On The Micro-Determinants of Credit Spreads

ECO375: Empirical Project

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1 Introduction

This paper is structured as follows: Section 7 is the literature review situating the research question, Section 8 contains the preliminary analyses, Section 9 contains the methodology, Section 11 contains the results, and Section 10 has the hypothesis testing.

Higher spread = higher perceived risk

2 Firm value and capital structure ratios

Enterprise Value = Market Cap + Total Debt - Cash EVtoSales measures how expensive a company is relative to its revnue High EV/Sales -> market expects high growth OR company is overvalued High EV -> lower PERCEIVED risk -> lower spreads

PPE is actual long-term assets (machines, buildings, equipment) High EV/PPE -> growth-oriented High EV/PPE -> riskier -> higher spreads

High P/S -> confidence -> lower spreads

Book Value = Assets - Liabilities P/B <1 -> undervaluation -> financial distress -> higher spreads

Dividend yield -> higher MAY indicate risk

High RATE -> more efficient -> lower spreads

3 profitability and operational efficiency

operating margin = earnings before interest and taxes/revenue high margin -> lower default risk (firm is efficient) -> lower spreads

High total capital expenses to total assets -> lower spreads or less cash :

low book value per share -> maybe bankrupt

High asset turnover -> efficient -> lower spreads

4 Liquidity and Cash flow ratios

current ratio = current assets (cash + receivables + inventory)/ current liabilities (obligations due) low current ratio -> liquidity risk -> higher spreads

Cash dividend coverage ratio = operating cash flow/cash dividends paid lower coverage -> weak cash flow -> higher spreads

5 Leverage and Capital Structure

high total debt/shareholder equity -> in debt -> higher spreads

high total debt/(total debt + equity) -> high reliance on debt -> high spreads

6 Bond specific

Higher amount outstanding -> lower spreads (more liquid?) smaller amount outstanding -> higher spreads

years to maturity -> more interest rate and credit risk -> higher spread (risk premium)

low couponds -> high price sensitity? MAYBE. Higher does not not imply higher here

SLR assumptions: linearity in parameters Random sampling no perfect colllnearity Zero conditional mean Homoskedasticity (1-4) unbiased ness add 5 to get BLUE 6 is normality

difference in percentages: basis points

6.1 Description of variables

The variables are as follows

Variable	Description
Issuer	Name of the company that issued the bond
Spread	The difference between the bond's yield and the yield on a government bond of the same maturity. Measured in bps
Ticker Parent	Identifier for the parent company
Enterprise Value to Sales	Measures how expensive a company is relative to its revenue
Enterprise Value to PPE	Measures valuation relative to tangible assets
Price to Sales	How much investors pay for $1 of revenue

Variable	Description
Price to Book Value	Measures how expensive the firm is relative to accounting equity
Dividend Yield	Return shareholders receive from dividends
Return on Average Total Equity	How efficient the firm is with investments
Operating Margin	Core profibility measure
Total Capital Expenses to Total Assets	How much firm invests in long-term assets
Book Value per Share	Accounting value per share
Asset Turnover	Measures how well assets generate revenue
Current Ratio	Measures short-term liquidity
Cash Dividend Coverage Ratio	Measures if firm can pay dividends purely from operations
Total Debt to Equity	Measures financial leverage
Total Debt to Total Capital	Shows how much of capital is from debt
Amount Outstanding	Size of the bond
Years to Maturity	Number of years until the bond pays back its principal
Coupon	Annual payments made to bond holders

Spread is numeric with a range from [-196.8, 395.8]. It had a mean of -14.6 and a standard deviation of 57.6. It had skweness of 1.017

PricetoBook Value is numeric with a range from [-10.3, 7.1]. It had a mean of 0.214 and a standard deviation of 1.17. It had skewness of 0.106.

Return on Average total equity was numeric with a range [-90.96, 135.03]. It had a mean of -0.47 and a standard deviation of 19.466. It had a skweness of 1.236.

Current Ratio is numeric with a range from [-1.47, 3.27]. It had a mean of -0.14 and a standard deviation of 0.395. It had a skewness of 2.86.

6.2 Statement of hypothesis/research question

The research question this paper will seek to answer is what are the micro determinants of credit spread. We propose the following model

$y = \beta_0 + \beta_1 x_1 + \beta_2 x_2$

Where y is the spread of bonds, x_1 is ...

7 Literature Review

do now "For banks, credit spread can be an indicator of the profitability or risk premium related to a lender providing a loan to an individual borrower. The credit spread accounts for the maturity, liquidity, credit risk, and creditworthiness of borrowers. In this study, credit spread is defined as the difference between the loan rate and risk-free rate." (**u2021investigating?**)

Collin-Dufresn, Goldstein, and Martin (2001): book value (more leverage -> higher spreads)

"Hence, it is clear that credit spreads are expected to increase with leverage. Likewise, credit spreads should be a decreasing function of the firm's return on equity, all else equal." Collin-Dufresn, Goldstein, and Martin (2001)

"Implied volatility smiles in observed option prices suggest that markets account for the probability of large negative jumps in firm value. Thus, increases in either the probability or the magnitude of a negative jump should increase credit spreads."Collin-Dufresn, Goldstein, and Martin (2001)

Total Debt to Equity + Total Debt to Total Capital (**fu2021credit?**) "we assess the existence of a firm leverage effect" "firm leverage appears to have a significant influence"

(**wang2023liquidity?**) ROE "Return on net assets… the higher the ROE, the better the operating conditions and the ability to service debt." higher -> lower spreads Current Ratio ""The higher the current ratio, the better the ability to service debt…the smaller the credit spread." "

(**kaviani2020policy?**) Operating Margin ""…operating income-to-sales ratio…"

(**carvalho2023loan?**) Price to book value (Market-to-book) ""Borrower-level controls include Equity Volatility, Size, Firm Age, Profitability, Tangibility, Market-to-Book, Leverage, Rated." " amount outstanding (loan amount) "I define the net notional amount of credit risk outstanding for a given firm as: NOf,t is analogous to the face value of debt outstanding in bond markets—it captures the net amount of protection sold…" Years to maturity (loan maturity) "…a firm is defined as a combination of the underlying firm (e.g. Ford) and a maturity bucket (e.g. 0-2 years)… The maturity buckets I consider are (in years): 0-2, 2-4, 4-6, 6-8, 8-10, and 10+."

(Collin-Dufresn, Goldstein, and Martin 2001) added total debt to equity and enterprice valuue to sales.

8 Descriptive

8.1 Tables

8.2 Plots

8.3 Summary of key variables

9 Methodology

9.1 Clear statement of the model and its assumptions

9.2 Specification tests

9.3 Robustness considerations

10 Hypothesis Testing

10.1 Choise of appropriate test

11 Results

11.1 Correct interpretation of results

Economic intuition provided

Collin-Dufresn, Pierre, Robert S Goldstein, and J Spencer Martin. 2001. "The Determinants of Credit Spread Changes." *The Journal of Finance* 56 (6): 2177–207.