Journal of Financial Management Strategy
Alzahra University
Vol. 11, No. 40, Spring 2023

pp. 33-34

Research Paper

The Ability of Support Vector Machine (SVM) in Financial Recovery Prediction[1]

Kazem Haronkolaee[2], Ali Nabavi Chashmi[3], Ghodratollah Barzegar[4], Iman Dadashi[5]

Received: 2021/04/06 Accepted: 2023/02/25

INTRODUCTION[6]

One of the most important issues in the field of financial management is investors' ability to distinguish between favorable and unfavorable investment opportunities. Predicting the financial recovery of distressed companies is an essential concept that can aid in optimal resource utilization and generate good returns for investors. The significance of predicting companies' financial recovery stems from the fact that if financially distressed companies are not financially recovered, they may go bankrupt, which has direct and indirect impacts on various economic groups, such as financial problems for company owners and unemployment. The financial crisis of debtors also has negative effects on the supply chain. Considering the importance of predicting the time of exiting and its impact on users' decisions, this study aims to provide a model for predicting the financial recovery of distressed companies using the support vector machine algorithm.

MATERIALS AND METHODS

This research is a descriptive survey. To achieve its purpose, data from 167 distressed companies listed on the Tehran Stock Exchange were collected from 2001 during 2018. The

1. DOI: 10.22051/JFM.2023.35495.2532
2. Ph.D Student, Department of Accounting, Babol branch, Islamic Azad University, Babol, Iran. Email:Kazem.haron@yahoo.com.
3. Associate Professor, Faculty of Management, Islamic Azad University, Babol, Iran. Corresponding Author, Email: Anabavichashmi2003@gmail.com.
4. Assistant Professor, Department of Accounting, Faculty of Accounting and Management, Mazandaran University, Babolsar, Iran. Email: Gh_barzeghar@umz.ac.ir.
5 Assistant Professor, Department of Accounting, Faculty of Economic and Administrative Sciences, Qom University, Qom, Iran. Email: Idadashi@gmail.com.
6. This article is based on the thesis conducted by Kazem Haronkolaee, Dr. Ali Nabavi Chashmi (the supervisor), Dr. Ghodratollah Barzegar and Iman Dadashi (the advisors).

research sample contains 223 data points from the healthy period and 501 data points from the period of distress. In this study, the LARS feature extraction algorithm was used to identify important variables for predicting financial recovery. Then, a support vector machine was used to evaluate and accurately predict the features extracted using the learning machine method.

RESULTS AND DISCUSSION

The results of this study indicate that out of 54 financial variables, 10 variables are more effective in predicting the recovery from distress. A support vector machine has been used to evaluate the extracted variables obtained from the Lars feature extraction algorithm, which accurately predicts 74% of the recovery time and exit of companies from financial distress. Further analysis of the results shows that the accuracy of the model forecasting has increased from more than three years before the financial recovery to the year of the financial recovery.

CONCLUSION

The findings of this study reveal the significance of financial variables in predicting the financial recovery of companies. Data analysis shows that among the 10 financial variables that affect the prediction of financial recovery, 5 are related to leverage, 3 to efficiency, and 2 to liquidity. Notably, financial leverage is identified as the most influential factor in predicting financial recovery in terms of both the number and weight of variables. This can be attributed to the fact that financial leverage is a key determinant of a company's capacity to repay financial obligations, and it is a major factor that contributes to a company's distress. The increase of financial leverage escalates the degree of distress and risk of the company, and its uncontrolled surge can amplify the risk of financial crisis and bankruptcy. Therefore, enhancing the financial leverage of distressed companies is a sign of their financial recovery. Efficiency reflects the optimal utilization of company resources and a factor that drives operational improvements and subsequently, working capital, which affects the company's liquidity. The ability and liquidity of the company to pay off debts are crucial factors in overcoming financial crises and reducing the risk of bankruptcy. Alongside leverage indicators, they are among the fundamental indicators that strengthen the financial recovery of distressed companies.

Based on the results of the analysis, it is recommended that investors choose a suitable portfolio of distressed companies and invest in companies that, according to the research model, have a faster time to exit from distress than other distressed companies. Managers of distressed companies can also pay attention to the research results to determine whether their company has signs of recovery and exit from distress. Banks and credit institutions are advised to use the research model to determine the departure time of distressed companies applying for facilities to assess their ability to repay the granted facilities.

Keywords: Financial Distress; Lars Algorithm; Support Vector Machine Algorithm.
JEL Classification: B26 ،C58 ،D53،.G34.