Literature review, Scoring

Shumway’s article

* Critical about static model of probability of default (especially Altman’s method)
* Porposes a more dynamic model that accounts for the evolution of the firm in time and the variables that affect its risk of default
* Use traditional financial ratio like altman but add market dimension with : idiosyncratic standard deviation (measure the volatility of the firm’s itself compared to that of the global market), stocks returns, size of the market the firm operated on

Results

The variables related to the market mentioned above are highly significant and therefore are good predictors for the risk of default. Half of the traditional financial ratios aren’t significant. EBIT/total asset, Net income/total asset are nevertheless good predictors.

Ohlson’s article Financial Ratios and the Probabilistic Prediction of Bankruptcy

Uses financial ratios in a logistic regression

**Financial Ratios Used**

Ohlson identifies a set of financial ratios that have historically shown a strong correlation with bankruptcies. These ratios cover different dimensions of a company's financial health:

1. **Leverage Ratio (Total Debt / Total Assets)**: Measures a company's indebtedness. A high ratio indicates a strong reliance on debt.
2. **Current Ratio (Current Assets / Current Liabilities)**: An indicator of a company's ability to cover its short-term obligations. A low value may signal imminent liquidity problems.
3. **Return on Assets (Net Income / Total Assets)**: An indicator of a company's profitability relative to its assets. A low or negative return on assets is often a warning sign.
4. **Size of the Company**: Measured in terms of total assets. Ohlson shows that smaller companies have a higher risk of bankruptcy.
5. **Working Capital / Total Assets**: This ratio measures a company's relative liquidity by comparing its working capital to its total assets.

These ratios were selected not only for their empirical relevance but also because they are readily available in standard financial reports (like 10-K filings).

for the prediction of a binary variable (bankruptcy or not) based on a set of explanatory variables—in this case, financial ratios.

**Dataset**

The analysis is based on data from U.S. companies that filed for bankruptcy under Chapter 7 or Chapter 11 between 1970 and 1976. Financial ratios are extracted from the companies' annual reports (10-K filings).

**5. Study Results**

The study's results confirm that several of the financial ratios included in the model are significant indicators of bankruptcy probability. Ohlson presents the coefficients of each variable in the regression model and their statistical significance.

**Highlights:**

* **Leverage**: Companies with high debt levels (high leverage) are much more likely to go bankrupt. The coefficient for this variable is statistically significant and positive.
* **Profitability**: Companies with negative return on assets are significantly more at risk.
* **Size**: The smaller the company, the higher the risk of bankruptcy.
* **Liquidity**: Liquidity ratios (current ratio and working capital/total assets) are also strongly linked to bankruptcy probability.