendation should generally be underweight, assuming less expensive alternatives are available for the portfolio strategy being employed.

★ (Sell): Indicates a high probability of undesirable risk-adjusted returns from the current market price over a multiyear time frame, based on our analysis. Scenario analysis by our analysts indicates that the market is pricing in an excessively optimistic outlook, limiting upside potential and leaving the investor exposed to Capital loss. This rating encourages investors to strongly consider exiting portfolio positions in the security in nearly all strategies.

Distribution of Recommendations

Our spread of recommendations is displayed in Exhibit 6. Our recommendations are based on a long-term fundamental view and rigorous, consistently-applied methodology, so the proportion of positive relative to negative recommendations will often ebb and flow in negative correlation to moves in the market. Exhibit 7 demonstrates how our recommendations have helped clients generate wealth in the past few years. We had many ★★★★★ (formerly Buy) and ★★★★ (formerly Accumulate) recommendations as the market declined through 2011. Many of these recommendations became ★★★ (formerly Hold), ★★ (formerly Reduce), and then ★ (formerly Sell) as the market has rallied from mid-2012, but the median price-to-fair value ratio has again tipped back below 1.0 following the recent market slide.

Exhibit 6 Morningstar Australian/New Zealand Recommendation Dispersion (as at 7 November 2018)
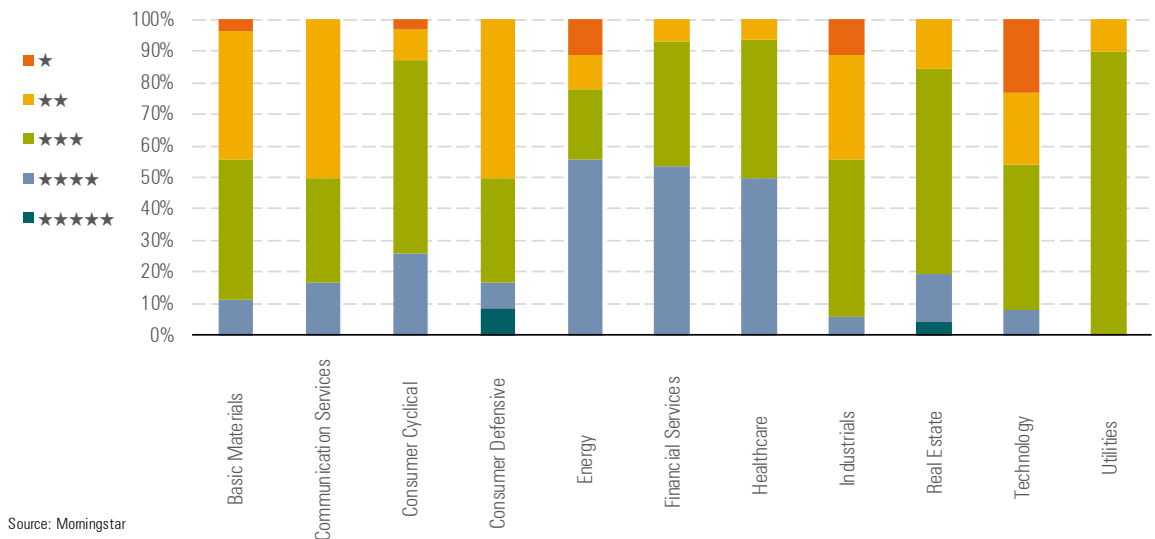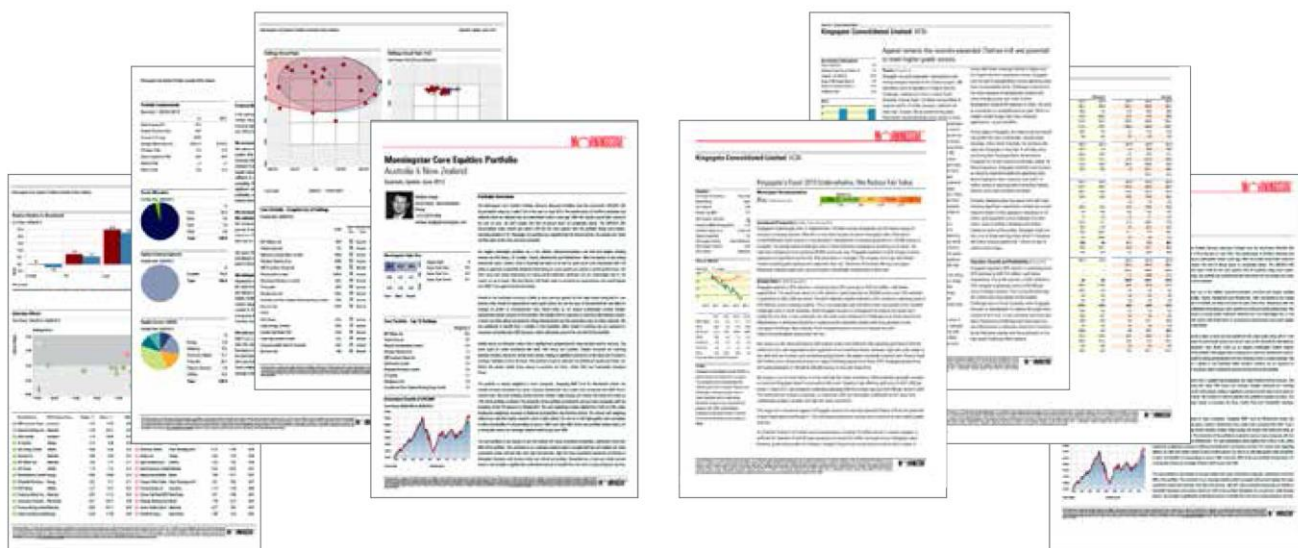

Source: Morningstar

Exhibit 7 Morningstar Australian/New Zealand Recommendation Distribution Over Time (as at 7 November 2018)
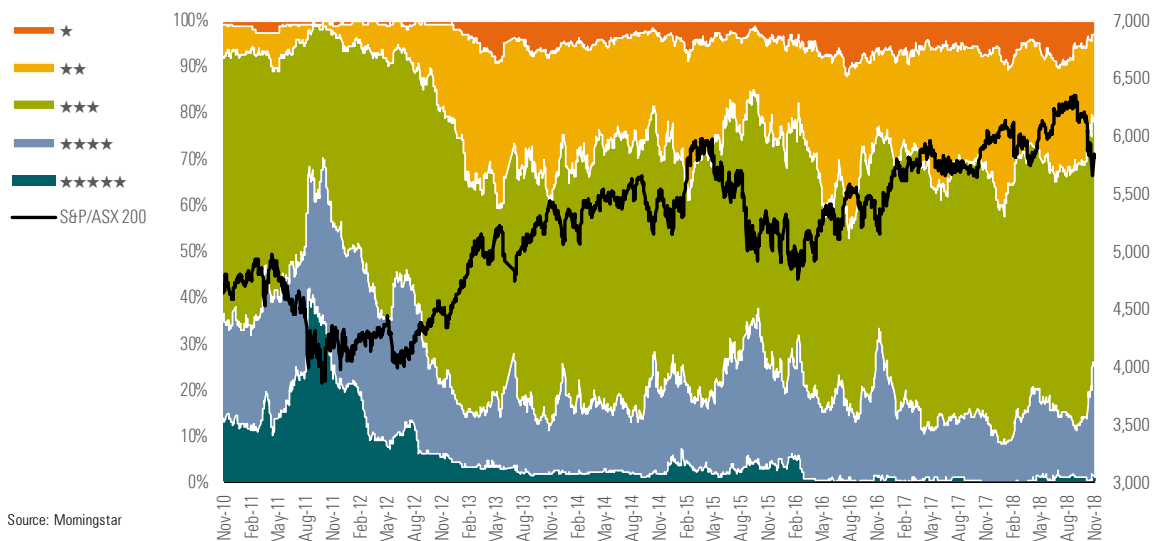
Source: Morningstar

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Research Publications

Morningstar publishes a range of exceptional research material to support adviser and investor conversations and decisions, including:

► **Comprehensive Company Reports**

Includes a summary of our in-depth analysis on the company's strategic positioning and competitive advantages, risks, financial health, proprietary Morningstar datapoints (fair value estimate, fair value uncertainty, moat, and stewardship) and financial forecasts. These also include analyst notes containing analysis of key corporate events and changes to key assumptions and/or datapoints.

► **Timely Corporate Event Analysis**

Analysis of, and advice on, events that require shareholder action such as capital raisings, mergers, takeovers, demergers, off-market buybacks, spin-offs.

► **Equity Pre-IPO Reports**

A detailed report on companies due to list on the ASX for which a prospectus has been released to the market and which we intend to initiate full coverage on. On occasion we produce an IPO "preview" report which includes an assessment of the industry and competitors, in anticipation of release of a prospectus for the upcoming listing.

► **Australia and New Zealand Equity and Credit Securities Outlook**

A comprehensive publication packed with our most salient and actionable views across our equity and credit research coverage.

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► **Thematic Reports**

Special reports containing in-depth analysis on a company, sector, or industry where we have identified of an actionable investment opportunity.

► **Best Stock Ideas**

A monthly publication containing our highest conviction Australia & New Zealand equity investment opportunities currently trading at attractive prices.

► **Credit Research Publications**

We produce a range of credit-focused publications and these are detailed in the following section.

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Morningstar's Approach to Credit Research

Purpose

Morningstar's credit research measures an issuer's ability to satisfy its debt and debt-like obligations in a full and timely manner. The investment appeal of each security is a function of the quality of the issuer and the unique structural characteristics of the security itself.

Our analysis is forward-looking, based on expectations of future cash flow, and incorporates both objective and subjective assumptions.

Analysis is carried out by Morningstar's credit research team, which works closely with the equity research team, leveraging the equity analysts' expert knowledge and analysis of the underlying businesses.

Issuer Risk Rating

Our credit assessment of an issuer follows the same core principles as the assessments used in our equity research, but adjusts for credit-specific metrics. We use qualitative and quantitative measures which vary slightly to suit unique industry characteristics.

We analyse business risk, financial risk and security investment risk to place the security in one of the issuer risk categories of low, medium, high and speculative. The issuer risk rating is distinct from the security investment risk rating.

► **Business risk** captures the fundamental uncertainty around a firm's business operations and the cash flow generated by those operations. Key components of the business risk rating include the Morningstar Economic Moat Rating and Morningstar's uncertainty rating.

> ► Companies with an economic moat possess sustainable competitive advantages that allow it to earn excess returns over a long period of time. Without a moat, profits are more susceptible to the effects of competition. Companies with a narrow moat are likely to achieve excess returns for the next 10 years, while wide-moat companies are more than likely to generate excess returns for the next 20 years. Morningstar's detailed methodology identifies the underlying source of an economic moat as one, or a combination, of the following five specific categories: intangible assets; cost advantage; switching costs; network effect; and efficient scale.

> ► Morningstar's uncertainty rating represents our ability to predict the intrinsic value of a company's shares. Our framework decomposes the equity fair value uncertainty into systematic risk and unsystematic risk. Systematic risk can be thought of as a company's beta to the economy which we measure through sales volatility relative to changes in gross domestic product, operating leverage, and financial leverage. Unsystematic risks are idiosyncratic, company-specific factors that can impact valuation such as the

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regulatory environment, large contract expirations, concentrated customer base, unpredictable management and severe changes in the competitive environment. From a debtholder's perspective, the uncertainty rating measures the stability and reliability of the "equity cushion" at the bottom of the capital structure.

► **Financial risk** assesses the firm's financial health by testing the company against a series of leverage and cash flow ratios. We rate the likelihood of financial distress by analysing how many times a company's internal cash generation, plus total excess liquid cash, will cover its debt-like contractual commitments during the next five years, based on Morningstar's proprietary discounted cash flow model. We also consider historical and forecast financial ratios, including ratios that focus on liquidity, profitability, capital structure and interest coverage.

Security Investment Risk Rating. The security investment risk rating is a rating of risk at the security level which may not align directly with the issuer risk rating. It is important to consider the terms and conditions of the prospectus in combination with the fundamental assessment of issuer risk. The security's unique structural features can affect the probability and timing of principal and interest payments, thereby significantly altering the investment risk profile. We apply an adjustment to the issuer risk rating for the security's unique characteristics to reach a security investment risk rating of low, medium, high or speculative. Factors such as discretionary distributions, capital triggers, non-viability triggers and credit rating events play a part in changing the risk profile of these securities relative to traditional fixed-income securities.

Fair Value Estimate

Morningstar uses relative and absolute valuation measures to estimate the fair value of each credit security. Our relative measure estimates a fair value credit spread by comparing the security's trading margin (or credit spread) with its designated benchmark. This spread above the benchmark (typically the bank-bill swap rate) measures the credit risk premium of the security which, together with the benchmark yield, gives the security yield. As a general rule, the fair value credit spread will be higher for securities with higher security risk, and will diminish over time as the security approaches its maturity or call date. Investors should therefore be compensated with an additional spread premium for each unit of additional security risk and term risk. Our absolute measure of fair value estimates fair value credit spread based on a transition model, which aligns our security investment risk rating to the probability of default over the life of the security. This probability is determined by a regression analysis of security investment risk and historical default rates.

Timing and Frequency of Credit Security Research Reports

► Pre-sale summary reports are generally issued within 24 hours of the launch of a new credit security meeting our coverage criteria.

► New-issue research reports on securities that meet the coverage criteria are generally published within a week of the launch of the issue.

► Ongoing research reports are updated annually at a minimum, often sooner in the case of a price sensitive event or recommendation change.

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► A monthly credit research report which provides a roundup of current market events, pricing, recommendations and changes, issuance updates and outlook.

► An archive of credit research reports is available on the Morningstar® Adviser Research Centre™ platform and Morningstar's retail investor website.

Research Report Content

Credit research reports contain detailed issuer analysis and an investment recommendation on the security. Reports contain the following content:

► Recommendations – For new issues: Subscribe/Don't Subscribe. Once a security begins trading: ★★★★★ (Buy); ★★★★ (Accumulate); ★★★ (Hold); ★★ (Reduce); and ★ (Sell).

► Security Investment Risk – Our credit assessment of the issuer, adjusted for the unique characteristics of the security, grouped into the following categories: low, medium, high or speculative.

► Investment Rating – Overview of the risk and investment appeal of the security.

► Analyst Note – Analysis of a key event and implications for the investment appeal of the security.

► Thesis – Analysis of the business risk and financial risk of the underlying business.

► Contract Summary – Description of the specific characteristics of the security.

► Security Valuation – Key inputs to the valuation of the security.

► Risks – Analysis of potential risks to the underlying business and the security.

► Investment Perspective for the Underlying Business – Investment Rating, Risk, Growth, Profitability and Financial Health.

► Forecasts and key ratios for the underlying business.

Morningstar's credit analysis builds on the expertise of the equity research team, including:

► At least five years of detailed proforma financial statement forecasts.

► Extensive analysis of free cash flow and return on invested capital.

► Uncertainty and scenario analysis, including upside and downside cases.

► Forecasts of leverage, coverage and liquidity ratios.

► Estimates of off-balance-sheet liabilities.

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Morningstar Australia/New Zealand Equity and Credit Research Team

Team Qualifications, Tenure, Industry Experience

The average industry experience of the Australian and New Zealand analyst team is more than 16 years and about 8 years' average tenure with Morningstar. Staff turnover is low, reflecting Morningstar's status as an employer of choice where quality research is awarded above all else. Profiles of the Australian and New Zealand analyst team and investment committee members are provided in the Appendix.

Exhibit 8 Morningstar Australian/New Zealand Equity and Credit Research Team Qualifications, Tenure, Industry Experience

Name	Title	Sector	Qualifications	Tenure with Morningstar (years)	Industry Experience (years)
Adam Fleck	Regional Director of Equity Research Australia & New Zealand	Consumer, Infrastructure	BBA (Fin), CFA	12	12
Peter Warnes	Head of Australasia Equity Research		BCom	26	50
John Likos	Director of Equity Research, ANZ	Credit, Hybrids	BEc, LLB, Grad Dip FINSIA, CFA	5	17
Johannes Faul	Director of Equity Research, ANZ	Retail, REITs	CFA, MBA, BBus	3	16
David Ellis	Senior Analyst	Banks, Insurance, Diversified Financials	BCom, Grad Dip FINSIA, CPA	13	30
Mark Taylor	Senior Analyst	Oil & Gas, Mining Services	BSc, Grad Dip Mineral Economics	15	29
Brian Han	Senior Analyst	Telecommunications, Media, Leisure	BCom (Fin), LLB, Grad Dip FINSIA	4	21
Mathew Hodge	Senior Analyst	Metals, Mining	CFA	17	17
Gareth James	Senior Analyst	Technology, Professional Services	BPhysics	9	15
Adrian Atkins	Senior Analyst	Utilities	BEng, MCom (Hons)	14	14
Tony Sherlock	Senior Analyst	Property, REITs	BEc, MBA, CA, CPA, Grad Dip FINSIA	6	8
Chanaka Gunasekera	Analyst	Insurance, Diversified Financials, REITs	BEc, LLB, LLM,MFin&Acc, CFA	1	5
Daniel Ragonese	Analyst	Gaming, Consumer	BBus, MFin	4	8
Grant Slade	Analyst	Industrials	BScience, MFin	<1	13
Violet Li	Associate Analyst	Banks, Insurance, Diversified Financials	BAcc, MAppFin, MAcc	4	4
Angus Hewit	Associate Analyst	Consumer	BFin	4	5
Average				**9**	**17**

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Profiles of Australian and New Zealand Equity and Credit Analyst Team

Adrian Atkins
Senior Equity Analyst
Utilities, Transport (ex Airlines)

Adrian is a senior equity analyst in the equity research team at Morningstar, a leading global provider of independent investment research. Adrian covers the utilities and transport (excluding airlines) sectors across Australia and New Zealand. Adrian joined Aspect Huntley, subsequently acquired by Morningstar, in 2004. He has a Bachelor's degree in Engineering and a Master's degree in Commerce (Hons) majoring in Finance and Economics, both from the University of Sydney.
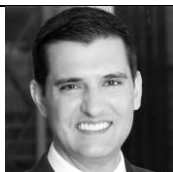
David Ellis, CPA
Senior Equity Analyst
Banks, Insurance and
Diversified Financials

David is a senior equity analyst in the equity research team at Morningstar, a leading global provider of independent investment research. He covers the banks, insurance and diversified financials sectors across Australia and New Zealand. David joined Aegis, subsequently acquired by Morningstar, in 2005. Before this, he worked extensively at St. George Bank and its predecessor Advance Bank in various accounting and management roles including asset and liability management and balance sheet risk management. He started his career in commercial accounting roles. He has a Bachelor of Commerce degree from the University of Newcastle, has a Graduate Diploma in Applied Finance and Investment from FINSIA, and is a member of CPA Australia.

Johannes Faul, CFA
Director
REITs, Retail

Johannes Faul is a director for Morningstar Australasia Pty Ltd, a wholly owned subsidiary of Morningstar, Inc. He covers the retail and real estate investment trust sectors across Australia and New Zealand. Faul joined Morningstar in April 2016 and has over 10 years' experience as a sell-side analyst, including at the Commonwealth Bank of Australia, the Bank of Montreal, and the Royal Bank of Scotland. Prior to that, he worked in corporate finance at PricewaterhouseCoopers. Faul has a master's degree in business administration from the University of Cologne and holds the Chartered Financial Analyst® designation.

Adam Fleck is the regional director of equity research for Australia and New Zealand at Morningstar, a leading global provider of independent investment research. He leads the firm's Sydney-based team of analysts focused on providing in-depth, fundamental equity research on Australian and New Zealand stocks based on sustainable competitive advantages and long-term valuation analysis. Before assuming his current role, Adam was director of North American consumer equity research for Morningstar, covering beverage and tobacco companies, and associate director of equity analysis, covering heavy equipment and other industrial companies. He joined Morningstar in 2006. Adam holds a bachelor's degree in business administration from the University of Notre Dame, where he graduated cum laude. He also holds the Chartered Financial Analyst® designation.

Adam Fleck, CFA
Director of Equity Research
Australia & New Zealand

Chanaka Gunasekera is an equity analyst for Morningstar Australasia Pty Ltd, a wholly owned subsidiary of Morningstar, Inc. He covers Australian and New Zealand financial-services companies, including wealth managers and REITs. Before joining Morningstar in 2017, Gunasekera worked for a Sydney-based wealth manager, providing investment advice to high-net-worth clients. He also was employed at a large global sell-side research house, providing advice to institutional shareholders, and at one of the big four Australian banks as an operational risk and compliance manager. Gunasekera holds bachelor's degrees in economics and law from the Australian National University and Bond University, respectively. He also holds a master's degree in law, specialising in corporate and commercial law, from the University of New South Wales and a master's degree in business, specialising in accounting and finance, from the University of Technology. He has the Chartered Financial Analyst® designation.

Chanaka Gunasekera, CFA
Equity Analyst
Diversified Financials, REITs

Brian is a senior equity analyst in the equity research team at Morningstar, a leading global provider of independent investment research. He covers the telecommunications and media sectors across Australia and New Zealand. Brian joined Morningstar in 2014 and previously worked as a senior research analyst at Fat Prophets, a fund manager at Constellation Capital Management and an analyst at Citigroup. He has a Bachelor's degree in Commerce (Finance) and a Bachelor's degree in Law, both from the University of New South Wales, and also has a post graduate Diploma in Applied Finance and Investment from FINSIA.

Brian Han
Senior Equity Analyst
Telecommunications, Media

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Angus Hewitt
Associate Equity Analyst

Angus Hewitt is an Associate Analyst in the Equity Research team at Morningstar, a leading global provider of independent investment research. Angus is responsible for assisting in the research of companies listed in Australia and New Zealand, across a variety of sectors.

Before joining Morningstar in 2015, Angus worked as an Equities Associate at Commonwealth Securities. He holds a Bachelor of Finance from the Australian National University, and is a Level II Candidate in the CFA Program.

Mathew Hodge, CFA
Senior Equity Analyst
Metals and Mining

Mathew is a senior equity analyst in the equity research team at Morningstar, a leading global provider of independent investment research. He covers the metals and mining resources sector across Australia and New Zealand. Mathew joined Aspect Huntley, subsequently acquired by Morningstar, in 2001, and worked previously in the mining industry in both underground coal and metalliferous mining in various mining engineering roles. He also holds the Chartered Financial Analyst® designation.
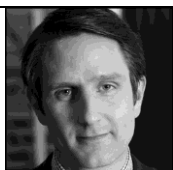
Gareth James
Senior Equity Analyst
Technology and Professional Services

Gareth is a senior equity analyst at Morningstar, a leading global provider of independent investment research. He covers the technology and professional services sectors across Australia and New Zealand. Gareth joined Aegis, subsequently acquired by Morningstar, in 2010. He has 12 years' equity markets experience encompassing research, trading, and equity capital raisings. Before joining Aegis, Gareth worked in Deloitte's Sydney Mergers and Acquisitions team, advising ASX-listed companies. In Ord Minnett's Equity Capital Markets team, he specialised in initial public offerings. He also spent four years within Rabobank's equity derivatives team. Gareth has a degree in Physics from the University of London and valuation qualifications from Macquarie University and FINSIA.

Violet Li
Associate Equity Analyst

Violet is an equity associate analyst in the equity research team at Morningstar, a leading global provider of independent research. Violet covers financials, REITs and Retail sectors, as well as other team operational responsibilities. Violet joined Morningstar in 2015 and worked previously as a Research Analyst at Orient Capital. She has a Bachelor's degree in Accounting from China, a Master's degree in Accounting from Macquarie University and a Master's degree in Applied Finance from the University of Western Sydney. She is an affiliate member of the Association of Chartered Certified Accountants (ACCA).

John Likos, CFA
Director
Credit, Banks, Diversified
Financials

John Likos is a director of equity and credit research for Morningstar Australasia Pty Ltd, a wholly owned subsidiary of Morningstar, Inc. Likos is responsible for research into Australian credit and equity securities. He has more than 15 years of credit experience in Australia and Europe, across a wide range of products, including institutional debt, credit derivatives, listed debt, hybrid securities and equities. Likos has a bachelor's degree in economics from Flinders University of South Australia, a bachelor's degree in law from the University of Adelaide, and a postgraduate diploma in applied finance and investment from Finsia, He also holds the Chartered Financial Analyst® designation.

Daniel Ragonese
Equity Analyst
Gaming, Consumer

Daniel is an equity analyst in the equity research team at Morningstar, a leading global provider of independent investment research. Daniel covers gaming and consumer sectors across Australia and New Zealand. Daniel has six years' experience in the investment industry and joined Morningstar in 2015. He worked previously as an Investment Analyst with the Commonwealth Bank. He has a Bachelor of Business degree and Master of Finance, both from the University of Technology, Sydney.

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Tony Sherlock, CA, CPA
Senior Equity Analyst
Property

Tony is a senior equity analyst in the equity research team at Morningstar, a leading global provider of independent investment research. Tony joined Morningstar in 2012 and covers the listed property (REITs) sector across Australia and New Zealand. Prior to joining Morningstar he was an equity research analyst at Royal Bank of Scotland researching the engineering construction sector and property developers, and before that at Aegis Equities Research as an equity research analyst covering property, infrastructure, and industrials companies. Before that, he worked as Senior Manager – Strategic Investments and Commercial at Westpac Banking Corporation, as a strategy consultant with Mellon Financial Corporation in New York, and as a Senior Consultant with Price Waterhouse in Melbourne. Tony has a Master of Business Administration degree from New York University Stern School of Business and a Bachelor of Economics in accounting and finance from Monash University. He is also a member of the Australian Institute of Chartered Accountants.

Grande Slade, CFA
Equity Analyst
Industrials

Grant Slade is an equity analyst for Morningstar Australasia Pty Ltd, a wholly owned subsidiary of Morningstar, Inc. He covers the building materials and construction, packaging, and other industrials sectors. Before joining Morningstar in 2018, Slade was an equity research analyst with Capital Dynamics, a global fund manager based across the Asia-Pacific region. Slade holds a Bachelor of Business in economics and financial economics and a Bachelor of Applied Science in biotechnology from the Queensland University of Technology. He also holds the Chartered Financial Analyst® designation.

Mark Taylor
Senior Equity Analyst
Oil & Gas and Mining Services

Mark is a senior equity analyst in the equity research team at Morningstar, a leading global provider of independent investment research. Mark covers the oil & gas and mining services sector across Australia and New Zealand. Mark joined Aspect Huntley, subsequently acquired by Morningstar, in 2003, and worked previously for Shaw Stockbroking as a Research Analyst and Corporate Finance Executive. He has a Bachelor's degree in Science and a post graduate Diploma in Mineral Economics from Macquarie University.

Peter Warnes
Head of Australia Equity
Research

Peter is head of equity research at Morningstar, a leading global provider of independent investment research. Peter is an experienced leader in our equity research group and regularly contributes thought-provoking research in several client channels, meets with investors to share our views, and represents Morningstar equity research in the media. He is also a member of Morningstar's Investment Committee in Australasia. Peter joined Aspect Huntley, subsequently acquired by Morningstar, in 1992. His investment career started in 1968 in the Investment Research Department of the Bank of New South Wales (now Westpac). He continued in industrial research and institutional stockbroking, working for Hattersley Maxwell and Bain & Company over a period of 15 years. Peter has a Bachelor's degree in Commerce (Accounting) from the University of New South Wales.

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About Morningstar

Morningstar, Inc. is a leading provider of independent investment research in North America, Europe, Australia, and Asia. The company offers an extensive line of products and services for individual investors, financial advisors, asset managers, retirement plan providers and sponsors, and institutional investors in the private capital markets.

Morningstar provides data and research insights on a wide range of investment offerings, including managed investment products, publicly listed companies, private capital markets, and real-time global market data. Morningstar also offers investment management services through its investment advisory subsidiaries, with more than $203 billion in assets under advisement and management as of June 30, 2018. The company has operations in 27 countries. M

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