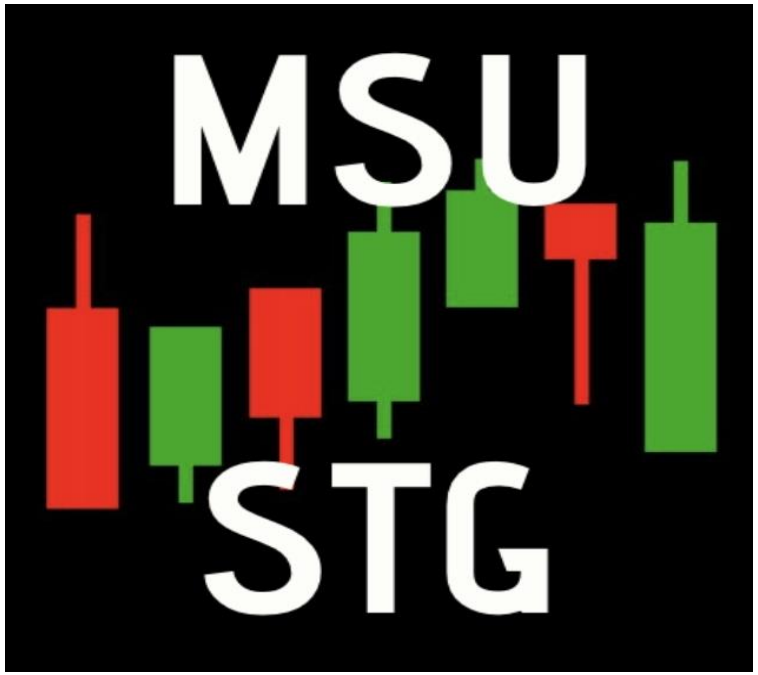
Student Trading Group
Fixed Income

March 28, 2024



Agenda

- Market update
- Open Discussion
- Fixed Income
- Q&A
- MW Investing Competition

Market Update

- GameStop(GME) missed earnings , revenue surprise of –12.49% compared to consensus forecast. ($2.05B vs actual of $1.79B). Analysts recommend and have acknowledged the stock to be a "strong sell."
- U.S. Energy Department's weekly inventory release showed that natural gas supplies increased when it was expected to decline. The bearish inventory numbers notwithstanding, futures settled with a slight gain week over week ,just the second in the last eight on signs of production pullback.(Potential short upside for stocks like CTRA or LNG ? Weekly Petroleum Status Report - U.S. Energy Information Administration (EIA)

Open Discussion

- Recent Trades?
- News?
- Predictions?
- Economic Data?
- Earnings?
- Etc.

Fixed Income (FI)

- Fixed income refers to a type of investment security that pays investors fixed interest or dividend payments until its maturity date.
- After maturity, the principal amount invested is returned to the investor.
- The most common types of fixed income securities are bonds, which can be issued by governments, municipalities, or corporations.

FI Securities Characteristics

- Regular income
- Principal repayment
- Risk
- Interest Rate Influence
- Credit Rating

FI Summary

- Fixed income investments are a key component of a diversified investment portfolio, offering a balance between risk and return while providing regular income.
- They are particularly favored by investors who are risk-averse or require a steady income stream.

Bond Valuation (BV)

- Bond valuation is the process of determining the fair value of a bond.

- This valuation is crucial for both investors and issuers to understand the worth of a bond in the current market environment. Here are the key components and steps involved in bond valuation:

Present Value of Future Cash Flows (BV)

- Bond valuation typically involves calculating the present value of the bond's future interest payments (coupons) and the present value of its principal repayment at maturity.

- The sum of these two present values gives the bond's fair value.

Interest Rates and Yields (BV)

- Interest Rates and Yields: The discount rate used in bond valuation is typically the bond's yield to maturity (YTM), which is the interest rate that equates the present value of the bond's future cash flows to its current price.

- Changes in interest rates in the broader market affect the YTM and, consequently, bond prices.

Coupon Payments (BV)

- The coupon rate of the bond, which is set at issuance, determines the periodic interest payments the bond will make. These payments are a key component of the bond's future cash flows.

Maturity (BV)

- The time until the bond's principal is repaid impacts its valuation. Longer-term bonds are generally more sensitive to interest rate changes than shorter-term bonds.

Credit (BV)

- The issuer's creditworthiness affects the bond's risk and, therefore, its yield and valuation. Bonds issued by entities with higher credit risk typically offer higher yields to compensate investors for the increased risk.

Market Conditions (BV)

- The bond's price can fluctuate based on overall market conditions, including changes in interest rates, inflation expectations, and the economic outlook.

Term Structure of Interest Rates

- Yield Curve
  - Greater the maturity, most likely greater yield
- Spot Rates vs Forward Rates
  - Spot rates -> Yields on zero coupon bonds or different maturities
  - Forward Rates -> future interest rates implied/predicted by current market

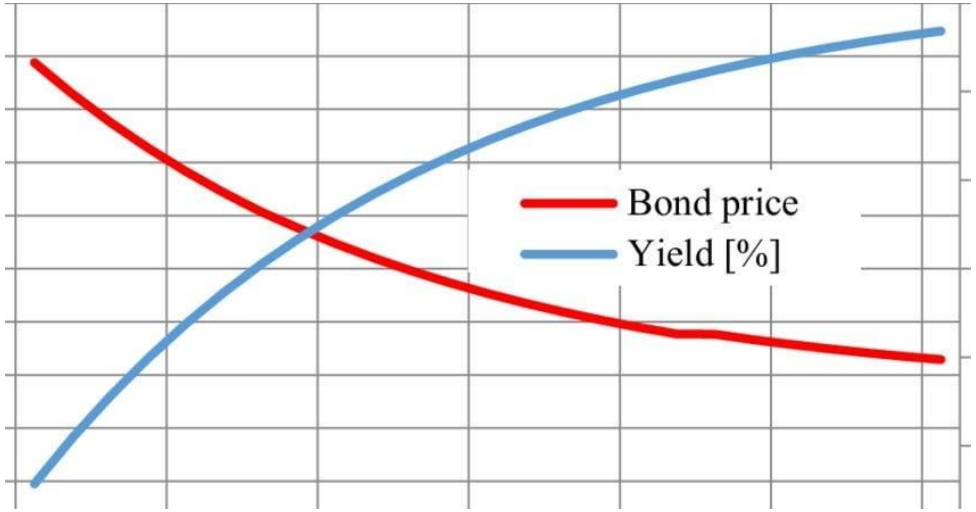
Bond Pricing & Interest Rate Risk

- Price based on present value of future cash flow
  - Use yield to maturity (YTM) as discount rate
- YTM is annualized rate of return if investor holds till maturity
- Bond price is inversely related to YTM
- Duration
  - Longer duration are more sensitive to interest rates
- Convexity
  - Degree to which bond prices change in response to change in interest rates
  - Higher convexity = more volatility when interest rates change

Inverse Relationship of Price and YTM

- When interest rates rise, new bonds offer higher coupon rates
- Old bonds with low coupon rates become less desirable, causing price to fall to make up for the lower yield

- When interest rates fall, new bonds offer lower coupon rates
- Old bonds with higher coupon rates become more desirable, causing price to rise to make up for the higher yield



5% yield on a $100 bond = $5

Which is the equivalent to

10% yield on a $50 bond = $5

Bond Pricing Problem

A 1 Year Bond sells for $300 and has a yield of 4%. What would the price be if the yield falls to 3%?

New Price = Old Price * (Old Yield/New Yield)

New Price = $300 * (0.04/0.03)
New Price = $300 * 1.333333
New Price = $400

****This example is very specific to a 1 Year Bond, and ignores Face Value****

Bond Pricing Formula

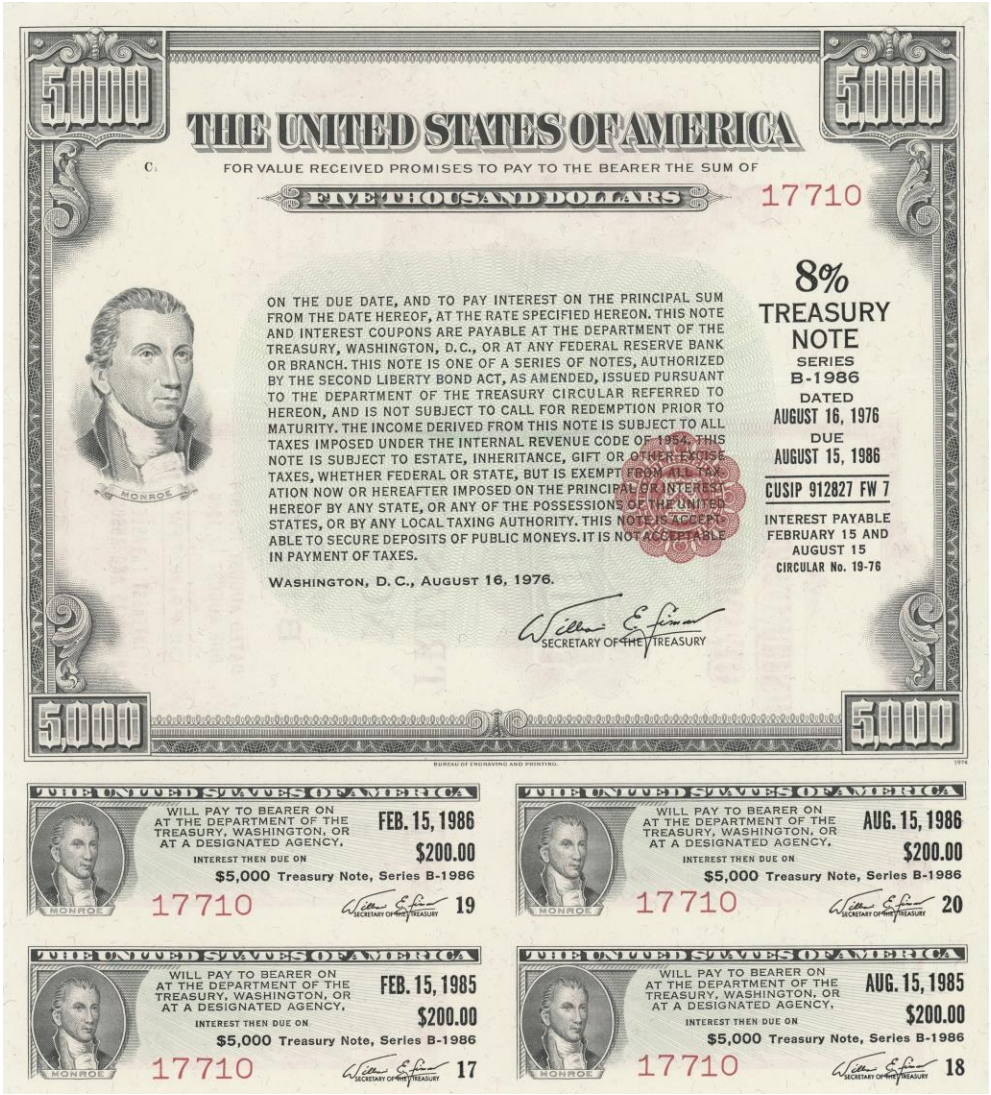
$$P = \sum_{t=1}^{n} \frac{C}{(1+r)^t} + \frac{F}{(1+r)^n}$$

P = Bond Price
C = Coupon Payment Per Period
r = YTM Per Period (decimal)

F = Face Value
n = Total Periods Until Maturity
t = Current Period (1 to n)

Government Bonds

- Yield spreads
- Risk premiums
- Treasury bills



Corporate Bonds

- Raise capital by issuing debt
- Investment Grade (BBB-/Baa3) vs High Yield (distressed debt)
- Secured bonds are backed by assets or collateral
- Unsecured bonds not backed by collateral
- Convertible Bonds allow holder to convert to common stock

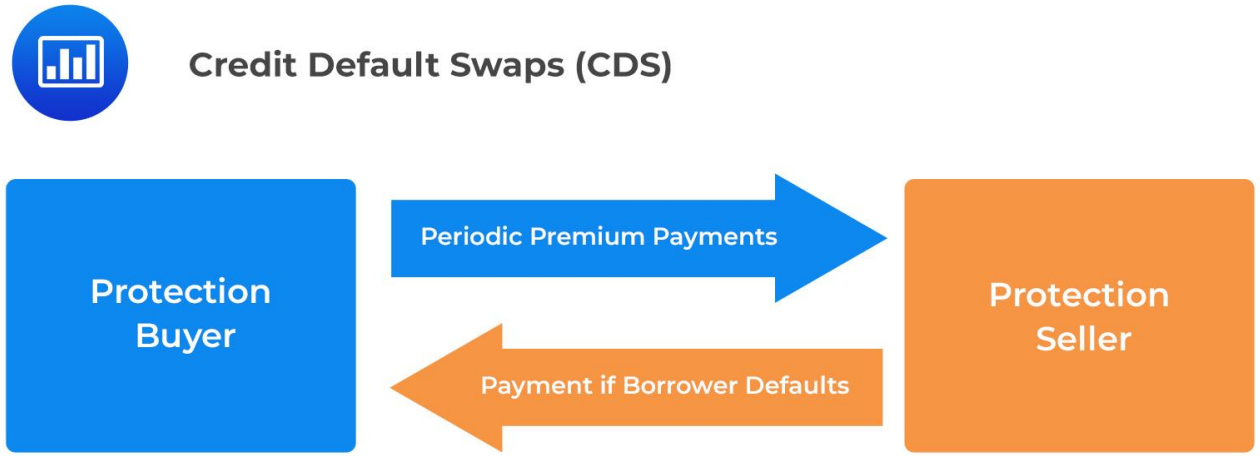
Credit Risk & Credit Analysis

- Defaults
- Issuer risk (credit worthiness)
- Macroeconomic factors
- Credit rating & credit agencies
- Credit spreads
  - Investors demand is the spread between corporate bond and risk free gov bonds (T-Bills)

Fixed Income Derivatives

- Interest rate futures (10yr Yield)
- Interest rate swaps
- Options on interest rate futures (caps & floors) (low liquidity)
- Credit default swaps
- Asset backed security derivatives

Credit Default Swaps



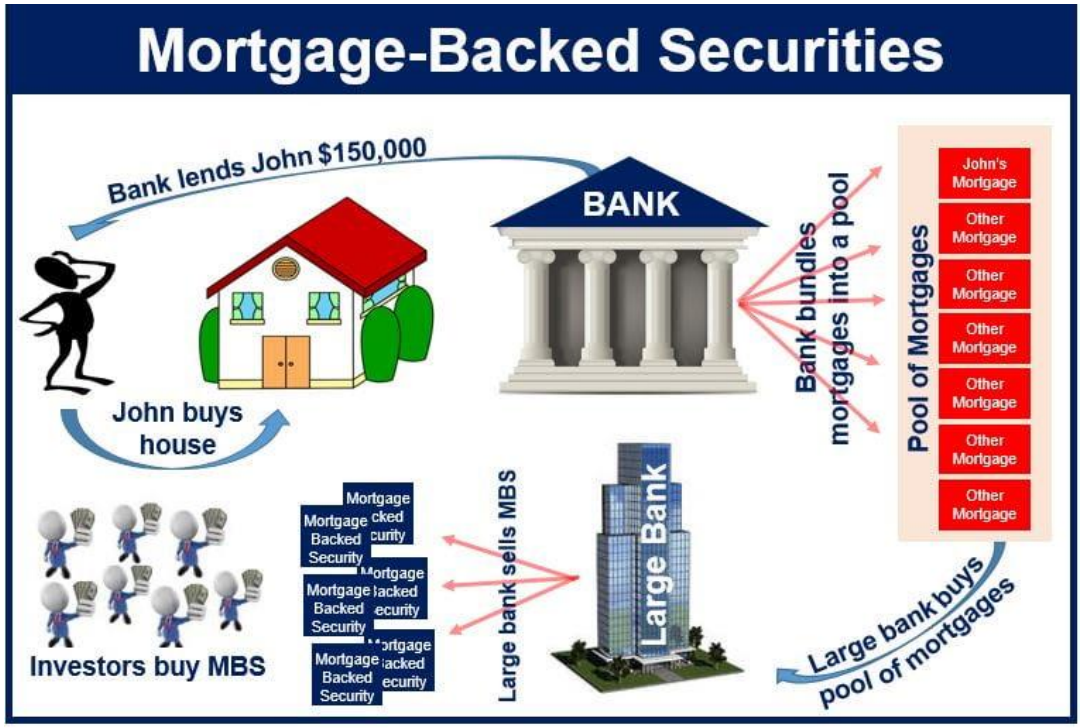
- Buyer of CDS pays small premium to ensures the position incase of default
- Seller of CDS collects premium but grantees to compensate buyer incase of default.

Asset-Backed Securities

- Financial instrument collateralized by an underlying pool of assets to generate cash flow from debt.
- Loans, leases, credit balances, receivables.
- Producer higher YTM than government or corporate bonds
- Assets include auto loans, credit card receivables, student loans, equipment leases…(consumer debt)

Mortgage-Backed Securities

- Cash flow from mortgage loans complied into a MBS
- Credit risk, including risk of default by mortgage borrowers and the risk of losses on underlying collateral
- Extension risk occurs in periods of rising interest rates causes payment speeds to slow down



Treasury Inflated Protected Securities

- Treasure bond designed to provide protection against inflation
- Backed by U.S. Department of the Treasury (safe/high liquidity)
- Principal value adjusts based on changes to CPI
- Fixed Rate
- Deflation hurts principal but will not decrease below par value at maturity

Fixed Income Portfolio Weight

- There are many ideologies and models regarding what percent of your portfolio should be composed of fixed income
- Different investors should base their weighting on factors such as risk tolerance, age, income, etc.
- One example for risk adverse investors is represented by the following

  B% = 0, if A < 30

  B% = A, if A > 30

The Proper Asset Allocation Of Stocks & Bonds By Age

Conventional Model

Age	Stocks	Bonds
0 - 25	100%	0%
30	70%	30%
35	65%	35%
40	60%	40%
45	55%	45%
50	50%	50%
55	45%	55%
60	40%	60%
65	35%	65%
70	30%	70%
75+	25%	75%

Q & A

MarketWatch Investing Competition

https://www.marketwatch.com/games/msu-stg-ss24

- ID: MSU STG SS24
- Password: msustg

Ending April 10th

Discord