INTRODUCTION TO BOND INVESTING
Credit analysis
BOND BASICS

1. Definition

What is a bond?
A bond is a fixed income instrument that represents a loan made by an investor to a borrower (typically corporate or governmental).

Why do companies issue bonds (vs stock)?
When companies or other entities need to raise money to finance new projects, maintain ongoing operations, or refinance existing debts, they may issue bonds directly to investors.

Stock issuance, on the other hand, puts additional stock shares in circulation, which means that future earnings must be shared among a larger pool of investors. This can result in a decrease in earnings per share (EPS), putting less money in owners’ pockets (we talk about «dilution»)

Where are bonds exchanged?
Many corporate and government bonds are publicly traded; others are traded only over-the-counter (OTC) or privately between the borrower and lender.
2. Different types of bonds

Fixed-rate bonds
The borrower (issuer) issues a bond that includes the terms of the loan, fixed-rate interest payments (coupon) that will be made, and the time at which the loaned funds (bond principal) must be paid back (maturity date).

T=0 1 2 3 4 5 6 = maturity date
- Principal  + coupon + coupon + coupon + coupon + coupon + principal

Variable rate bonds
The coupon rate doesn’t remain the same during the life of the bond. As an example, Inflation-Linked Bonds will have their coupon rate linked to the inflation rate to save the purchasing power of investors.

T=0 1 2 3 4 5 6 = maturity date
- Principal + variable coupon + variable coupon + variable coupon + variable coupon + variable coupon + principal

Zero-coupon bonds
A zero-coupon doesn’t pay any coupon at all. Instead, it is usually sold at a discounted price.

T=0 1 2 3 4 5 6 = maturity date
- % Principal + principal

Convertible bonds
A convertible bond is a fixed-income debt security that yields interest payments, but can be converted into a predetermined number of common stocks of the issuer.

If the issuer’s stock price increase by more than x% > The bond will be converted into shares of the issuer’s stock

3. Bond characteristics

Par / Face Value
The par value (also known as face value) represents the amount of principal that must be repaid to lenders at maturity.

Coupon
A coupon is the interest rate the issuer will pay its bondholders. The coupon can be paid annually, semi-annually or quarterly.

As we saw earlier, some bonds do not pay any coupon (zero-coupon bonds). Instead, these bonds are issued at a discount.

The coupon is calculated as a % of the face value ➔ a 10% annual coupon on a CHF 5'000 bond would imply an annual payment of 10%*5'000 = CHF 500
4. Bond characteristics – The role of credit rating agencies

**BOND RATING**

<table>
<thead>
<tr>
<th>Moody’s</th>
<th>S&amp;P / Fitch</th>
<th>Credit Worthiness</th>
<th>Risk</th>
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<tr>
<td>Aaa</td>
<td>AAA</td>
<td>Investment grade</td>
<td>Highest Quality</td>
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<tr>
<td>Aa</td>
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<td>Medium Grade</td>
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<td>Speculative</td>
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<tr>
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<td>CCC/CC/C</td>
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<td>C</td>
<td>D</td>
<td>In Default</td>
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**Issuer (Type & Ratings)**

The type and quality of the bond issuer is a critical characteristic as it is closely linked to its default risk.

- For example, the US government is far safer than any corporation.
- The 10 year German bond (‘bund’) is considered one of the reference rates in Europe.
- The ratings agencies (S&P, Moody’s, Fitch) help investors determine a company’s credit quality and default risk.
- Both an issuer and its bonds can be rated by credit rating agencies.

- **AAA** is the highest possible rating that can be assigned to an issuer / a bond by credit rating agencies. An AAA-rated bond has an outstanding degree of creditworthiness because the issuer can easily meet its financial obligations.
  - Example of AAA-rated countries: Germany, Canada, Denmark, Luxembourg
  - Example of AAA-rated corporations: Johnson & Johnson.

- **A D (respectively C for Moody’s) rated company/ government is considered in default.**
  - Example of a D rated country: Venezuela.

- **Lowest possible rating that can be assigned to an issuer / a bond by credit rating agencies.**
  - An investment grade issuer is an issuer with a relatively low risk of default.
  - A bond/issuer is considered to be investment grade if its rating is BBB (specifically BBB-/ Baa-3) or higher.

- **A junk issuer/bond is an issuer / a bond which is really risky.**
  - A bond/issuer is considered to be investment grade if its rating is BB (specifically BB+ / Baa1) or lower.
BOND PRICE & YIELD

Yield refers to the earnings generated and realized on an investment over a particular period of time, and is expressed in terms of percentage based on the invested amount. Yield is a measure of cash flow that an investor gets on the amount invested in a security. Usually it is computed on an annual basis.

1. Inverse relationship

Current yield

The current yield represents the return the bond will deliver if the bondholder holds it for a year. Since the bond price changes over time, the current yield will vary consequently.

\[
\text{Current Yield ROA} = \frac{\text{Coupon}}{\text{Current bond price}}
\]

There is an inverse relationship between a bond’s price and yield: as bond prices increase, bond yields fall.

- **Current yield < Coupon rate**: The bond is traded at a premium.
- **Current yield = Coupon rate**: The bond is traded at par.
- **Current yield > Coupon rate**: The bond is traded at a discount.

2. What affects bonds’ prices?

Interest rates

When a new bond is issued, it typically carries a coupon rate at or close to the prevailing market interest rate. Since the price of a bond changes over time, the current yield will vary consequently.
CREDIT ANALYSIS

1. General principles

Credit analysis is used to measure the issuer’s ability to meet its debt obligations. This process seeks to identify the appropriate level of default risk associated with investing in that particular entity.

THE FOUR C’S OF CREDIT

- Capacity
- Collateral
- Covenants
- Character

Technical analysis

Technical analysis focuses on analyzing statistical trends gathered from trading activity, such as yield/spread/price movements, to evaluate investments and identify trading opportunities. Bond spreads are the common way that market participants compare the value of one bond to another. Bond spreads reflect the relative risks of the bonds being compared. The higher the spread, the higher the risk usually is.

TECHNICAL MEASURES

- Price trends, chart patterns
- Yield comps table
- Spread movements

Suppose Amazon (S&P rating: AA) issues a CHF 1’000 bond.

If, during the life of the bond, Amazon is downgraded to A (meaning that its credit quality worsen), investors will require a higher yield, since they carry a higher risk. ➔ A higher yield means a lower price.

Inflation

Rising prices (inflation) over time reduce the purchasing power of each interest payment a bond pays. Therefore, the stronger the inflation the higher the return on bonds that investors want ➔ yield increase = price decrease

Credit ratings

As we saw earlier, Moody’s, S&P and Fitch assign a rating to bonds and issuers assessing the risk for default. The riskier the bond/issuer (the lower the rating), the higher the return on bonds that investors want.

Suppose Amazon issues a CHF 1’000 bond («Bond 1») carrying a 5% coupon maturing in 5 years. Investors will be paid CHF 50 annually.

Next year, rates go up. How does that impact the price of the bond?

- Amazon now issues a new bond («Bond 2») offering a 7% coupon with the same maturity. Bond 2 investors will receive a CHF 70 coupon per year (> CHF 50).
- The bond 1 becomes less attractive. In this situation, the bond price drops to compensate for the less attractive yield.

Next year, rates go down. How does that impact the price of the bond?

- Amazon now issues a new bond («Bond 2 bis») offering a 3% coupon with the same maturity. By investing in Bond 2 bis, investors will receive an annual coupon of CHF 30 (< CHF 50).
- Conversely, the price of the bond 1 goes up as it becomes more attractive.
Debt-to-Equity Ratio

The Debt/Equity ratio is a measure of the degree to which a company is financing its operations through debt versus wholly owned funds.

\[
\text{Debt/Equity} = \frac{\text{Total Debt}}{\text{Total Shareholder Equity}}
\]

**Company A**
- Debt = CHF 100
- Shareholder Equity = CHF 20

**Debt/Equity = 5x**

A highly levered and risky investment

**Company B**
- Debt = CHF 100
- Shareholder Equity = CHF 200

**Debt/Equity = 0.5x**

A low-risk company and a better investment

Leverage ratio

Analysts use it on a «snapshot» basis, as well as to look at trends over time.

\[
\text{Leverage} = \frac{\text{Net Debt}}{\text{EBITDA}}
\]

Industry
- What are the current trends?
- Exposure to technological changes?
- What are the main drivers?
- Vulnerability of the company to economic cycles?

Business model
- Understanding of the issuer’s activities and businesses
- How does the company stand from the competition?
- SWOT analysis

Financials
- Ratio analysis
- Financial statements analysis
- Bloomberg

Company structure
- Financial statements analysis
- Annual report
- Bloomberg

Leveraged ratios

Credit analysts also calculate leverage ratios to determine the extent to which the corporation is using financial leverage.

Leverage ratios are indicators that measure the proportion of debt in a company’s capital structure.
Liquidity ratios
«Liquidity» refers to the ease and quickness with which assets can be converted to cash—without a significant loss in value. The more liquid a firm’s assets, the less likely the firm is to experience problems meeting short-term obligations.

Current Ratio
The current ratio measures a company’s ability to pay short-term obligations or those due within one year. A company’s current ratio should be compared with its peers and the industry average.

\[
\text{Current Ratio} = \frac{\text{Current Assets}}{\text{Current liabilities}}
\]

- Current ratio > industry avg: management may not be using their assets efficiently
- Current ratio = industry avg: generally considered acceptable
- Current ratio < industry avg: may indicate a higher risk of distress or default

Quick Ratio
Similarly to the current ratio, the quick ratio is an indicator of a company’s short-term liquidity position and measures a company’s ability to meet its short-term obligations with its most liquid assets. The reason why we subtract inventory is that inventory’s liquidity can sometimes be a problem (not easily sellable).

Coverage & Cash Flow ratios
Cash flow ratios are used to test the adequacy of cash flows generated through earnings for purposes of meeting debt and lease obligations.

Operating Cash Flow
The operating cash flow ratio is a measure of how well current liabilities are covered by the cash flows generated from a company’s operations. An OCF Ratio > 1 indicates that a company has generated more cash in a period than what is needed to pay off its current liabilities.

\[
\text{OCF-to-Sales Ratio} = \frac{\text{OCF}}{\text{Sales}}
\]

\[
\text{FCF-to-Sales Ratio} = \frac{\text{FCF}}{\text{Sales}}
\]

FFO / Total Debt Ratio
This is a leverage ratio that a credit rating agency or an investor can use to evaluate a company’s financial risk.

\[
\text{FFO-to-Total Debt Ratio} = \frac{\text{FFO}}{\text{Total Debt}}
\]

Interest Coverage Ratio
The Time Interest Earned ratio indicates how many times a company can cover its interest charges on a pretax earnings basis.

\[
\text{Times Interest Earned} = \frac{\text{EBIT}}{\text{Interest}}
\]
THE 3 OTHER C’S OF CREDIT

Collateral
Collateral is looked at not only in the traditional sense of assets pledged to secure the debt, but also to the quality and value of those unpledged assets controlled by the issuer.

Covenants
Covenants are the terms and conditions of the lending agreement. They lay down restrictions on how management operates the company and conducts its financial affairs.

Character
Character of management is the foundation of sound credit. This includes the ethical reputation as well as the business qualifications and operating record of the board of directors, management, and executives responsible for the use of the borrowed funds and repayment of those funds.

TECHNICAL ANALYSIS

1. Understanding the concept of yield spread

Yield spread
The term «bond spreads» or «spreads» refers to the interest rate differential between two bonds. Mathematically, a bond spread is the simple subtraction of one bond yield from another.

Yield spreads are not fixed. Because bond yields are always in motion, so too are spreads. Spread is expressed in «basis points» (bp), with 1% = 100 bps.

Bond spreads reflect the relative risks of the bonds being compared. The higher the spread, the higher the risk usually is.

Worries about the country’s debt led to a sharp increase of the italian interest rate, increasing the spread against the 10 years german bund.

Italy-German 10 year Bond Spread

- 1.60%
- 2.40%
- 3.20%
- 4.00%
- 2.85%

2015 2016 2017 2018 2019
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