Z-Score

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What is a Z-Score

A Z-score is a numerical measurement of a value's relationship to the mean in a group of values. If a Z-score is 0, it represents the score as identical to the mean score.

Z-scores may also be positive or negative, with a positive value indicating the score is above the mean and a negative score indicating it is below the mean. Positive and negative scores also reveal the number of standard deviations that the score is either above or below the mean.

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BREAKING DOWN Z-Score

Z-scores reveal to statisticians and traders whether a score is typical for a specified data set or if it is atypical. In addition to this, Z-scores also make it possible for analysts to adapt scores from various data sets to make scores that can be compared to one another accurately. Usability testing is one example of a real-life application of Z-scores.

The Z-score is more commonly known as the Altman Z-score. Edward Altman, a professor at New York University, developed and introduced the Z-score formula in the late 1960s as a solution to the time-consuming and somewhat confusing process investors had to undergo to determine how close to [bankruptcy](#) a company was. In reality, the Z-score formula Altman developed ended up providing investors with an idea of the overall financial health of a company.

The Altman Z-Score Formula

financial ratios that can be found and calculated from a company's annual 10-K report. The calculation used to determine the Altman Z-score is as follows:

Z-Score = 1.2A + 1.4B + 3.3C + 0.6D + 1.0E

In this equation:

A = Working capital/total assets

B = Retained earnings/total assets

C = Earnings before interest and taxes (EBIT)/total assets

D = Market value of equity/book value of total liabilities

E = Sales/total assets

Typically, a score below 1.8 indicates that a company is likely heading for or is under the weight of bankruptcy. Conversely, companies that score above 3 are less likely to experience bankruptcy.

Shortfalls of the Z-Score

Alas, the Z-score is not perfect and needs to be calculated and interpreted with care. For starters, the Z-score is not immune to false accounting practices. Since companies in trouble may be tempted to misrepresent financials, the Z-score is only as accurate as the data that goes into it.

The Z-score also isn't much use for new companies with little to no earnings. These companies, regardless of their financial health, will score low. Moreover, the Z-score doesn't address the issue of cash flows directly, only hinting at it through the use of the net working capital-to-asset ratio. After all, it takes cash to pay the bills.

Finally, Z-scores can swing from quarter to quarter when a company records one-time write-offs. These can change the final score, suggesting that a company that's really not at risk is on the brink of bankruptcy.