Capstone 2 Project Proposal

Bankruptcy Prediction

05/21/2021

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Springboard - August 2020 Cohort

Problem Statement

The word bankruptcy is generally thought of in a negative context. The images that come to mind are closings, mass layoffs, higher prices, higher interest rates, financial ruin and economic collapse such as the Great Depression of 1929. In the United States there are more than 20,000 business bankruptcy filings every year as well as more than half a million personal filings every year. However bankruptcy can help moderate the economy keeping it from overheating in years of a boom economy and stimulating it during years of recession. Business bankruptcy allows companies to restructure, address their deficiencies, reengage in the economy and begin to reinvest and take more risk which generates economic growth. Being able to predict the red flags that may signify a company's risk of going concern is a valuable tool to lessen the effects of bankruptcy and identify a problem in a timely manner.

Stakeholders

1. Creditors - Creditors and banks that lend them capitol bear the main brunt of a company's decision to file bankruptcy. Receivers have to write off sometimes millions of dollars in debt related to their customer's decisions and early detection could lessen the amount of write offs.
2. Investors - Investors and shareholders base their decision to invest in a given company on the financial viability and going concern of that company and current investors could lose their investment if that company is not viable. Being able to identify and detect earlier any red flags could lessen their losses.

3. Consumers - Consumers are directly affected by a company's financial decisions in the form of higher interest rates and higher prices. Early detection will help maintain their buying power and lessen the effects of a bankruptcy filing.
4. Labor - Bankruptcy filings most often lead to layoffs and restructuring of resources and human capital. Identifying the red flags that lead to an imminent bankruptcy filing can lessen the effects on the labor market.

Data

The dataset is about bankruptcy prediction of Polish companies. The data was collected from Emerging Markets Information Service (EMIS), which is a database containing information on emerging markets around the world. The bankrupt companies were analyzed in the period 2000-2012, while the still operating companies were evaluated from 2007 to 2013. The data contains 43405 observations spread over 5 subsets (one per year), with 64 financial ratios for each observation. The dataset is maintained at the UCI machine learning repository.

https://archive.ics.uci.edu/ml/datasets/Polish+companies+bankruptcy+data

Approach

The data will be cleaned of missing values, organized and summarized to explore visually the statistically relevant financial ratios that may have an effect on bankruptcy prediction. I will explore multiple classification models to compare their performance and use those models to investigate correlations between the financial ratios and the likelihood of bankruptcy. This information will allow me to offer recommendations to all involved stakeholders.

Deliverables

The final deliverables will be a written report, a presentation, a slide deck and all the Jupyter notebooks that I will develop. I will identify a model that can properly predict bankruptcy using financial data from the company. This model will assist creditors and investors to make decisions and will be used by the company to possibly stave off bankruptcy by identifying red flags from their accounting data or to recognize in advance the factors preceding a negative financial situation.