

Altman Z-Score

Yankee Model Investment Club

April 2021

What Is It?

- Combination of five ratios of values found in a company's financial reports, each weighted by a factor, that gives an estimate for a company's solvency (or risk of bankruptcy)
- Created in 1968 by Edward Altman, at the time assistant professor of finance at NYU
- Developed by looking at various ratios from bankrupted companies and comparing to the same ratios from companies that survived
- Originally developed for use on publicly traded manufacturing companies; other versions have been refined for use on different industries
- In 2007, the median Z-score of companies that Altman analyzed was 1.81, leading him to believe a crisis was near

How Is It Calculated?

$$\text{Z-Score} = 1.2\mathbf{A} + 1.4\mathbf{B} + 3.3\mathbf{C} + 0.6\mathbf{D} + 1.0\mathbf{E}$$

A = working capital / total assets	(solvency)
B = retained earnings / total assets	(liquidity)
C = earnings before interest and tax / total assets	(profitability)
D = market value of equity / total liabilities	(leverage)
E = sales / total assets	(activity)

Z-score values:

Under 1.8 means danger

Over 3 means bankruptcy unlikely

Between 1.8 and 3? Gray area

Calculate It Yourself (who has time for that?)

<https://www.investingcalculator.org/investment/altman-z-score-calculator/>

Altman Z-Score Calculator

Net Sales:	<input type="text"/>
Ebit:	<input type="text"/>
Total Assets:	<input type="text"/>
Total Liabilities:	<input type="text"/>
Retained Earnings:	<input type="text"/>
Working Capital:	<input type="text"/>
Market Value of Equity:	<input type="text"/>
Altman Z-Score:	<input type="text"/>
<input type="button" value="Calculate"/>	<input type="button" value="Reset"/>

Look It Up

<https://www.chartmill.com> → Fundamental Analysis

Tractor Supply Company

NASDAQ:TSCO (4/9/2021, 7:00:01 PM)

After market: 177.69 0 (0%)

177.69

1.04 (0.59%) ↑

Chartmill FA Rating

★★★★★

SICDivision

Retail Trade

SICMajorGroup

Building Materials, Hardware, Garden Supply, And
Mobile Home Dealers

SICGroup

Building Materials, Hardware, Garden Supply, And
Mobile Home Dealers

Earnings (Last)

2021-01-28

Earnings (Next)

2021-04-22

Ins Owners

0.7

Inst Owners

87.66

Market Cap

20.65B

Analysts

78

Valuation

★★★★★

PE

25.86

Fwd PE

26.6

PEG (NY)

N/A

PEG (5Y)

1.44

P/S

1.94

P/B

10.73

EV/EBITDA

17.03

Growth

★★★★★

EPS 1Y

46.79%

EPS 5Y

18.02%

EPS Next Y

-2.77%

EPS Next 2Y

2.37%

EPS growth Q2Q

35.54%

Revenue growth 1Y

27.16%

Revenue growth 5Y

11.27%

Revenue growth Q2Q

31.32%

Profitability

★★★★★

ROA

10.62%

ROE

38.93%

PM

7.05

Asset Turnover

1.51

Health

★★★★★

Current Ratio

1.87

Quick Ratio

0.85

Altman-Z

5.45

F-Score

7

Debt/Equity

0.51

Dividend

★★★★★

Dividend Yield

1.17%

Dividend Growth

18.27%

DP

23.32%

Ex-Date

2021-02-19 (0.52)

Accuracy

~80-90% accurate at predicting bankruptcy 1 year before, based on series of tests performed on samples of companies over period of ~30 years

Scholars have criticized that the score and ratios are descriptive but not predictive (the work proved that bankrupt and non-bankrupt companies have *different* ratios but not that certain ratio values are doomed to fail)

Conclusions

- Nothing can predict the future
- Altman Z-score is another analysis tool to include in your toolbox
- Consider checking the score on current holdings and candidates for purchase to use as a data point in your decision

Sources

- https://en.wikipedia.org/wiki/Altman_Z-score
- <https://www.investopedia.com/terms/a/altman.asp>
- <https://www.chartmill.com>