

# CREDIT RISK AND RATING

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FE690 YUECHEN JIANG

# CONTENTS

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- **Introduction**
- **Credit rating prediction**
- **Datasets**
- **Feature selection and model construction**
- **Experimental results**

# INTRODUCTION

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- Credit rating assessment is a complicated process in which many parameters describing a company are taken into consideration and a grade is assigned, which represents the reliability of a potential client. Such an assessment is expensive because domain experts have to be employed to perform the rating. One way of lowering the costs of performing the rating is to use an automated rating procedure.

# CREDIT RATING PREDICTION

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- Corporate credit rating is a process in which a grade  $\omega \in \Omega$  from a predefined rating scale  $\Omega$  is assigned to a company. Rating agencies, such as Standard & Poor's (S&P's), Moody's, and Fitch have their own rating scales. For example, the rating scale of the S&P's is  $\Omega = \{AAA, AA, A, BBB, BB, B, CCC, CC, C, D\}$  – a total of 10 grades (rating classes) that are ordered from AAA, the most promising for investors, to D, the most risky one.



# FEATURE SELECTION AND MODEL CONSTRUCTION

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- The Y train of this project is: 'S&P Domestic Long-term Issuer Credit Rating'
- X train is selected as follows
- "Schiller's cyclically adjusted P/E ratio", "Books/Markets", "Enterprise Value Multiple", "Price/operating income (basic, excluding EI)", "Price/operating income (after dilution, excluding EI)", "P/E (dilution, excluding EI)", "P/E (dilution, excluding EI)", "Price/sale", "Price/Cash Flow", "Dividend Payout Rate", "Net profit rate", "Operating profit rate before depreciation", "Operating profit margin after depreciation", "Gross profit margin", "Pre-tax profit rate", "Cash Flow Margin", "Return on Assets", "Return on Equity", "Return on Capital Used", "Effective tax rate", "Average after-tax income of common stock", "Investment capital after-tax income", "After-tax income of total shareholder equity", "Gross Profit/Total Assets", "Common Stock/Investment Capital", "Long-term debt/investment capital", "Total debt/invested capital", "Capitalization Ratio", "Cash Balance/Total Liabilities", "Total debt/total assets", "Total Debt/EBITDA", "Short-term debt/total debt", "Long-term debt/total debt", "Cash Flow/Total Debt", "Free cash flow/operating cash flow", "Total liabilities/total tangible assets", "Long-term debt/book equity", "Total debt/total assets. I", "Total Debt/Capital", "Total debt/equity", "Asset Turnover Rate", "Accounts Receivable Turnover Rate", "Accounts Payable Turnover Rate", "Sales/Investment Capital", "Sales/Shareholders' Equity", "Research and Development/Sales", "Advertising Expenses/Sales", "Labor Expenses/Sales", "Cumulative/average assets", "Price/Booking", "Dividend Yield"