CHAPTER 6

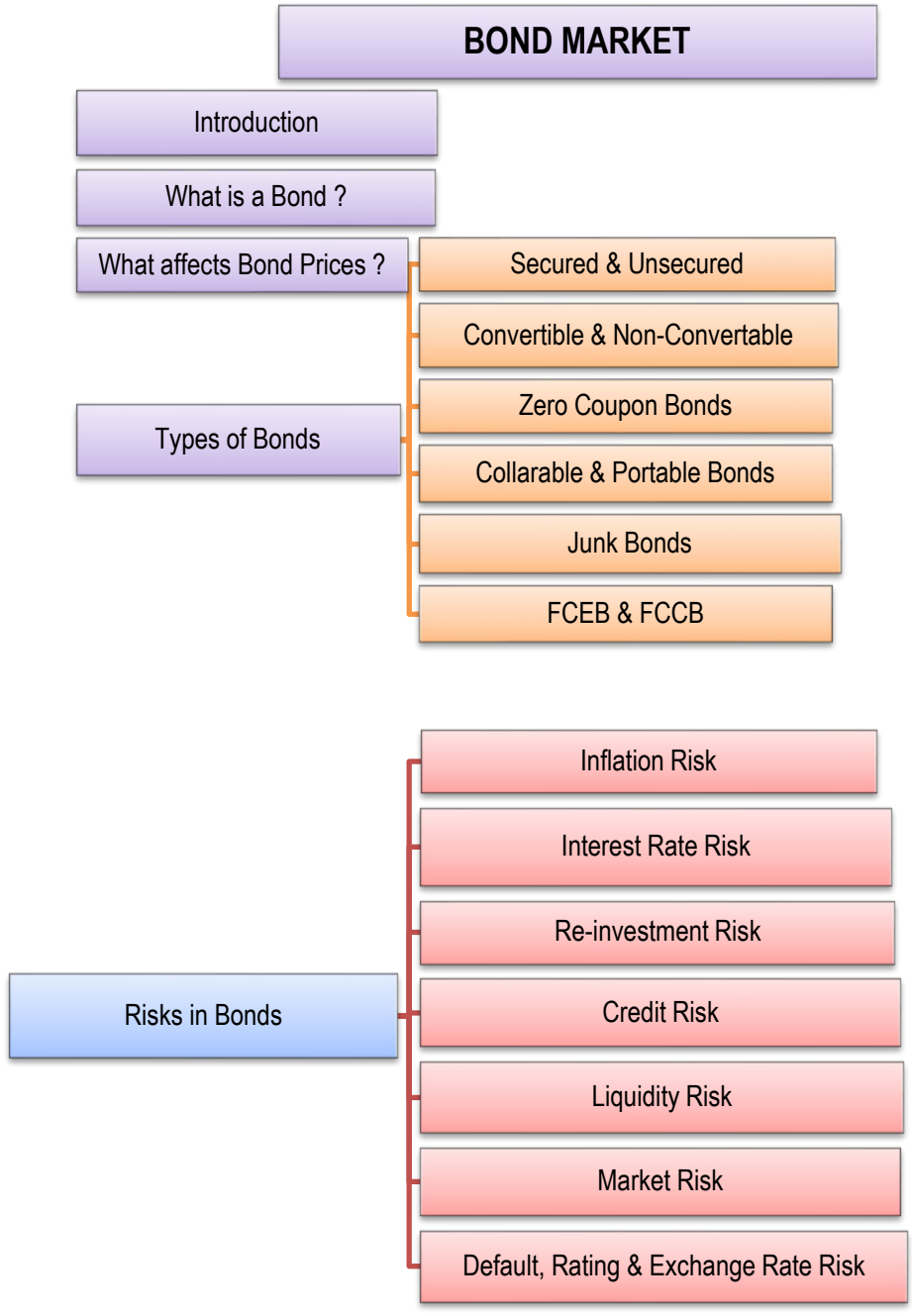
BOND MARKET

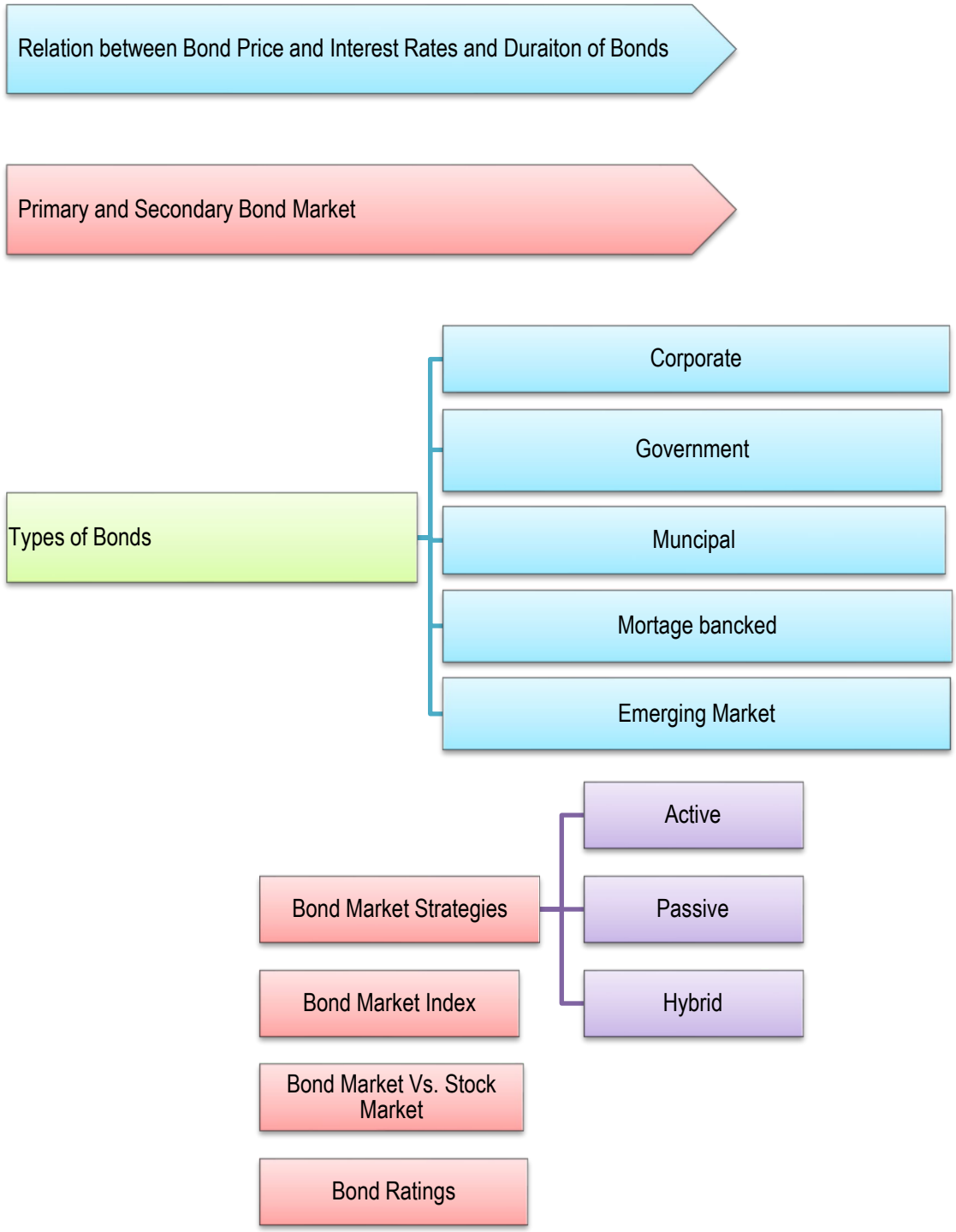
LEARNING OUTCOMES

After going through the chapter student shall be able to understand:

- Introduction to Bond Market
- What is a Bond?
- What affects Bond Prices?
- Types of Bonds
- Risks in Bonds
- Relation between Bond Price and Interest Rates
- Primary Bond Market Vs. Secondary Bond Market
- Types of Bond Markets
- Bond Indices
- Bond Market vs. Stock Market
- Bond Ratings

CHAPTER OVERVIEW



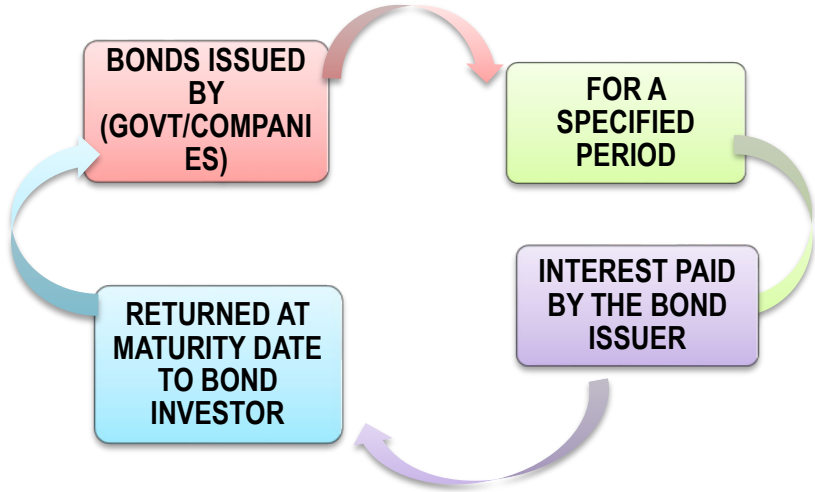


1. INTRODUCTION TO BOND MARKETS

1.1 What is a Bond Market?

A bond market—often called the debt market, fixed-income market, or credit market- is the collective name given to all trades and issues of debt securities. Governments typically issue bonds to raise capital to pay down debts or fund infrastructural improvements.

Publicly traded companies issue bonds when they need to finance business expansion projects or maintain ongoing operations.



Note: In the above figure, bond issued will be returned to the investor at maturity date depending upon whether the bond is redeemable or irredeemable.

1.2 History

Bonds have been traded far longer than stocks have. In fact, loans that were assignable or transferrable to others appeared as early as in ancient Mesopotamia, where debts denominated in units of grain weight could be exchanged among debtors. In fact, the recorded history of debt instruments dates to 2400 B.C.—via a clay tablet discovered at Nippur, now present-day Iraq. This artifact records a guarantee for payment of grain and listed consequences if the debt was not repaid.

Later, in the Middle Ages, governments began issuing sovereign debts to fund wars. In fact, the Bank of England, the world's oldest central bank still in existence, was established to raise money

to rebuild the British navy in the 17th century through the issuance of bonds. The first U.S. Treasury Bonds, too, were issued to help fund the military, first in the war of independence from the British crown, and again in the form of "Liberty Bonds" to help raise funds to fight World War I.

1.3 In Context of India

The East India Company played a huge role in bringing the concept of public borrowing. The East Indian Company started borrowing during the eighteenth century to finance its campaigns in South India. The debt which was owed by the government to the public was referred as the public debt. Public Debts are taken from public with the view to meet the deficit in revenue of the government.

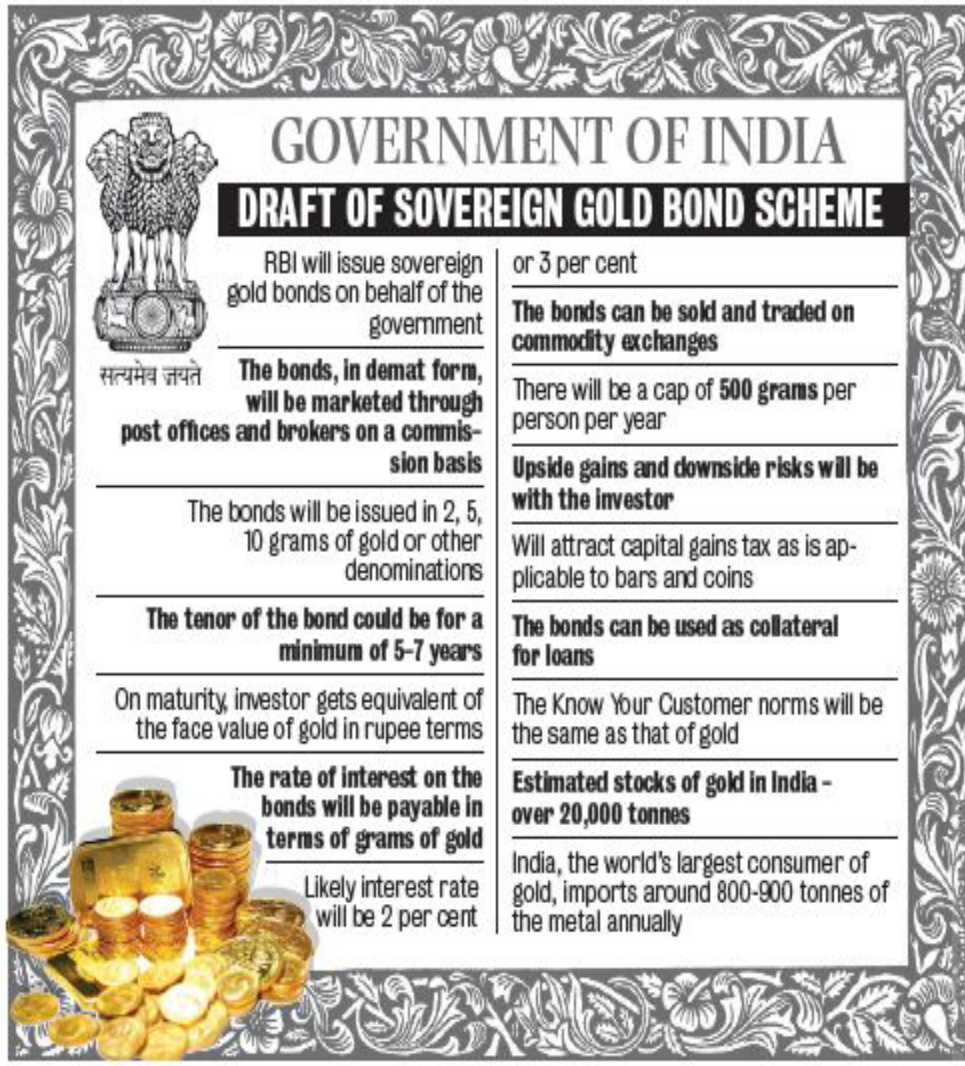
In India, the first borrowing was made in 1867 for the purposes of railway construction. Apart from that a rise in public debt was also encountered during the first world war. Interest rate of bonds varied in India from time to time. In 1857 it came down to 5% and gradually to 4% in 1871.

Bonds are regarded as securities under Section 2(h) of the Securities Contract (Regulation) Act, 1956. Bonds could be referred as loans provided by investors to the organizations. Bonds have interest rates at which they are redeemed after a certain maturity period. The borrower has obligation to pay interest on the principal amount. The interest is termed as coupons in the Indian Bond Market. There are various types of bonds which currently exists in the Indian Bond Market.

The plain vanilla bond is the simplest amongst all bonds. The bonds that currently exists are callable bonds, puttable bonds, zero coupon bond, amortizing bond, floating rate bond, government securities, and corporate bonds.

1.4 Key Points

- The bond market broadly describes a marketplace where investors buy debt securities that are brought to the market by either governmental entities or corporations.
- National governments generally use the proceeds from bonds to finance infrastructural improvements and pay down debts.
- Companies issue bonds to raise the capital needed to maintain operations, grow their product lines, or open new locations.
- Bonds are either issued on the primary market, which rolls out new debt, or traded on the secondary market, in which investors may purchase existing debt via brokers or other third parties.
- Bonds tend to be less volatile and more conservative than stock investments, but they also have lower expected returns.



1.5 Let's Understand Bonds through Examples

(a) Company A issues five-year bonds on January 1, 2018, which cost ₹100 each and pay 5%. However, the current yield is 6%.

What is the yield?

The yield is 6%.

What is the principal?

➢ The principal is ₹100.

What is the maturity period?

- January 1, 2023 (the maturity date is in five years from the issue date).

What is the coupon rate?

- The coupon rate is 5%.

(b) Company B issues two-year notes on March 1, 2018, which cost ₹ 500 each and pay 6%, with the first payment made six months after the issue date.

Various dates at which the bondholder will be paid interest are as follows:

- September 1, 2018
- March 1, 2019
- September 1, 2019
- March 1, 2020

How much will they be paid on each date?

- September 1, 2018: ₹ 500 x (6%/2) = ₹ 15
- March 1, 2019: ₹ 500 x (6%/2) = ₹ 15
- September 1, 2019: ₹ 500 x (6%/2) = ₹ 15
- March 1, 2020: ₹ 500 x (6%/2) + ₹ 500 = ₹ 515

Note:

(i) 6%/2 because the coupon rate is annual but is paid semi-annually.

(ii) Last payment includes the principal.

2. WHAT IS A BOND?

What is a debt security? A bond. To raise capital from investors who are ready to lend them money for a predetermined period of time, borrowers issue bonds.

Lending to the issuer—which could be a federal agency, local government, business, or corporation—occurs when you purchase a bond. In exchange, the bond's issuer agrees to pay you a certain interest rate over the duration of the bond and to reimburse the principal—also referred to as the bond's face value or par value—when the bond "matures," or when the main amount is due after a predetermined amount of time. Bonds may be redeemed at par or at a premium, depending

on the terms stated when the bonds were issued. Additionally, they have monthly interest that must be paid by the issuer.

An investor acquires ownership of the company when he makes an equity investment. If there is a debt, the investor becomes the issuing entity's creditor. Investing in debt securities is essential for creating a solid and diverse portfolio since it guarantees fixed income.

Bonds are purchased by investors as a reliable source of income. Bonds issuers usually pay interest on a fixed timetable, like every six months.

Bonds are a means to protect capital when investing, as bondholders receive their entire principle back if the bonds are held to maturity. Bonds can serve as a buffer against investments in more erratic stocks.

Bonds are issued by businesses, governments, and municipalities to raise money for a variety of purposes, such as:

a) Supplying operating cash flow

b) Paying off debt

c) Funding major projects including hospitals, schools, and roadways

2.1 Important Concepts in Bonds

(i) **Face Value:** Face value (or par value or principal) is the amount the investor will get back from the issuer once the debt instrument matures. Bonds may be issued at face value or at a discount to the face value. If a bond trades for a price higher than its face value, then it is said to be traded at a premium. If it is trading below the face value, it is said to be traded at discount.

(ii) **Coupon or Interest Rate:** Coupon is the amount the investor will receive via interest payments for the debt instrument. The interest is calculated and paid on the face value of the instrument, irrespective of its price in the market.

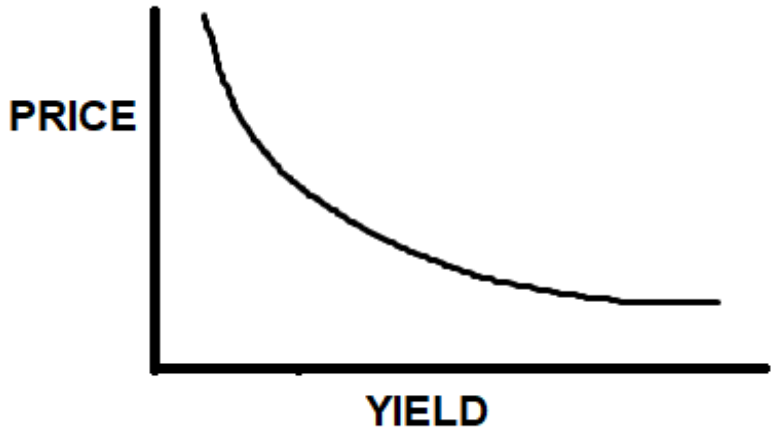
Example - If the Bond with face value 1000 has 8% p.a. coupon rate, then interest shall be ₹ 800 per year which shall be paid by the issuer to the investor.

(iii) **Maturity:** Maturity is the date on which the investor is repaid the principal by the issuer. The tenure for the maturity of an instrument can range from one day to 30 years. The maturity date is one of the important dates to consider for YTM or Yield.

(iv) **Yield:** Yield from a financial angle is the annual percentage return earned from the investment made on a security. For example, a 6% yield means that the investment averages a 6% return each year. Yield is the most popularly used tool to measure the return from a bond – be it a government bond or a corporate bond. The simplest way to understand yield is the situation where an investor purchases bonds directly from the issuer at face value. Here, if the coupon interest rate is 7%, the yield is 7% (coupon yield).

(v) **Price Yield relationship:**

- Price-yield relationship between bonds is not a straight line but it is convex (curved). This indicates that price changes for yield changes—both an increase and a drop in yield—are not symmetrical (or an exact match).
- Bonds vary in how sensitive their prices are to yield fluctuations. As a result, price variations for a given change in yield will vary based on the type of bond held.
- Higher the term to maturity of the bond, greater the price sensitivity.
- Lower the coupon, higher the price sensitivity because of higher interest rate risk (discussed later in the chapter). Other things remaining the same, bonds with higher coupon exhibit lower price sensitivity than bonds with lower coupo



Note: In the above figure, it is shown that when bond price increases the bond yield decreases.

(vi) **Current yield:** Current market price is different than secondary market price, so interest earned on current market price is known as current yield i.e. if I invest money at current market price what annual yield I will receive on my investment at today's price.

Formula: (Interest /Po) x 100.

Where Po is Spot Price or the current market price of bond.

For example, face value of a 12% bond is Rs. 100. An investor buys the bond from the market for (i) Rs. 90, Rs. 100, or (iii) Rs. 110. His current yield in all the three situations are as follows:

(i) $\frac{\text{Interest}}{P_0} \times 100 = \frac{12}{90} \times 100 = 13.33\%$

(ii) $\frac{12}{100} \times 100 = 12\%$

(iii) $\frac{12}{110} \times 100 = 10.91\%$

We can see from the above example that as the price of the bond increases, the yield decreases.

(vii) Yield to maturity (YTM): Yield to maturity is expressed as the average annual yield from a bond held till maturity. The return (in terms of percentage) paid on an instrument in the form of dividend or interest is called Yield. In the debt markets, yield to maturity is a widely used measure to compare bonds. This is the annual return on the bond if held to maturity considering when you bought the bond and what you paid for it.

Yield to maturity is a special concept applicable to bonds and the returns they generate. Usually, when calculating bond yield, the annual return earned from the bond is assessed. It is the IRR earned from holding a bond till maturity. Since bond prices change, YTM will also keep changing with change in bond price and thus helps in assessing the true worth of the bond. It helps you decide whether you should invest in the bond or not.

The formula for yield to maturity (YTM) is given as follows –

YTM = {Annual coupon rate + (Difference between the face value and market value of the bond / Remaining years to maturity)} / {(Face value + market value of the bond) / 2}

Example 1:

For instance, say a bond has a face value of ₹ 100. Its current market value is ₹ 98. The bond is issued for five years. The annual coupon here is calculated as 10% of ₹ 100, which is ₹ 10.

The yield to maturity would be calculated as follows –

YTM = {₹10 + (100 – 98 / 5)} / {(100 + 98) /2}

= 10.4 / 99 = 0.1050

= 10.50%

Example 2:

Calculate the YTM of 9.95% SBI 15-year bonds with the help of following information:

Face Value: ₹ 10000

Maturity Amount: ₹ 10000

Tenure: 15 Years

Allotment Date: March 16, 2014

Maturity Date: March 16, 2029

Coupon/Interest: 9.95% p.a. payable annually (₹ 995 on the Face Value of ₹ 10000)

Interest Payment Date: April 2nd every year

Market Price: ₹ 10788.56 (July 23, 2015)

Remaining Tenure: 13 Years and 236 Days (or approx. 13.65 Years)

YTM is the discount rate in percentage which is going to make the present value of ₹ 995 payable every year on April 2nd and present value of ₹ 10000 payable on March 16, 2029, equal to the market price of ₹ 10788.56.

Thus, putting the same in YTM formula we arrive at YTM = 10.13%.

(Source: https://www.tickertape.in/glossary/yield-definition-types-formula-yield-to-maturity-and-more/)

(viii) Calculation of Weighted Yield: Weighted Yield is calculated when an investor is holding a series of bonds in his/her portfolio. It is calculated as follows:

1) As is the case with all investment assets, the first step in calculating bond portfolio is to calculate the market value of portfolio.

2) Calculate individual yield of the bond.

3) Calculate the Weight Yield by taking the product of each individual bond market value and its corresponding yield.

(ix) **Volatility:** Volatility is the change in the market price of the bond with respect to say change in interest rates. The greater the length of the bond's remaining term, the more sensitive it will be to changes in interest rates.

For example, a one-year bond will change less than a 10-year bond or a 30-year bond, but it will have the same sensitivity to interest rates as a 30-year bond with 1 year to go until maturity.

Bonds with longer remaining terms will be more volatile than those with less time until maturity.

(x) **Yield Curve:** The yield curve is a graph used to show the relationship between yield and maturity. Yield curves work best when plotting different maturity dates for the same type of bond, meaning that the only major difference in the securities is their maturity date. Due to different economic situations at various times, the curve can take various shapes.

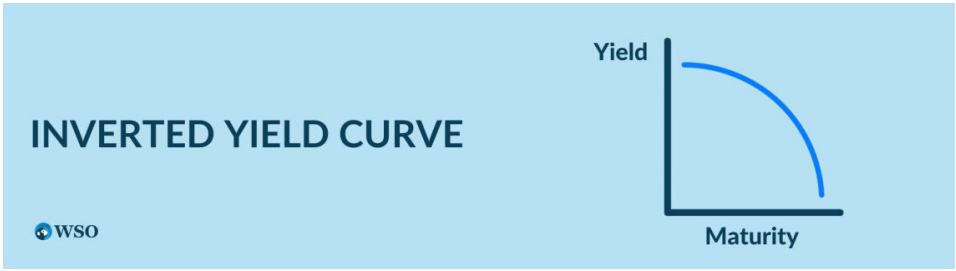
The five main types of the curves are:

(a) **Normal Yield Curve**

The normal upward-sloping curve is the most common type of curve. It represents a market situation where the interest rates for long-term bonds are higher than for short-term bonds.

This upward sloping curve is considered normal because, in a rational market, investors expecting economic growth will generally ask for a higher compensation (interest rate) for greater exposure to risk, as longer-term securities are exposed to more uncertainty. This is usually associated with economic expansion.

(b) Inverted Yield Curve:



An inverted downward-sloping curve is an unusual type of curve. It represents a market situation where the interest rates for long-term bonds are lower than for short-term bonds.

This is because investors predict that long-term interest rates will decline due to various perceptions.

For example, an expected slower economy and a decline in inflation drive greater demand for higher-yielding short-term securities and lower demand for long-term securities.

The inverted curve is usually seen as a leading indicator of recession, suggesting the pessimistic market perception of the economy in estimated 6 - 18 months.

(c) Steep Yield Curve:

A steep curve represents a temporary scene in economic expansion, where the long-term yields increase quicker than the short-term yields.

A steep curve has a steeper slope than a normal curve. Therefore, compared to the normal curve, the difference between short-term and long-term yields is bigger in a steep curve.

This type of curve normally indicates the start of an economic expansion after a recession. As the curve steepens, banks can borrow money at lower rates and lend at higher rates.

(d) Flat Yield Curve:

A flat curve is normally associated with a transitory change between the normal and inverted curves. It represents a market situation where the yields from all maturities become similar.

A flat curve can denote a change in the bonds market but is not necessarily seen as a solid indicator of a change in investors' perspective on market expectations.

(e) Humped Yield Curve:

A humped curve, called a bell-shaped curve, is a rare situation where medium-term yields are higher than short-term and long-term yields.

It can result from a negative butterfly – a non-parallel shift in the yield curve where mid-term yields change by a greater magnitude than short-term and long-term yields.

Historically, returns following humped curves were either extremely good or tremendously poor. Like a flat curve, a humped curve represents a transitional state and isn't normally used as an indicator for future expectations of the market condition.

(Source: https://www.wallstreetoasis.com/resources/skills/finance/yield-curve)

3. WHAT AFFECTS BOND PRICES?

Largely interest rates and credit quality of the issuer are the two main factors which affect bond prices.

(a) Interest Rates

i. When interest rates fall, the existing fixed rate bonds become more valuable, and the prices move up until the yields become the same as the new bonds issued during the lower interest rate scenario.

ii. When the credit quality of the issuer deteriorates, market expects higher interest from the company and the price of the bond falls and vice-versa.

(b) Another factor that determines the sensitivity of a bond is the "**Maturity Period**". A longer maturity instrument will rise or fall more than a shorter maturity instrument.

(c) Government Borrowing and Fiscal Deficit

(d) RBI Policies revised from time to time

(e) Bank Rate

4. TYPES OF BONDS

(i) **Secured and unsecured Bonds:** Secured bonds are backed by an asset, which could be real estate, machinery (particularly for railroads, airlines, and transportation firms), or an additional source of revenue. One example of a single bond type that is guaranteed by the borrowers' tangible assets—such as the titles to their homes—as well as their revenue stream from mortgage payments is mortgage-backed securities (MBS).

Bonds are collateralized because investors have a claim on the issuer's assets in the event of a default and failure to make interest or principal payments, allowing them to recoup their investment. But occasionally, this claim on the borrower's assets can be contested, or the proceeds from the sale of an asset would not be sufficient to reimburse investors in full. In either scenario, bondholders might expect to receive a partial return on their investment after a period of time that could vary from weeks to years.

Unsecured bonds are backed by "the full faith and credit" of the issuer rather than a particular asset. Put otherwise, the investor does not have a claim on any collateral, only the issuer's pledge to repay. However, this need not always be a negative thing.

After investors whose securities are higher in the capital structure are paid, owners of unsecured bonds have a claim on the assets of the defaulting issuer. The holders of the secured bonds, for instance, will obtain payment first if, for example, ABC Ltd. issued both unsecured and secured bonds and subsequently filed for bankruptcy.

(ii) Convertible and non-convertible bonds/debentures: Debt products that require long-term investments are convertible bonds and debentures. Convertible refers to the fact that these can be changed into equity shares later. The issuing firm may occasionally have the authority to convert these, but the shareholders always have the final say. Compared to other debt products, convertible debentures have a lower coupon rate and offer tax advantages over interest paid. They can be entirely, partially, or selectively convertible, depending on both parties.

- **Fully Convertible Bonds/Debentures:** These bonds/debentures, as specified in the agreement, are fully convertible into equity shares after a predetermined amount of time. Bond/debenture holders become company shareholders upon conversion.
- **Partially Convertible Bonds/Debentures:** As the name implies, these bonds/debentures have a portion that can be partially converted into equity shares at the end of the designated tenure. The remaining bonds and debentures are still refundable within the terms of their maturity. Many investors prefer not to convert because it results in smaller equity capital.
- Financial fixed-income instruments known as **Non-Convertible Bonds or Debentures** do not have the option to convert into equity shares at maturity. These are typically offered to the public by well-known businesses looking to raise long-term funding. The benefits of non-convertible bonds and debentures include tax advantages, low risk, high yields, higher interest rates, and liquidity. Depending on the terms of the contract, these have a defined maturity date and interest that might be paid monthly, quarterly, semi-annually, or annually.

(iii) Zero Coupon Bonds

- A zero-coupon bond has a specific maturity date when it returns the bond principal.
- A zero-coupon bond pays no periodic income.
- The only cash inflow is the par value at maturity.
- Zero Coupons are issued at discount to the Face value.

- Zero Coupon bonds at maturity are redeemed for its full-face value.
- It is known as pure discount bond or deep discount bonds.

(iv) Callable and Puttable Bond

Callable Bonds: A callable bond, also known as a redeemable bond, gives its issuer the option—but not the responsibility—to redeem the bond before to its maturity date. A bond having an inbuilt call option is called a callable bond.

There are usually limitations on the call option associated with these bonds. For instance, it's possible that the bonds won't be redeemable within the first few initial years of their life. Furthermore, certain bonds permit redemption solely under certain exceptional circumstances.

If lower interest rates are anticipated, callable bonds can be advantageous to the bond issuers. The issuers may redeem their bonds in this situation and issue new bonds with reduced coupon rates.

Conversely, investors are exposed to greater risk when purchasing callable bonds. Investors will forfeit a portion of their future interest payments if the bonds are redeemed; this is commonly referred to as refinancing risk. Bonds that carry a higher level of risk typically carry a premium to offset the extra risk to investors.

Puttable Bonds: A debt instrument containing an integrated put option is called a puttable bond. The put option feature gives the bondholder the ability to compel the issuer to repay the principal early, but it does not impose any obligations on them.

Before the date of maturity, the put option may be executed on certain dates or after a predetermined amount of time. Bondholders who exercise a put option are required to sell the bond back to the issuer at a predetermined price, which is often the bond's par value, also known as its "face value."

The main advantage of the put option from the bondholder's point of view is defense against the possibility of rising interest rates in the financial markets. In essence, the bondholder gets the choice to reinvest the proceeds at the higher current interest rates after early redemption of the bond.

The choice to exercise the put option ultimately boils down to whether the risk-reward trade-off is judged worthwhile, and the expected gain exceeds the amount of risk assumed. Investors are encouraged to buy a bond with an embedded put option since it provides a lower yield than similar bonds without the put feature.

Furthermore, the efficacy of the puttable bonds in both the rising interest rates and falling interest rates is as follows:

- **Rising Interest Rates:** Bondholders have the option to redeem their bonds and return them to the issuer should interest rates rise. The bondholder might reinvest the capital in more advantageous circumstances after the funds are returned to increase return.
- **Falling Interest Rates**: On the other hand, a logical bondholder would choose to hold the bond until maturity because it would make no sense to exercise the put option at that point.

(v) **Junk bonds:** Junk bonds are high-risk debt with ratings of BB or below by Moody's and Standard and Poor's. Junk bonds are also called high-yielding bonds because of the high interest rates they pay to the investors.

Some more types of Bonds:

- **Foreign Currency Exchangeable Bonds (FCEB)** – It is a bond expressed in foreign currency and the principal and the interest of which is payable in foreign Currency. The issuer of the bond is an Indian company, and the bonds are subscribed by a person resident outside India.

  The bonds are exchangeable into equity shares of another company which is also called the offered company. FCEB's are issued by the investment or holding company of a group to non-residents which are exchangeable for the shares of the specified group company at a predetermined price.
- **Foreign Currency Convertible Bonds (FCCBs)** are issued by a company to non-residents giving them the option to convert them into shares of the same company at a predetermined price.

The basic difference between FCEB and FCCB is that FCCB involves just one company while FCEB involves at least two companies i.e. the bonds are usually of the parent company while the shares are of the operating company which must be a listed company.

5. RISKS IN BONDS:

Bonds are generally considered secure investments, but all investments carry some level of risk. Risk-taking investors often pursue higher returns, while risk-averse investors might become uneasy during market downturns. Below is the list of most common types of Risks in Bond that investors should be aware of:

#1 – Inflation Risk/Purchasing Power Risk

Inflation risk refers to the effect of inflation on investments. When inflation rises, the purchasing power of bond returns (principal plus coupons) declines. The same amount of income will buy lesser goods. For instance, when the inflation rate is 4%, every ₹ 1000 return from the bond investment will be worth only ₹ 960.

#2 – Interest Rate Risk

Interest rate risk refers to the impact of the movement in interest rates on bond returns. As rates rise, bond prices decline. In the event of rising rates, the attractiveness of existing fixed rate bonds with lower returns declines, and hence the price of such bonds falls. The reverse is also true. Short-term bonds are less exposed to this risk, while long-term bonds have a high probability of getting affected.

#3 – Reinvestment Risk

The probability that investors will not be able to reinvest the cash flows at a rate comparable to the bond's current return refers to reinvestment risk. This tends to happen when market rates are lower than the bond's coupon rate. Say, a $100 bond's coupon rate is 8% while the prevailing market rate is 4%. The $8 coupon earned will be reinvested in the market at 4% rather than 8%. This is called the risk of reinvestment.

#4 – Credit Risk

Credit risk results from the bond issuer's inability to make timely payments to the lenders. This leads to interrupted cash flow for the lender, where losses might range from moderate to severe. Credit history and capacity to repay are the two most important factors determining credit risk.

#5 – Liquidity Risk

Liquidity risk arises when bonds become difficult to liquidate in a narrow market with very few buyers and sellers. Narrow markets are characterized by low liquidity and high volatility.

#6 – Market Risk/Systematic Risk

Market risk is the probability of losses due to market reasons like slowdown and rate changes. Market risk affects the entire market together. In a bond market, no matter how good an investment is, it is bound to lose value when the market declines. Interest rate risk is another form of market risk.

#7 – Default Risk

Default risk is the bond issuing company's inability to make required payments. Default risk is seen as other variants of credit risk where the borrowing company fails to meet the agreed terms of the issue.

#8 – Rating Risk

Bond investments can also sometimes suffer from rating risk where a slew of factors specific to the bond and the market environment affect the bond rating, thus decreasing the bond value and demand of the bond.

9 – Re Pricing Risk

As maturity increases, price sensitivity increases at a decreasing rate. Price sensitivity is inversely related to a bond's coupon rate. Price sensitivity is inversely related to the yield to maturity at which the bond is selling.

10 – Exchange Rate Risk

Exchange-rate risk is the risk of receiving less in domestic currency when investing in a bond that is in a different currency denomination than in the investor's home country. When investors purchase a bond that is designated in another currency other than their home countries, investors are open to exchange risk.

This is because the payment of interest and principal will be in a foreign currency. When investors receive that currency, they must go into the foreign currency markets and sell it to purchase their home currency. The risk is that their foreign currency will be devalued compared to the currency of their home countries and that they will receive less money than they expected to receive.

For example, a U.S. investor purchases a Rupee Denominated Bond. When the interest payment comes due and if the Rupee has depreciated in comparison to US Dollar, the investor will receive less in USD than expected at the time of selling in the foreign currency markets.

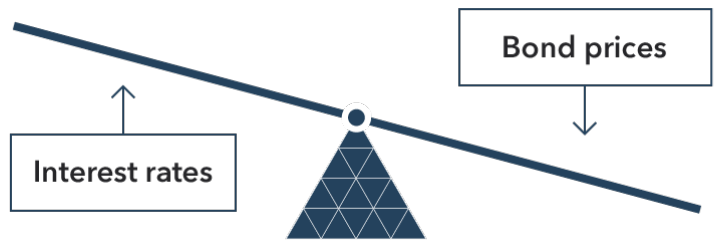
Different types of bond risks elucidated above almost always decrease the worth of the bond holding. The decline in the value of bonds decreases demand, thus leading to a loss of financing options for the issuing company. The nature of risks is such that it doesn't always affect both parties together. It favours one side while posing risks for the other.

How to manage bond risk?

Managing bond risk involves diversifying your bond portfolio considering different bond types, maturities, and credit qualities. Additionally, staying informed about market trends and economic conditions can help you make informed decisions. Monitoring interest rate movements and conducting regular portfolio reviews are essential for adjusting your strategy based on changing risk factors. *(Source https://www.wallstreetmojo.com/bond-risk/)*

6. RELATION BETWEEN BOND PRICE AND INTEREST RATES AND DURATION OF BOND

Bond Price and interest rates have inverse relation as depicted in the picture below. If the interest rate goes up the price of the bonds goes down and vice versa.



When Interest rate goes up the new bonds are issued at higher rates and the demand for the old, fixed rate bonds decline as there are new bonds available at higher interest rates. Thus, the price of the old bonds falls to make the Yield to maturity of the old bonds equal to the new bonds and the new investors become indifferent of their decision to choose between the old and new bonds.

When Interest rate goes down the new bonds are issued at lower rates and the demand for the old, fixed rate bonds increases as they provide more interest to investors, as the new bonds are available at lower rates. Thus, the price of the old bonds increases with more demand, to make the Yield to maturity of the old bonds equal to the new bonds and the new investors become indifferent of their decision to choose from the old and new bonds.

Furthermore, a bond's tenure indicates how sensitive its price is to shifts in interest rates. Put differently, the **bond duration** quantifies the amount that the bond's price changes in response to each 1% change in the interest rate.

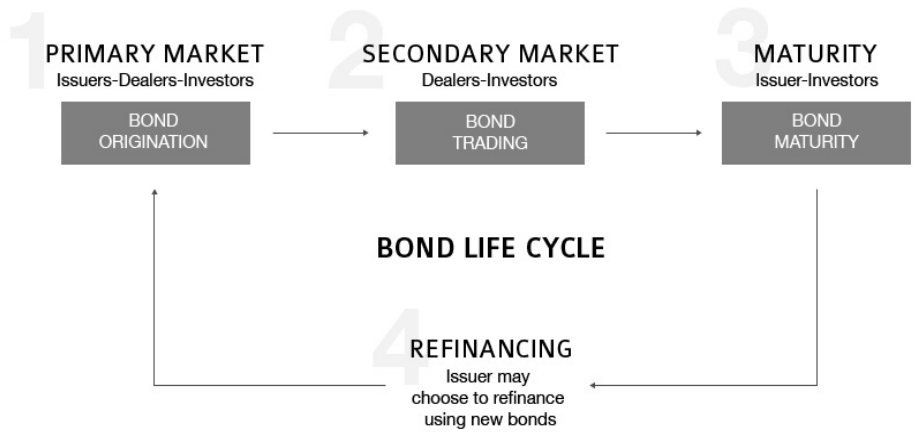
Years are used as the unit of bond duration measurement. As discussed, there is an inverse relationship between interest rates and bond prices. Consequently, a bond with a five-year tenure will see a 5% decrease in price for every 1% increase in interest rates, and vice versa. The bond price movement will be increased for each unit of change in interest rates the longer the bond duration.

Relation of Bond price with Yield

Again, the inverse relation between Bond price and Yield. If the price goes up, the investor will get the interest at face value and in case of rise in price, the investor is paying higher to get the same return thus the effective yield goes down. Similarly, when the price of a bond goes down, the investor will get the same interest on the lower amount i.e. face value which he is paying to buy the bond thus increasing the yield.

7. PRIMARY BOND MARKET VS. SECONDARY BOND MARKET

The word "market" can have many different meanings, but it is used most often as a catch-all term to denote both the primary market and the secondary market. In fact, "primary market" and "secondary market" are both distinct terms; the primary market refers to the market where securities are created, while the secondary market is one in which they are traded among investors.



Basis for comparison	Primary Market	Secondary Market
Definition	A primary market is a venue where businesses issue new shares to the public to raise the money, they need for long-term needs like expanding their business or acquiring a distinctive organization.	A secondary market serves as a model for the capital market, where investors trade company's debentures, current shares, options, bonds, treasury bills, commercial papers, etc.
Named As	New issue market	Aftermarket
Type of Purchase	Direct	Indirect
Buyer and Seller	Buying and selling takes place between the company/ government and the investors.	Buying and selling takes place between the investors.
Financing Benefit	It offers funding to the government or already-existing businesses to support their expansion and growth.	It does not provide any kind of financing.
Intermediaries involved	Underwriters or Merchant Bankers	Brokers
Pricing Levels	Fixed	Varies to demand and supply

7.1 THE PRIMARY MARKET

The primary market is a market in which securities are created. Businesses first offer new stocks and bonds to the public in this market. One illustration of a primary market is an initial public offering, or IPO. Through these deals, investors can purchase securities directly from the bank that handled the initial underwriting of a specific stock or bond. An IPO occurs when a private company issues stock or bond to the public for the first time.

For example, a company Hari Ltd hires five underwriting firms to determine the financial details of its IPO. The underwriters suggested that the issue price of the bond will be Rs.100 and coupon rate is 10%. At that point, investors can purchase the IPO straight from the issuing business for this sum.

This is the first opportunity that investors must contribute through IPO to a company through the purchase of its bond. A company's liability is created of the funds generated by the sale of its bond in the primary market.

Types of Primary Offering

Companies who have already had securities enter the secondary market are able to raise more stock through an offering on the primary market which is called a right issue. Proportionate rights are granted to current investors depending on the shares they now possess, while new investments in freshly issued shares are available to others.

Preferential allocation and private placement are two more forms of primary market offerings for equities. Companies can sell directly to larger investors, including banks and hedge funds, through private placement without having to make their shares publicly traded. Conversely, preferential allotment provides shares at a unique price that isn't offered to the public to a limited group of investors (often hedge funds, banks, and mutual funds).

Like this, companies and governments looking to raise debt capital may decide to issue fresh bonds on the primary market, both short- and long-term. Coupon rates on newly issued bonds are set to reflect the prevailing interest rates at the time of issuance, which may differ from those on previously issued bonds.

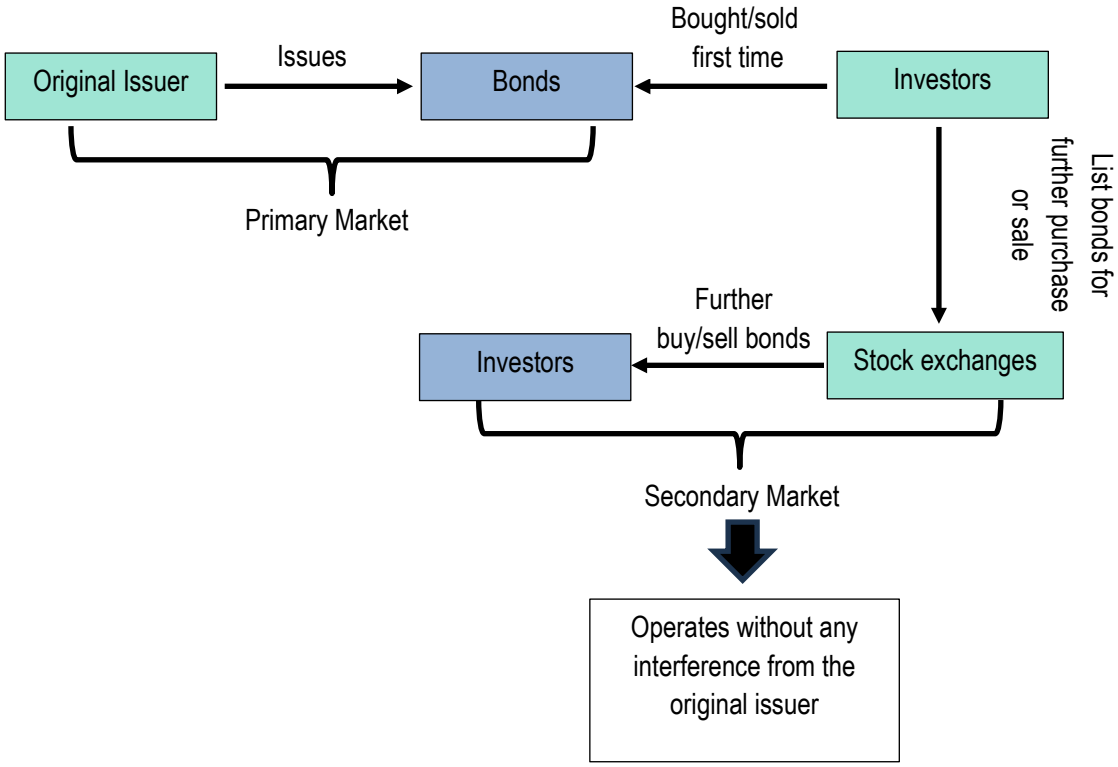
The primary market is where securities are bought directly from issuers, which is a crucial concept to grasp.

7.2 The Secondary Market

For buying equities, the secondary market is commonly referred to as the "stock market." This includes the National Stock Exchange (NSE), Bombay Stock Exchange (BSE), New York Stock Exchange (NYSE) and all major exchanges around the world. The fact that investors transact with one another is what makes the secondary market unique.

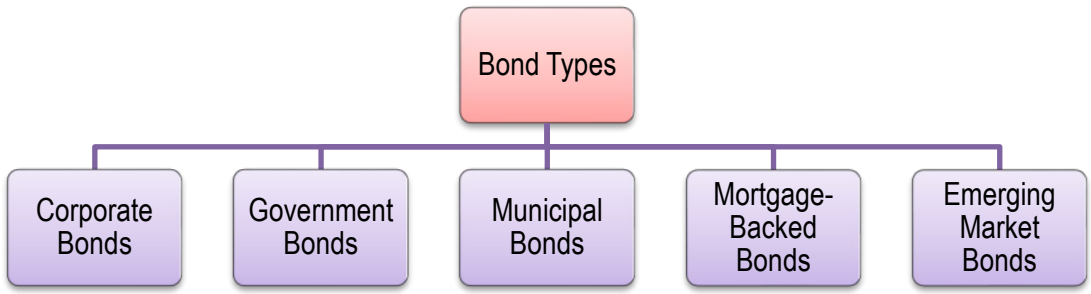
The secondary bond market is the market where bonds are bought and sold by investors. The revenues from the sale of bonds go to the counterparty, which could be a dealer or an investor, in contrast to the primary market where funds from investors go directly to the issuer. This is a significant distinction between the two markets. That is, investors exchange previously issued securities without the involvement of the issuing company in the secondary market.

For example, if you go to buy NHAI Bonds from marketplace, you are dealing only with another investor who owns bonds of NHAI. NHAI is not directly involved with the transaction.



8. TYPES OF BOND MARKETS

The general bond market can be segmented into the following bond classifications, each with its own set of attributes.



8.1 Corporate Bonds

Companies issue corporate bonds to raise money for various reasons, such as financing current operations, expanding product lines, or opening new manufacturing facilities. Corporate bonds are typically defined as longer-term financial securities with a minimum one-year maturity.

Generally, corporate bonds are categorized as high yield (often known as "junk") or investment grade. The credit rating given to the bond and its issuer serves as the basis for this classification. A bond with an investment grade rating is considered high-quality and has a low default risk. Bond rating firms like Fitch, Moody's, and Standard & Poor's use different designations, consisting of the upper and lowercase letters "A" and "B", to identify a bond's credit quality rating, for example- AAA, AA, BBB, BB, etc.

Junk bonds are bonds with a higher default risk than most bonds issued by governments and corporations. In exchange for purchasing a bond, an investor receives an obligation or promise to pay interest payments and the principal amount invested back. Junk bonds are issued by corporations that are having financial difficulties and run a high chance of defaulting—that is, failing to pay investors' principal amount and interest. High-yield bonds are another name for junk bonds because they require a higher yield to partially offset default risk. These bonds have credit ratings from S&P below BBB- or from Moody's below Baa.

In simple words, corporate bonds are nothing, but debt instruments issued by a company, the holder of which receives interest from the company periodically for a fixed period and gets back the principal along with the interest due at the end of the maturity period.

Example- Considering that you hold a 10% 5-year corporate bond issued by Aman Ltd with Face Value ₹ 100 and interest is paid annually:

Aman Ltd will

- Pay you ₹ 10 every year for 5 years.
- Redeem face value of the bond i.e. ₹100 + ₹ 10 accrued interest at the end of 5 years.

8.2 Government Bonds

Incentives for purchasing government or sovereign bonds include periodic interest payments together with the payment of the face value shown on the bond certificate on the designated maturity date. For conservative investors, government bonds are appealing because of this feature. Sovereign debt bonds are often regarded as the least hazardous kind of bonds because their backing

comes from a government with the authority to impose taxes on its people or create new money to make the payments.

In India, state governments solely issue bonds or dated securities known as State Development Loans (SDLs), while the central government issues both treasury bills and bonds or dated securities. G-Secs are referred to as risk-free gilt-edged instruments since there is almost no default risk associated with them. G-Securities are securities that are paid on face value and have a fixed or variable coupon (interest rate). Securities typically have tenors of five to forty years.

8.3 Municipal Bonds

Municipal bonds are locally issued by states, cities, special-purpose districts, public utility districts, school districts, publicly owned airports and seaports, and other government-owned entities that seek to raise cash to fund various projects.

Municipal bonds are commonly tax-free at the central level and can be tax-exempt at state or local tax levels too, making them attractive to qualified tax-conscious investors.

Municipal bonds are of two main types. A general obligation bond (GO Bonds) is issued by governmental entities and not backed by revenue from a specific project, such as a toll road. Some GO bonds are backed by dedicated property taxes, others are payable from general funds. A revenue bond instead secures principal and interest payments through the issuer or sales, fuel, hotel occupancy, or other taxes. When a municipality is a reasonable issuer of bonds, a third party covers interest and principal payments.

8.4 Emerging Market Bonds

Emerging market bonds are fixed-income investments issued by the governments or corporations of countries that are not considered to be developed nations.

These are bonds issued by governments and companies located in emerging market economies, providing much greater growth opportunities, but also greater risk, than domestic or developed bond markets.

Today, bonds are issued in developing nations and by corporations located in these countries all over the world, including from Asia, Latin America, Eastern Europe, Africa, and the Middle East or particularly countries like- Argentina, Brazil, Mexico, etc.

Investing in developing market bonds entails conventional risks associated with all debt offerings, including the issuer's ability to fulfil payment obligations and the issuer's financial or economic performance. But because emerging countries can be politically and economically unstable, these

dangers are increased. While emerging economies have made significant progress in mitigating sovereign and country risks, the likelihood of socioeconomic instability remains higher in these countries than in developed ones, especially the United States.

Emerging markets also pose other cross-border risks, including exchange rate fluctuations and currency devaluations. If a bond is issued in a local currency, the rate of the INR versus that currency can positively or negatively affect your yield. When that local currency is strong compared to the INR, your returns will be positively affected, while a weak local currency adversely affects the exchange rate and negatively affects the yield.

For Example-

Assume you purchased a Mexican emerging market bond. The bond has a 10-year maturity and is issued by Mexico (MBONOS). As of October 2022, the face value is 100 pesos, or around 500 rupees. Interest is paid to you every six months, and ten years later, you get your main investment back plus all interest accrued up to that point.

9. BOND MARKET STRATEGIES

Investors use majorly three strategies for analysing and investing in Bonds Market. They are as follows: -

Active Strategy

The first method is called Active method, and its only goal is to generate larger returns over an extended period. As a result, investors typically hold onto their investments for a longer period and attempt to profit from changes in interest rates, yield curve shifts, and variations brought on by changes in credit ratings.

Passive Strategy

Investors who use the passive strategy would rather hold onto their bonds until they mature. The goal is to regularly generate respectable profits with the highest level of safety without engaging in frequent trading. Here, the goal is to minimize costs while matching cash flows to liabilities.

Hybrid Strategy

It combines both active and passive strategies, as the name implies. It gets over both strategies' drawbacks.

10. BOND MARKET INDEX

An index is a way to consistently monitor the performance of a collection of assets. Typically, indexes track the performance of a group of securities meant to mimic a specific segment of the market.

A bond index or bond market index is a method of measuring the investment performance and characteristics of the bond market. There are numerous indices of differing construction that are designed to measure the aggregate bond market and its various sectors (government, municipal, corporate, etc.) A bond index is computed from the change in market prices, and, in the case of a total return index, the interest payments associated with selected bonds over a specified period of time.

Bond indexes or indices serve as a benchmark for investors and portfolio managers to assess the relative performance of actively managed bond portfolios, which aim to surpass the index, and passively managed bond portfolios, which are structured to equalize the index's performance. Bond indices are also used in determining the compensation of those who manage bond portfolios on a performance-fee basis.

An index is a mathematical construct, so it may not be invested in directly. But many mutual funds and exchange traded funds attempt to "track" an index, and those funds that do not may be judged against those which do.

10.1 History

Total return bond indices were first developed in the 1970s, at which point they measured only U.S. investment grade bonds. Indices for high-yield (below investment grade) U.S. bonds and non-U.S. government bonds were developed in the mid-1980s. During this period, it became increasingly apparent that most portfolio managers were unable to outperform the bond market. This resulted in the development of passively managed bond index funds, and the proliferation of indices themselves. *(Source: Wikipedia)*

10.2 Characteristics

Characteristics that are meaningful in understanding bond indices include:

- **The sample of securities:** The number of securities in the index, and the criteria used to determine the specific bonds included in the index.

- **Market sector measured:** Indices can be composed of government bonds, municipal bonds, corporate bonds. Indices may also consist of bonds within a certain range of maturities, e.g. long term, intermediate term, etc.
- **Weighting of returns:** The impact of each individual issue's return on the overall index may be weighted by market capitalization (the market value of the security), or equal-weighted for each security. Most bond indices are weighted by market capitalization. This results in the "bums" problem, in which less creditworthy issuers with a lot of outstanding debt constitute a larger part of the index than more creditworthy ones with less debt.
- **Quality of price data:** The market price used for each bond in the index may be based on actual transactions, a brokerage firm's estimate, or a computer model.
- **Reinvestment assumptions:** What does the rate of return calculation assume regarding reinvestment of periodic interest payments from the bonds in the index?

(Source: Wikipedia)

10.3 Indices and Passive Investment Management

In the 1970s, total return bond indices were created and were limited to measuring investment-grade U.S. bonds. The mid-1980s saw the development of indexes for both non-U.S. government bonds and high-yield (below investment grade) U.S. bonds. The fact that most portfolio managers couldn't beat the bond market during this time grew more and more evident. This led to the growth of indexes themselves and the creation of passively managed bond index funds.

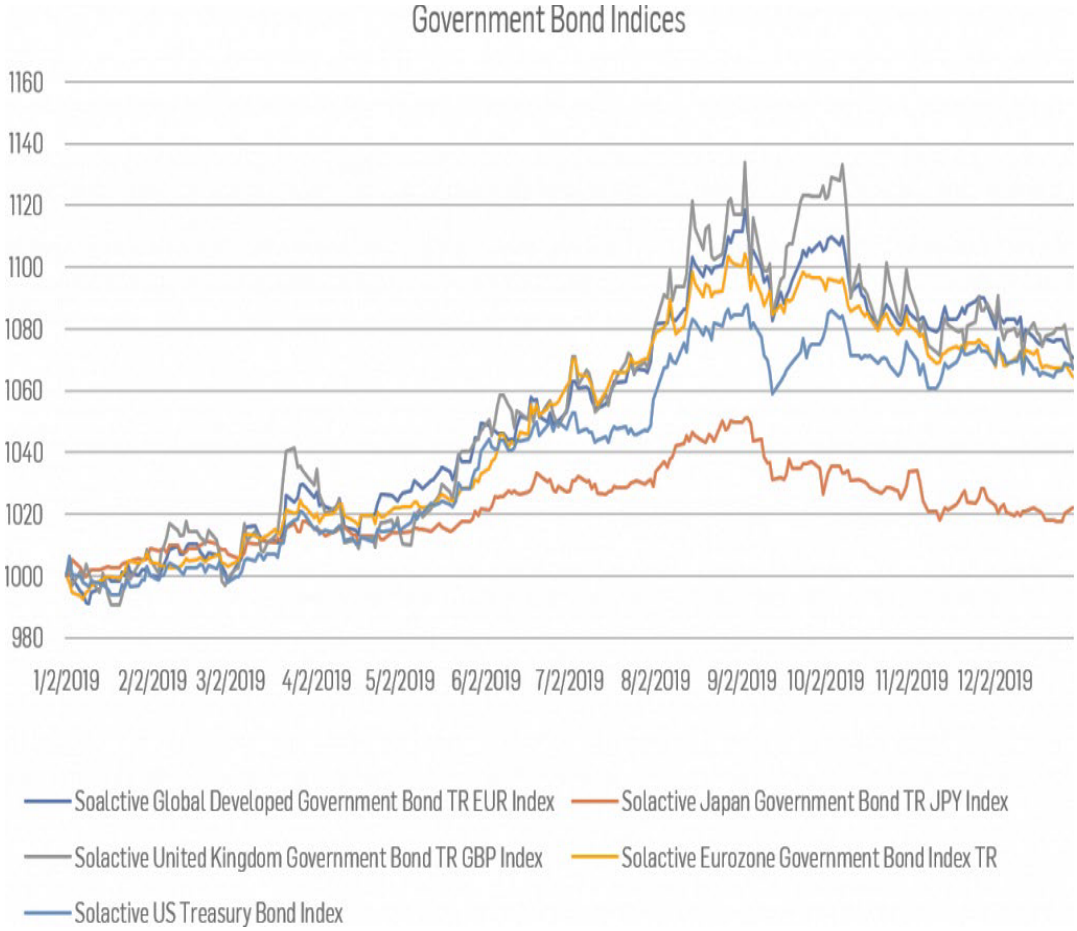
Passive fund managers typically buy a portion of the stocks that make up their benchmark index. However, the performance of their entire portfolio is compared to the index. Passive bond fund managers have a harder time matching the performance of their benchmark than their stock index fund counterparts since bond indices usually incorporate more securities than stock indexes. The market's average duration is frequently not the best duration for a particular portfolio. Bond futures can be used to replicate the characteristics of an index by matching the bond index's duration.

Broker/dealer companies have developed customized bond market indices of their own. For the company, these indices may open new revenue streams. The index's inventor will charge a fee for the index data required to build up and rebalance a portfolio linked to its exclusive index, but they also anticipate that their clients will execute most of the trades through their trading desk.

Customized indices are occasionally created by investment managers to satisfy the needs and long-term investing objectives of their clients.

For example-

- Nifty Bharat Bond Index
- Nifty 8–13-year G-Sec Index
- Nifty 1D Rate Index
- Nifty CPSE Bond Plus SDL Sep 2024 50:50 Index
- Nifty AAA Bond Plus SDL Apr 2026 50:50 Index
- Nifty PSU Bond Plus SDL Apr 2026 50:50 Index
- Nifty SDL Apr 2026 Top 20 Equal Weight Index



11. BOND MARKET VS. STOCK MARKET

Bonds differ from stocks in several ways. Bonds represent debt financing, while stocks equity financing. Bonds are a form of credit whereby the borrower (i.e. bond issuer) must repay the bond owner's principal plus additional interest along the way. Stocks do not entitle the shareholder to any return of capital, nor must they pay interest (or dividends). Because of the legal protections and guarantees in a bond stating repayment to creditors, bonds are typically less risky than stocks and therefore command lower expected returns than stocks.

Both stock and bond markets tend to be very active and liquid. Bond prices, however, tend to be very sensitive to interest rate changes, with their prices varying inversely to interest rate moves. Stock prices, on the other hand, are more sensitive to changes in future profitability and growth potential.

Basis for comparison	Stock Market	Bond Market
Nature of investment	Investment in shares.	Investment in loans.
Risk Involved	Riskier than the debt market	Less risky
Nature of Returns	Reaps higher returns	Lower returns than the equity market
Type of Earning	Dividends	Interest
Volatility	More volatile than debt market	Less volatility

Let's understand this with the help of an example -

Suppose there is an MBA Burger Wala Stall (MBW) that recently opened. The founder of the MBW is receiving much more demand than anticipated and wants to take advantage of the situation by opening a second Stall of MBW. The second Stall will cost around ₹ 1,00,000/- to set up and running. However, the founder does not have money on hand to fund the second Stall even though he knows it will be successful.

The founder can go to various investors and pitch the success of his business to the investors to raise money for the second Stall.

The founder can raise money through a bond, by borrowing ₹1,00,000/- from investors and promising to pay back ₹1,00,000/- in five years plus an additional 10% interest. The founder is hoping that the Stall will be successful, and he will be able to make more than ₹ 1,10,000, so he can pay back the loan plus interest and keep the excess for himself.

The founder can also raise the funds through a stock by issuing 9000 shares to himself and selling 1000 shares to other people for ₹ 1,00,000/-. Each of the shares represents ownership of the company.

The shareholders are entitled to 10% of all the MBW Stall's future earnings, but the founder does not need to pay back the initial amount raised from investors, which contrasts with bonds.

If MBW goes bankrupt, the founder would owe money to the bondholders first, before receiving anything himself. It is because bondholders have seniority and extra protection from bankruptcy risk.

12. BOND RATINGS

The creditworthiness of corporate or government bonds is indicated by bond ratings. The ratings, which offer assessments of a bond issuer's financial stability and ability to repay the bond's principal and interest in accordance with the terms of the contract, are released by credit rating organizations.

S&P, Moody's, and Fitch, the three private independent rating agencies, own nearly 95% of the market share in the bond rating industry. Every rating agency has a different grading scheme. All rating systems, however, categorize bond investments according to risk (from default to best quality) and quality grade (investment grade, non-investment grade, or not rated). Although they offer low yields, investment-grade bonds are regarded as safe investments with little default risk. Bonds that aren't investment grade carry greater risk, but their yield is higher.

Professional analysts' bond ratings offer institutional and individual investors a trustworthy resource for decision-making.

12.1 S&P Global Bond Ratings

As one of the three Nationally Recognized Statistical Rating Organizations (NRSRO) certified by the U.S. Securities and Exchange Commission, Standard & Poor's (S&P) is the oldest credit rating organization. The organization covers over a million credit ratings for securities, structured finance organizations, and corporate and government bonds.

S&P offers bond ratings for both the short and long terms. The evaluation of a security's default probability is the primary objective of the S&P credit rating.

Rating	Description	Grade
AAA	Extremely strong capacity to meet financial obligations.	Investment
AA	Very strong capacity to meet financial obligations.	Investment
A	Strong capacity to meet financial obligations, but somewhat susceptible to adverse economic conditions and changes in circumstances.	Investment
BBB	Adequate capacity to meet financial commitments, but more subject to adverse economic conditions.	Investment
BB	Less vulnerable in the near-term but faces major ongoing uncertainties to adverse business, financial and economic conditions.	Speculative
B	More vulnerable to adverse business, financial and economic conditions but currently has the capacity to meet financial commitments.	Speculative
CCC	Currently vulnerable and dependent on favorable business, financial and economic conditions to meet financial commitments.	Speculative
CC	Highly vulnerable; default has not yet occurred but is expected to be a virtual certainty.	Speculative
C	Currently highly vulnerable to non-payment, and ultimate recovery is expected to be lower than that of higher rated obligations.	Speculative
D	Payment on a financial commitment or breach of an imputed promise; also used when a bankruptcy petition has been filed or similar action taken.	Speculative
NR	The security was not rated.	

12.2 Moody's Investors Service Bond Ratings

Another credit and bond rating company recognized by NRSRO is Moody's. In addition to more than 135 sovereign countries, the company serves 4,000 financial institutions, 5,000 non-financial corporate issuers, 18,000 public finance issuers, 11,000 structured finance transactions, and 1,000 issuers of infrastructure and project finance. The assessment of expected losses in the event of a default is the main objective of Moody's ratings, in contrast to S&P and Fitch.

Rating	Description	Grade
Aaa	Obligations of the highest quality, with minimal risk.	Investment
Aa	Obligations of high quality, with very low credit risk.	Investment
A	Obligations of upper-medium-grade, with low credit risk.	Investment
Baa	Obligations of moderate credit risk that may possess speculative characteristics.	Investment
Ba	Obligations with speculative elements that are subject to substantial credit risk.	Speculative
B	Obligations are considered speculative that are subject to high credit risk.	Speculative
Caa	Obligations of poor standing and are subject to very high credit risk.	Speculative
Ca	Highly speculative obligations that are likely in, or very near, default, with some prospect of recovery in principal and interest.	Speculative
C	Lowest-rate class of obligations that are typically in default, with little prospect of recovery of principal and interest.	

The current rating categories, which range from Aa to Caa, can have the number modifiers applied to them. The number 1 denotes the obligation's ranking at the top end of the rating category, the number 2 its mid-range ranking, and the number 3 its bottom end.

12.3 Fitch Ratings

Out of the "Big Three" credit rating organizations, Fitch is the smallest. Financial institutions, insurance providers, sovereigns, corporate finance, structured finance, Islamic finance, and international infrastructure are just a few of the industries the firm works with. Fitch's market share is, nevertheless, smaller than that of its more powerful competitors.

Like S&P, Fitch's rating is primarily used to evaluate the likelihood of a securities defaulting. It also makes use of an S&P-style bond rating system.

Rating	Description	Grade
AAA	Extremely strong capacity to meet financial obligations.	Investment
AA	Very strong capacity to meet financial obligations.	Investment
A	Strong capacity to meet financial obligations, but somewhat susceptible to adverse economic conditions and changes in circumstances.	Investment
BBB	Adequate capacity to meet financial commitments, but more subject to adverse economic conditions.	Investment
BB	Less vulnerable in the near-term but faces major ongoing uncertainties to adverse business, financial and economic conditions.	Speculative
B	More vulnerable to adverse business, financial and economic conditions but currently has the capacity to meet financial commitments.	Speculative
CCC	Currently vulnerable and dependent on favorable business, financial and economic conditions to meet financial commitments.	Speculative
CC	Highly vulnerable; default has not yet occurred but is expected to be a virtual certainty.	Speculative
C	Currently highly vulnerable to non-payment, and ultimate recovery is expected to be lower than that of higher rated obligations.	Speculative
D	Payment on a financial commitment or breach of an imputed promise; also used when a bankruptcy petition has been filed or similar action taken.	Speculative
NR	The security was not rated.	-

In the US and several European nations, credit rating organizations are heavily involved in credit laws and regulations. Furthermore, rating agencies have a big impact on the world's capital markets because they give investors an evaluation of assets. For investors, credit ratings continue to be one of the most important sources of information about credit research and credit risk.

Investors should not, however, only depend on the credit ratings that credit agencies provide. The strong ties between credit rating agencies and major financial institutions may lead to conflicts of interest, as the global financial crisis of 2007–2008 demonstrated. For instance, some mortgage-backed securities that were on the verge of being classified as junk securities received the highest ratings from credit rating organizations.

TEST YOUR KNOWLEDGE

Multiple Choice Questions (MCQs)

1. The bonds issued by Central Government, state government and a corporate body are respectively named as ……

   (a) State Bond, Sovereign Bond, Corporate Bond

   (b) National Bond, Sovereign Bond, Corporate Bond

   (c) Sovereign Bond, State Bond, Corporate Bond

   (d) None of the above

2. When the required yield on a bond falls below its coupon rate, the bond ……

   (a) sells at par

   (b) sells at discount

   (c) sells at premium

   (d) None of the above

3. Default risk is lower in ……

   (a) Treasury bills

   (b) Government bonds

   (c) ICICI bonds

   (d) SBI bonds

4. Bonds are an attractive form of Investment. Which of the following statements is false?

   (a) The longer the time to maturity, the less sensitive the market price of the bond becomes to changes in prevailing market rates.

   (b) Interest Rates and Bond Values are inversely related and in a non-linear way.

   (c) The higher the coupon rate, the less sensitive the market price of the bond becomes to changes in prevailing market rates.

   (d) When the prevailing market interest rate is higher than the coupon rate, the bond will be traded at a discount.

5. Corporate bonds are less marketable than money market instruments and corporate equities because ……

   (a) corporate bonds are long-term securities, which tend to be riskier and less marketable.

   (b) corporate bonds are in fact not less marketable than money market instruments and corporate equities.

   (c) the former are for smaller denominations.

   (d) corporate bonds are not tax exempt.

6. In which the place new stocks and bonds are created and sold to investors?

   (a) Primary market

   (b) Secondary market

   (c) Auction market

   (d) Stock exchange

7. Government securities with a period of more than 1 year are called ……

   (a) Government bonds

   (b) Treasury bills

   (c) Bill of exchange

   (d) Commercial Papers

8. The call-option value of a callable bond is likely to be high when ……..

   (a) interest rates are low and expected to remain low

   (b) interest rates are high and expected to remain high

   (c) interest rates are volatile

   (d) markets are inefficient

9. Which of the following is a measure of interest rate sensitivity of a bond?

   (a) Duration

   (b) YTM

   (c) Current yield

   (d) None of the above

10. Which among the following financial instruments is dealt with by Primary Dealers?

    (a) Bonds

    (b) Mutual Funds

    (c) Government securities

    (d) Debentures

11. Irredeemable bond is also known as …….

    (a) Fully convertible bond

    (b) Perpetual bond

    (c) Partially convertible bond

    (d) None of the above

12. Floating rate bonds carry ……

    (a) Fixed rate of interest

    (b) Varying rate of interest

    (c) Zero rate of interest

    (d) None of the above

13. When the risk perception is high, investor prefers to get the bond at ……

    (a) Higher rate

    (b) Reduced rate

    (c) Par rate

    (d) None of the above

14. If the maturity period of bond is more, investor prefers ……

    (a) Lesser returns

    (b) Higher returns

    (c) Zero returns

    (d) None of the above

15. Interest rate that every bond/debenture carries on its face value and is fixed at the time of issue is called ……..

(a) Bond rate

(b) Repo rate

(c) Coupon rate

(d) All of the above

16. Marketability risk of bond is ……

(a) The market risk which affect all the bonds

(b) Variation in return caused by difficulty in selling stocks

(c) The failure to pay the agreed value of the bond by the user

(d) A and C

17. Bonds issued at a discount and redeemed prior to its maturity is called ……..

(a) Mortgage bonds

(b) Zero coupon bonds

(c) Convertible bonds

(d) All of the above

18. A bond that can be redeemed prior to its maturity is called ……..

(a) Callable bonds

(b) Option bonds

(c) Step-up bonds

(d) Non-callable bonds

19. Peter Parker Incorporation has outstanding, high yield Bond with following features: Face Value $ 20,000 Coupon 10% Maturity Period 6 Years. Special Feature Company can extend the life of Bond to 12 years. Presently the interest rate on the equivalent Bond is 8%. If an investor expects that interest will be 8%, six years from now then the amount he should pay for this bond now is ……..

(a) 21,846

(b) 22,866

(c) 20,586

(d) 21,800

20. Now suppose in above question, based on that expectation, he invests in the Bond, but interest rate turns out to be 12%, six years from now, then his potential loss/ gain will be ……. in comparison to the above question.

(a) 4496 loss

(b) 2284 loss

(c) 3484 profit

(d) 3484 loss

21. Bond duration, in general, measures the ……. to a change in interest rates.

(a) sensitivity of the yield

(b) sensitivity of the yield to maturity

(c) sensitivity of the full price

(d) sensitivity of the convexity

22. Nominal value of 10% bonds issued by a company is `100. The bonds are redeemable at ` 112 at the end of year 5. The value of the bond ……. if required yield is 5%.

(a) 131.047

(b) 129.48

(c) 112.24

(d) 125.42

23. An investor is considering the purchase of the following Bond: Face value ` 100, Coupon rate 18%, Maturity 3 years. If he wants a yield of 20% ……. is the maximum price he should be ready to pay for.

(a) 95.75

(b) 95.81

(c) 96.82

(d) 97.64

24. In above question, if the Bond is selling for ` 97.80, ... would be his yield.

(a) 18%

(b) 19%

(c) 20%

(d) 21%

25. If the bonds already issued by the private sector are cancelled, it indicates that .....

(a) Markets expect higher yields as fund raising from the private sector is likely to be curtailed.

(b) Markets expect lower yields as fund raising from the private sector is likely to be curtailed.

(c) Markets expect lower yields as fund raising from the private sector is likely to be increased.

(d) None of the above.

26. If RBI decides to increase interest rates, the bond's price which is offering similar return as the current interest rates would ..... because its coupon payment is less attractive now on a relative basis. Therefore, investors would look for new bonds with .....

(a) rise; higher risk-free return

(b) fall; lower risk-free return

(c) fall; higher risk-free return

(d) rise; lower risk-free return

Theoretical Questions

1. What is a Bond?

2. Illustrate the concept of yield curve with suitable diagrams.

3. Discuss the various types of bonds.

4. Explain the various types of risks in bonds.

5. What is the relationship between interest rates and the price of a bond?

ANSWERS/SOLUTIONS

Answers to the MCQ based Questions.

1.	**(c)**	**2.**	**(c)**	**3.**	**(a)**	**4.**	**(a)**	**5.**	**(a)**
6.	**(a)**	**7.**	**(a)**	**8.**	**(c)**	**9.**	**(a)**	**10.**	**(c)**
11.	**(b)**	**12.**	**(b)**	**13.**	**(b)**	**14.**	**(b)**	**15.**	**(c)**
16.	**(b)**	**17.**	**(b)**	**18.**	**(a)**	**19.**	**(a)**	**20.**	**(d)**
21.	**(c)**	**22.**	**(a)**	**23.**	**(b)**	**24.**	**(b)**	**25.**	**(a)**
26.	**(c)**								

Explanations to the practical questions in the MCQs

19. (a) If the current interest rate is 8%, the company will not extend the duration of Bond and the maximum amount the investor would be ready to pay will be: = $2,000 PVIAF (8%, 6) + $20,000 PVIF (8%, 6) = $2,000 x 4.623 + $20,000 x 0.630 = $9,246 + $ 12,600 = $ 21,846.

20. (d) If the current interest rate is 12%, the company will extend the duration of the Bond. After six years the value of a Bond will be = $2,000 PVIAF (12%, 6) + $20,000 PVIF (12%, 6) = $2,000 x 4.111 + $20,000 x 0.507 = $8,222 + $10,140 = $18,362 Thus, potential loss will be $18,362 - $21,846 = $3,484.

22. (a) Required yield rate = 5%

Year	Cash Flow ₹	DF (5%)	Present Value ₹
1-5	10	4.3295	43.295
5	112	0.7835	87.752
Value of bond			131.047

23. (b) Calculation of Maximum price Bo = ₹ 18 × PVIFA (20%,3) + ₹ 100 × PVIF (20%,3) = ₹ 18 × 2.106 + ₹ 100 × 0.579 = ₹ 37.908 + ₹ 57.9 = ₹ 95.808

24. (b) Calculation of yield

At 19% the value = ₹ 18 × PVIFA (19%,3) + 100 × PVIF (19%,3)

= ₹ 18×2.140 + ₹ 100×0.593 = ₹ 38.52 + ₹ 59.30 = ₹ 97.82

If the bond is selling at ` 97.80, which is more than the fair value, the YTM of the bond would be less than 20%. This value is almost equal to the amount price of ` 97.80. Therefore, the YTM of the bond would be 19%.

Alternatively,

$$\text{YTM} = \frac{₹\ 18 + \frac{₹\ 100 - ₹\ 97.8}{3}}{\frac{₹\ 100 + ₹\ 97.8}{2}} = 0.1894 \text{ or } 18.94\% \text{ say } 19\%$$

Answers to the Theoretical Questions

1. Please refer to paragraph 2
2. Please refer to paragraph 2 (x)
3. Please refer to paragraph 4
4. Please refer to paragraph 5
5. Please refer to paragraph 6