

# Confusing Concepts

of Bonds Made Easy



Finance

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## Confusing concepts related to Bond

### Bond Price and Other Confusion

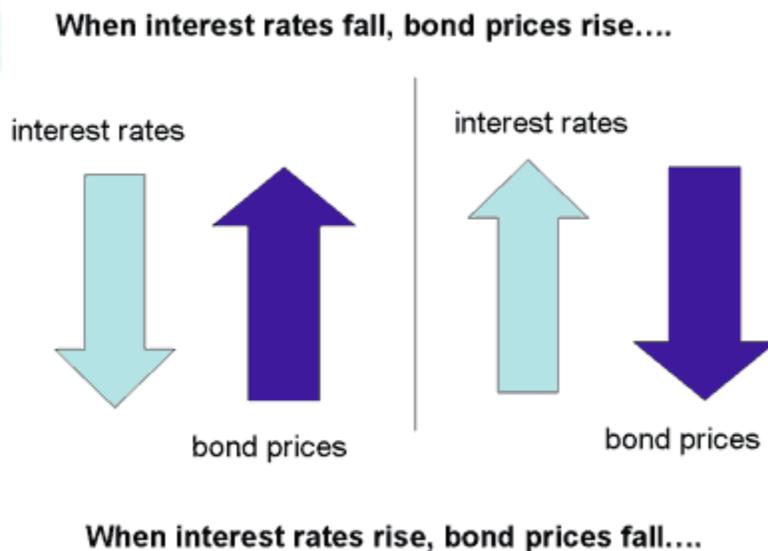
Bond price is the present discounted value of future cash stream generated by a bond. It refers to the sum of the present values of all likely coupon payments plus the present value of the par value at maturity.

One must know that price of bond is not same as the face value. So, if the company issued bonds at face value at Rs. 1000 then their Bond price can increase or decrease over time.

### Factors affecting Bond Price

#### 1) Interest Rate

One major factor which decides the price is Interest Rate.



## How does Decrease in Interest Rate Results in Increase in Bond Price

- Suppose the bond is issued at face value of 1000 at coupon rate of 10% with maturity 10 years in future. You bought this bond because you wanted to get a guaranteed return and fixed deposits in the bank were only offering 9%.
- Now suppose after 1 year the interest rate on fixed deposit decreases to 8%. Since your bond is valid for 10 years, you will get 10% interest even though fixed deposit would just give 8% return. Therefore, more people will become interested in buying bonds from you and would be ready to pay you higher than the face value of Rs. 1000

Similarly Increase in Interest Rate will result in decrease in Bond Price.

## 2) Yield to Maturity

The term comprises of 2 terms:

### a) Maturity

It is the period during which its owner will receive interest payments on the investment.

When the bond reaches maturity, the owner is repaid its par, or face, value.

The vast majority of bonds have a set **maturity date**—a specific date when the bond must be paid back at its face value, called par value.

### b) Yield

Yield is a figure that shows the return you get on a bond. The simplest version of yield is calculated using the following formula:

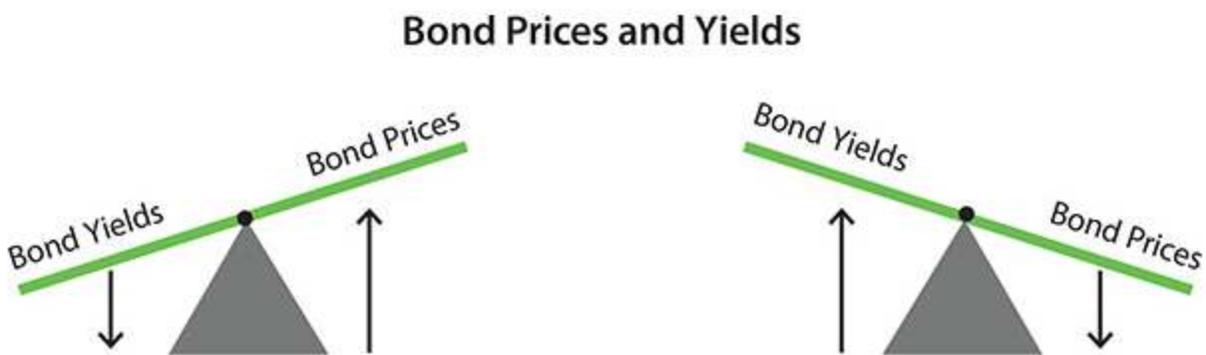
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Yield = Coupon amount/Price.

When you buy a bond at face value, yield is equal to the interest rate. When the price changes, so does the yield

Yield to maturity (YTM) is the total rate of return that will have been earned by a bond when it makes all interest payments and repays the original principal.

Link between Bond Yield and Bond Price



Putting It All Together: The Link between Price and Yield and Interest Rate

## 1. Interest Rate to Bond Price Relationship

- a. Decrease in Interest Rate Results in Increase in Bond Price
- b. Increase in Interest Rate results in decrease in Bond Price

## 2. Yield to Price Relationship

When price goes up, yield goes down and vice versa. Technically, you'd say the bond's price and its yield are inversely related.

## 3. Interest Rate, Price and Yield in the Market

1. When interest rates rise, the prices of bonds in the market fall, thereby raising the yield of the bonds. If you apply common sense, this is right also because when interest rate increase, yield should also increase otherwise nobody will invest in bonds as Fixed deposits will offer better rate of Interest
2. When interest rates fall, the prices of bonds in the market rise, thereby lowering the yield of the older bonds and bringing them into line with newer bonds being issued with lower coupons. If you apply common sense, this is right also because when interest rate fall, yield should also fall otherwise nobody will invest in fixed deposits as Fixed deposits will offer lower rate of Interest

## Duration of Bond

Duration is a measure of the sensitivity of the price -- the value of principal -- of a fixed-income investment to a change in interest rates. Duration is expressed as a number of years.

Bond prices are said to have an inverse relationship with duration. If a bond has a high duration, it indicates that investors would need to wait an extended period to receive the coupon payments and principal invested.

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**Note:** Higher the duration, higher would be the risk to the fall in bond price when interest rates increase. Normally, if interest rates change by 1%, a fixed income security's price is likely to experience an inverse change by approximately 1% for each year of duration

For example: if a bond's price is 100 and duration is 6 years then if the interest rates increase by 1% then bonds price will increase by  $6 \times 1 = 6\%$ . So, Bond's price will become 94

In general, things affecting a bond's duration:

- **Bond's Price:** Bond Price and Duration are inversely related. Larger the Bond Price, lower the duration and Vice-versa
- **Coupon:** The higher a bond's coupon, the more income it produces early on and thus the shorter its duration. The lower the coupon, the longer the duration (and volatility). Zero-coupon bonds, which have only one cash flow, have durations equal to their maturities.
- **Maturity:** The longer a bond's maturity, the greater its duration (and volatility). Duration changes every time a bond makes a coupon payment. Over time, it shortens as the bond nears maturity.



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