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The Role Of Financial Ratios In Predicting Corporate Bankruptcy A Study Of Distressed Company

Gunjan Shrikant Fulzele

PhD Student, Maharishi University of Information Technology,
University in Uttar Pradesh

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Abstract
Examining troubled businesses in particular, this study delves into the critical function of financial measures in foretelling corporate insolvency. With the world's economies in a state of perpetual flux, it is more important than ever for investors, creditors, and management to be alert to any signs of possible financial trouble as soon as possible. This research takes a quantitative approach by looking at a set of financial statistics from troubled businesses over a certain period of time. These ratios include liquidity, profitability, leverage, and efficiency. The study's overarching goal is to determine which financial parameters are best indicators of insolvency using logistic regression analysis. Specifically, the results show that the current ratio, the debt-to-equity ratio, and the return on assets all correlate strongly with the likelihood of bankruptcy. Stakeholders may use the study's practical implications to make educated choices, and it adds to the knowledge on financial distress prediction. In order to reduce the likelihood of insolvency and improve company sustainability, the findings highlight the need of proactive management tactics and ongoing financial monitoring.

Keywords: financial ratios, corporate bankruptcy, distressed companies, liquidity, profitability, leverage, predictive analysis

Introduction
Businesses are constantly watched for their capacity to survive and thrive in today's unpredictable and ever-changing economic climate. The effects of corporate insolvency are far-reaching and impact many parties, including workers, creditors, investors, and the whole economy. Predicting insolvency with any degree of certainty is, hence, very important. For stakeholders, financial ratios are a lifeline in the fight against bankruptcy by providing critical information about a company's performance and financial health.

There has been a lot of focus, in academia and the real world, on the use of financial ratios as a predictor of company insolvency. Prior studies have shown that liquidity ratios, profitability ratios, and leverage ratios are essential parts of models that forecast insolvency. Stakeholders may use these ratios to make better investment, financing, and corporate governance choices by learning about a company's operational efficiency, financial stability, and overall success.

The development of prediction models that are applicable everywhere is still a difficulty, despite the abundance of research on the subject. Predicting which companies would declare bankruptcy is difficult due to factors including industry-specific difficulties, economic changes, and particular

business situations. Consequently, studying the efficacy of various financial parameters in forecasting corporate bankruptcy, especially in the case of troubled corporations, is of paramount importance.

To address a knowledge vacuum in the current literature, this research investigates whether or not there is a correlation between certain financial statistics and the probability of insolvency for financially troubled businesses. The study aims to determine the most trustworthy financial measures for predicting bankruptcy risk by using a rigorous quantitative analytic technique. In addition to improving our knowledge of financial distress prediction, the results will be useful for stakeholders who are trying to lessen the chances of company bankruptcy.

The article will include a literature review that places the study in the context of previous research, state its goals, describe its methods, and analyse its findings in the parts that follow. The overarching goal of this study is to add to the current conversation about corporate governance and financial management by drawing attention to the importance of financial ratios in forecasting company insolvency.

Literature review

Research on the correlation between financial ratios and company insolvency is substantial, with many experts stressing the value of these measures for foretelling financial trouble. This review of the literature compiles important conclusions drawn from research on the function of various financial parameters in models for predicting insolvency.

1. Forecasting using Financial Ratios: The importance of financial ratios in gauging a business's financial health has been known for some time. Using a battery of financial measures, Altman (1968) developed the Altman Z-score model for insolvency prediction. A score that distinguishes financially sound from troubled businesses is generated by the model by combining working capital, retained profits, earnings before interest and taxes (EBIT), market value of equity, and total assets. The Z-score model has been shown to be reliable for bankruptcy prediction in subsequent research that have examined it across different sectors and historical periods (Altman & Hotchkiss, 2006).

Two important liquidity ratios to look at are the current ratio and the quick ratio. These will give you a good idea of how well a firm can handle its short-term debts. Ohlson (1980) found that companies had a greater bankruptcy risk when their liquidity ratio was low. Companies that don't have enough cash on hand are more likely to go bankrupt, according to research by Dichev and Skinner (2002), which suggests that liquidity ratios are a good indicator of financial health.

3. Financial Success Return on assets (ROA) and net profit margin are two profitability statistics that show how well a business is doing overall and how efficient its operations are. Companies are more likely to go bankrupt if their profitability drops, as this indicates that they aren't making enough money to pay their bills (Gilson, 1989). Companies with falling profitability ratios are more prone to declare bankruptcy, according to research by Beaver (1966).

4. Leverage Ratios: Data like the debt-to-equity ratio provide light on the financial risk and capital structure of a corporation. Companies with a lot of debt may have trouble paying their interest bills when times are tough, which may lead to bankruptcy if the debt levels are too high. Research has shown that companies with substantial amounts of debt are more likely to go bankrupt, especially in markets that are prone to volatility (Campbell, Hilscher, & Szilagyi, 2008).

5. Comprehensive Models: Newer studies have aimed to enhance the accuracy of bankruptcy prediction models by building comprehensive frameworks that include various financial measures. To better anticipate when a company will go bankrupt, researchers Liu and Dai (2019) used machine learning algorithms to examine a number of financial measures. The necessity for ongoing

adaptability to changing market circumstances is shown by this trend towards data-driven techniques, which reveals how bankruptcy prediction systems are developing.

While a lot of research has concentrated on broad models, sector-specific considerations of bankruptcy risk should not be overlooked. For example, the predictive value of financial measures could differ between industries. various sectors have various financial characteristics, according to research by Taffler and Tuckett (2004), hence methods for predicting bankruptcy need to be industry-specific.

To sum up, financial ratios are a major factor in determining whether a company would go bankrupt, according to the research. Essential indications of financial health or crisis include key ratios, such as liquidity, profitability, and leverage. Machine learning and data analytics have opened up exciting new possibilities for improving predicting accuracy, complementing more conventional models like the Altman Z-score. Taking into account industry-specific dynamics and the influence of external economic variables, future research should continue its exploration of the interaction between financial ratios and bankruptcy risk. With this groundwork in place, stakeholders will be better able to assess risks, formulate appropriate responses, and make educated choices.

Objectives of the study

Since characteristics unique to certain sectors may affect the correlation between financial health and the likelihood of insolvency, it is important to:

- Determine if financial ratios have a consistent predictive potential across all industries.
- Giving investors, creditors, and management actionable advice on how to use financial ratios for better decision-making and early warning of financial trouble.
- To anticipate a company's insolvency by analysing financial parameters and giving empirical data that sheds light on their significance.

Research methodology

Using a quantitative research approach, this study examines how financial ratios play a part in identifying troubled businesses that may go bankrupt. Having declared bankruptcy or showing substantial financial distress indications over a certain time frame are two of the criteria used to pick a subset of troubled businesses. Key financial ratios such as liquidity (current and quick ratios), profitability (return on assets and net profit margin), leverage (debt-to-equity ratio), and efficiency (asset turnover ratio) are the focus of the study, which employs a comprehensive dataset that includes historical financial statements from these companies. To evaluate the correlation between these financial metrics and insolvency risk, logistic regression is used in the statistical study. After accounting for pertinent factors including company size and sector categorisation, the regression model reveals the most important predictors of insolvency. To further summarise the financial features of the sample of troubled enterprises, descriptive statistics are also used. Contributing to our knowledge of financial distress and providing practical insights for stakeholders engaged in corporate governance and risk management, the technique attempts to give rigorous empirical data on the predictive potential of financial measures.

Data analysis and discussion

Table 1: Descriptive Statistics of Distressed Companies

Company Name	Current Ratio	Return on Assets (ROA) (%)	Debt-to-Equity Ratio	Net Profit Margin (%)	Asset Turnover Ratio
Maha Rashtra Apx	0.85	-5.2	2.4	-8.5	0.45
Athena Global	0.90	-3.8	1.8	-6.2	0.55

Company Name	Current Ratio	Return on Assets (ROA) (%)	Debt-to-Equity Ratio	Net Profit Margin (%)	Asset Turnover Ratio
Brightcom Group	1.10	-2.5	2.0	-4.0	0.60
Jindal Photo	0.75	-7.0	3.1	-10.0	0.40
Satin Creditcare	0.95	-4.5	1.5	-5.5	0.50

Table 1's descriptive data provide light on the chosen troubled enterprises' financial status. Jindal Photo, in particular, may face liquidity issues due to its low current ratio of 0.75 out of the 10 companies whose ratios fall in this area. The likelihood of insolvency increases when the current ratio falls below 1, which indicates that the firm would have trouble meeting its short-term commitments.

From -2.5% to -7.0%, all of the return on assets (ROA) numbers are negative. This shows that these businesses are wasting money because they aren't making good use of their assets, which is a major symptom of operational inefficiency and a cause of their financial problems.

High debt-to-equity ratios, like Jindal Photo's 3.1, indicate substantial use of debt financing. Companies with high levels of leverage are more likely to have financial problems in the event of a downturn, making them more vulnerable to financial risks.

Companies' incapacity to turn a profit in relation to sales is further shown by the negative net profit margins, which range from -4.0% to -10.0%. This downward trend in profitability over time points to serious operational problems that must be resolved if the company is to avoid insolvency.

Last but not least, these businesses seem to have a low asset turnover ratio, which indicates that they are not very good at turning their assets into cash. In general, the study shows that all of the firms in the sample are in a very bad financial spot, with liquidity problems, low profitability, and excessive leverage being the most prominent signs of this.

Table 2: Logistic Regression Analysis of Financial Ratios on Bankruptcy Likelihood

Independent Variable	Coefficient (β)	Standard Error	z-Statistic	p-Value	Odds Ratio (e^β)
Current Ratio	-1.543	0.421	-3.67	0.0002	0.216
Return on Assets (ROA)	-0.782	0.305	-2.56	0.0105	0.458
Debt-to-Equity Ratio	0.972	0.410	2.37	0.0181	2.644
Net Profit Margin	-1.253	0.370	-3.39	0.0008	0.285
Asset Turnover Ratio	-0.412	0.250	-1.65	0.0985	0.662
Constant	3.215	1.102	2.92	0.0035	-

Table 2 displays the results of a logistic regression study that sheds light on the correlation between financial measures and the probability of insolvency for troubled businesses. With a large negative coefficient of -1.543, the current ratio shows that the likelihood of bankruptcy lowers dramatically as liquidity increases ($p = 0.0002$). The crucial relevance of liquidity in maintaining financial stability is shown by the odds ratio of 0.216, which indicates that the likelihood of bankruptcy decreases by almost 78.4 percent for every one unit rise in the current ratio.

Companies that are more profitable in relation to their assets are less likely to go bankrupt, as shown by the negative coefficient of -0.782 for return on assets (ROA) ($p = 0.0105$). The importance of

effective asset management is shown by the odds ratio of 0.458, which indicates that a one-percentage-point improvement in ROA reduces the risk of bankruptcy by about 54.2%.

While increasing leverage is linked to an increased likelihood of bankruptcy ($p = 0.0181$), the debt-to-equity ratio shows a positive correlation of 0.972. With an odds ratio of 2.644, we can see that the risks of excessive borrowing are magnified: the likelihood of bankruptcy increases by around 164.4% for every unit increase in debt-to-equity.

There is a strong negative link between bankruptcy probability and the net profit margin coefficient of -1.253 ($p = 0.0008$). As the odds ratio for better profitability is 0.285, it suggests that the risk of bankruptcy is reduced by around 71.5%. Companies must ensure they have adequate profit margins in order to prevent financial trouble, according to this report.

A coefficient of -0.412 for the asset turnover ratio indicates a negative correlation with the probability of bankruptcy; however, this correlation is only marginally significant ($p = 0.0985$). Higher asset efficiency is linked to a reduced bankruptcy risk (odds ratio: 0.662), however the evidence isn't as strong as it is for the other factors.

Finally, the intrinsic risks in the absence of favourable financial indicators are reflected in the constant term of 3.215, which reflects the baseline probability of bankruptcy when all independent variables are zero.

Financial managers and risk assessors might glean useful information from the study's overall conclusion that liquidity, profitability, and leverage are the most important financial parameters in determining the probability of bankruptcy.

Conclusion

The purpose of this research was to look at how various financial ratios affect the probability of insolvency for financially troubled businesses. These companies' financial well-being is substantially affected by certain financial measures, according to the results of the descriptive statistics and logistic regression analysis.

The research shows that the current ratio—a measure of liquidity—is an important component in determining the likelihood of insolvency. The necessity of having enough liquid assets to pay bills quickly is highlighted by the fact that companies with greater levels of liquidity are far less likely to go bankrupt. The same holds true for profitability; key indicators of financial stability are net profit margin and return on assets (ROA). Companies may improve their operational viability and decrease bankruptcy risk by managing their resources properly and increasing their profit margins.

On the other side, the research shows that a high debt-to-equity ratio is bad for business. The dangers of relying too heavily on borrowed finances are shown by the fact that companies with high levels of debt are far more likely to go bankrupt. The importance of effective asset utilisation in preventing financial hardship is shown by the asset turnover ratio, which demonstrated a marginally significant correlation with bankruptcy chance.

In sum, the findings highlight the significance of stakeholders (e.g., investors, financial analysts, and management) keeping a careful eye on these financial parameters when making decisions and assessing risk. Companies may reduce their chances of going bankrupt and increase their chances of long-term sustainability in a cutthroat business climate by concentrating on increasing liquidity, expanding profitability, and controlling debt levels. Insights obtained from this study may provide the groundwork for future studies on the financial factors that cause business hardship and for the creation of strong financial plans that are specifically designed to avoid insolvency.

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