



At Morningstar, we evaluate stocks as pieces of a business, not as pieces of paper.

We think that purchasing shares of superior businesses at discounts to their intrinsic value and allowing them to compound their value over long periods of time is the surest way to create wealth in the stock market.

Morningstar's quantitative ratings for stocks are designed to leverage the fundamental analysis from our equity research team. Using statistical modeling, we attempt to assign ratings to stocks that are analogous to the ratings that our equity analyst staff assigns. In this way, our quantitative research is linked to our analyst research.

It is possible, however, for our quantitative ratings to conflict with our analyst ratings. There are pros and cons to each system, and neither can be generalized to be superior to the other.

Like our analyst ratings, we calculate our quantitative ratings on a nightly basis using all available data as of the close of relevant markets. This means ratings can and do change on a daily basis to reflect the most up-to-date information. For this reason, our current rating always reflects our current opinion of any given equity security.

Intrinsic Value Estimate (IVE): The IVE is analogous to Morningstar's fair value estimate for stocks. It represents the per share value of the equity of a company. The IVE differs from the fair value estimate in that it is not assigned by an equity analyst; instead, it is calculated via a quantitative algorithm designed to predict the fair value that a Morningstar analyst would assign the stock. The IVE is displayed in the same currency as the company's last close price.

Valuation: The valuation is based on the ratio of a company's intrinsic value estimate to its last close price. Companies with ratios above 1.1 are deemed undervalued. Companies with ratios below 0.9 are deemed overvalued. All other companies are considered fairly valued.

Valuation Confidence: Any equity valuation involves some degree of uncertainty. Valuation confidence describes our level of uncertainty about the accuracy of our intrinsic value estimate. In this way it is analogous to Morningstar's fair value uncertainty ratings. However, the valuation confidence metric is not assigned by an analyst. Instead, it is calculated by our quantitative valuation algorithm. The higher the valuation confidence, the smaller the potential range of outcomes for that particular company.

Competitive Advantage: The competitive advantage rating is analogous to Morningstar's economic moat rating in that both are meant to describe the strength of a firm's competitive position. However, the competitive advantage rating is not assigned by an equity analyst. Instead, it is calculated by a quantitative algorithm

designed to predict the economic moat rating a Morningstar analyst would assign to the stock.

Distance to Default: Morningstar's Distance to Default metric is an equity-market-based indicator of financial health, and is the metric underlying the financial health score. Distance to Default incorporates information about a company's equity volatility and financial leverage to arrive at a score ranging from zero to 1. A high Distance to Default indicates strong financial health.

Financial Health: Financial health is based on Morningstar's proprietary Distance to Default calculation.

Solvency Score: The Morningstar Solvency Score is an accounting-ratio-based financial health indicator. It incorporates information about a firm's profitability, liquidity, leverage, and interest coverage to arrive at a final score. A high Solvency Score indicates weak financial health.

Forecast Range: The forecast range represents the interquartile range of possible paths that the stock price may follow over future periods based on a gradual migration of the price to our intrinsic value estimate. It is based on Morningstar's intrinsic value estimate, the current stock price, and valuation confidence.

Competitive Advantage Trend: The competitive advantage trend is a time-series chart of Morningstar's competitive advantage described above.

Liquidity: The liquidity score is a measure of the trading liquidity available for the firm's equity. It is calculated using the trailing 12 months of daily volume for the firm's shares.

Momentum: The momentum rating reflects a firm's trailing 12 months of total return momentum. We display it as a relative data point reflecting the stock's percentile standing versus our coverage universe. The momentum rating ranges from 0 to 1, with higher ratings indicating greater momentum.

Percentile Rankings for Quantitative Scores: For Morningstar's quantitative scores, we present three sets of percentile ranks that show how the company ranks versus our entire universe, the company's sector, and the company's country of domicile. A score of 1 means the company ranks among the top 1 percent of its peer group. For valuation, the smaller the percentage rank, the more undervalued the stock is versus its peers according to our quantitative algorithm. For Valuation Confidence, the smaller the percentage rank, the greater the confidence we have in the valuation. For Competitive Advantage, the smaller the percentage rank, the stronger the company's competitive strength. And for Financial Health, the smaller the percentage rank, the stronger the company's financial health.