



1FP571

Special seminar – Advanced Corporate Finance



EVROPSKÁ UNIE
Evropské strukturální a investiční fondy
Operační program Výzkum, vývoj a vzdělávání



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Bankruptcy Prediction

Multiple Discriminant Analysis (MDA)

- identify the **sample of bankrupt firms**,
- identify the **matching sample of healthy firms** (controlling for the size and industry factors),
- calculate a group of **financial statement ratios** expected to be **linked with the likelihood of bankruptcy**

Altman's Z- score model

popular MDA bankruptcy prediction model (developed on data for manufacturing firms)



Bankruptcy Prediction

Z-score:

bankruptcy $Z < 1.81$; **gray zone** $Z \in < 1.81; 2.99 >$; **prosperity** $Z > 2.99$

Z-score =

$$\begin{aligned} & 1.2x \text{ (Net Working Capital/Total Assets)} \\ & + \\ & 1.4x \text{ (Retained Earnings/Total Assets)} \\ & + \\ & 3.3x \text{ (EBIT/Total Assets)} \\ & + \\ & 0.6x \text{ (Market Value of Equity/Book Value of Liabilities)} \\ & + \\ & 1.0 \times \text{ (Sales/Total Assets)} \end{aligned}$$



Bankruptcy Prediction

Z-score's ratios relate to different aspects of profitability & risk

Net Working Capital/Total Assets:

short-term liquidity risk

Retained Earnings/Total Assets:

accumulated profitability

and relative age of a firm

EBIT/Total Assets:

current profitability

MV of Equity/BV of Liabilities:

debt/equity incorporating
market's assessment of the
equity value; long-term
solvency risk and the market's
overall assessment of the firm's
profitability and risk

Sales/Total Assets:

ability of a firm to use
assets to generate sales



Bankruptcy Prediction

Real World Applications of Z-Score

- Models similar to the Z-Score are used by bond rating services (Moody's and Standard & Poor's) to rate corporate bonds



Bankruptcy Prediction

REFERENCES

Class #16 Ratio Analysis & Bankruptcy Detection Class #16 1,
<http://docplayer.net/29943936-Class-16-ratio-analysis-bankruptcy-detection-class-16-1.html?>



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