Data Science in Finance and Economics

Research article

Bankruptcy prediction using machine learning and an application to the case of the COVID-19 recession

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Supplementary

Appendix A

Table A.1 contains an exhaustive list of all 57 financial ratios used to train our machine learning models. The ratios contain not only the most used features but also the features that are commonly overlooked. The features cover all 3 financial statements.

Table A.1. Financial ratios used for training models.

Financial Ratio	Type	Description
Accrual	NUM	Accruals/Average Assets
adv_sale	NUM	Advertising Expenses/Sales
aftret_eq	NUM	After-tax Return on Average Common Equity
aftret_equity	NUM	After-tax Return on Total Stockholders' Equity
aftret_invcapx	NUM	After-tax Return on Invested Capital
at_turn	NUM	Asset Turnover
bm	NUM	Book/Market
capei	NUM	Shiller's Cyclically Adjusted P/E Ratio
capital_ratio	NUM	Capitalization Ratio
cash_debt	NUM	Cash Flow/Total Debt
cash_lt	NUM	Cash Balance/Total Liabilities

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Financial Ratio	Type	Description
cash_ratio	NUM	Cash Ratio
cfm	NUM	Cash Flow Margin
curr_debt	NUM	Current Liabilities/Total Liabilities
curr_ratio	NUM	Current Ratio
de_ratio	NUM	Total Debt/Equity
debt_assets	NUM	Total Debt/Total Assets
debt_at	NUM	Total Debt/Total Assets
debt_capital	NUM	Total Debt/Capital
debt_ebitda	NUM	Total Debt/EBITDA
debt_invcap	NUM	Long-term Debt/Invested Capital
dltt_be	NUM	Long-term Debt/Book Equity
equity_invcap	NUM	Common Equity/Invested Capital
evm	NUM	Enterprise Value Multiple
gpm	NUM	Gross Profit Margin
GProf	NUM	Gross Profit/Total Assets
int_totdebt	NUM	Interest/Average Total Debt
intcov	NUM	After-tax Interest Coverage
intcov_ratio	NUM	Interest Coverage Ratio
inv_turn	NUM	Inventory Turnover
invt_act	NUM	Inventory/Current Assets
lt_debt	NUM	Long-term Debt/Total Liabilities
lt_ppent	NUM	Total Liabilities/Total Tangible Assets
npm	NUM	Net Profit Margin
ocf_lct	NUM	Operating CF/Current Liabilities
opmad	NUM	Operating Profit Margin After Depreciation
opmbd	NUM	Operating Profit Margin Before Depreciation
pay_turn	NUM	Payables Turnover
pcf	NUM	Price/Cash flow
pretret_earnat	NUM	Pre-tax Return on Total Earning Assets
pretret_noa	NUM	Pre-tax return on Net Operating Assets
profit_lct	NUM	Profit Before Depreciation/Current Liabilities
ps	NUM	Price/Sales
ptb	NUM	Price/Book
ptpm	NUM	Pre-tax Profit Margin
quick_ratio	NUM	Quick Ratio (Acid Test)
RD_SALE	NUM	Research and Development/Sales
rect_act	NUM	Receivables/Current Assets
rect_turn	NUM	Receivables Turnover
roa	NUM	Return on Assets

Financial Ratio	Type	Description
roce	NUM	Return on Capital Employed
roe	NUM	Return on Equity
sale_equity	NUM	Sales/Stockholders Equity
sale_invcap	NUM	Sales/Invested Capital
short_debt	NUM	Short-Term Debt/Total Debt
staff_sale	NUM	Labour Expenses/Sales
totdebt_invcap	NUM	Total Debt/Invested Capital