CCRA™

CERTIFIED CREDIT RESEARCH ANALYST

Session 3 – Understanding of Loans and Bonds(Part-1)

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). A bond could be thought of as an document of acknowledgement between the lender and borrower that includes the details of the loan and its payments. Bonds are used by companies, municipalities, states, and sovereign governments to finance projects and operations. Owners of bonds are debtholders, or creditors, of the issuer. Bond details include the end date when the principal of the loan is due to be paid to the bond owner and usually includes the terms for variable or fixed interest payments made by the borrower.

Types of Bonds….

- Treasury Bonds
- Other US Government Bonds
- Investment-Grade Corporate Bonds
- High Yield corporate Bonds/Junk Bonds
- Foreign Bonds
- Mortgage-Backed Bonds
- Municipal Bond

Treasury Bonds…

Treasuries are issued by the federal government to finance its budget deficits. Because they're backed by Uncle Sam's awesome taxing authority, they're considered credit-risk free. The downside: Their yields are always going to be lowest (except for tax-free munis). But in economic downturns they perform better than higher-yielding bonds, and the interest is exempt from state income taxes.

Other U.S. Government Bonds…

United States Treasury Bonds are government debt instruments issued by the United States Department of the Treasury to finance government spending as an alternative to taxation.

Investment Grade Corporate Bonds….

Investment-grade corporate are issued by companies or financing vehicles with relatively strong balance sheets. They carry ratings of at least triple B from Standard & Poor's, Moody's Investors Service or both. (The scale is triple-A as the highest, followed by double-A, single-A, then triple-B, and so on.) For investment-grade bonds, the risk of default is considered pretty remote. Still, their yields are higher than either Treasury or agency bonds, though like most agencies they are fully taxable. In economic downturns, these bonds tend to underperform Treasuries and agencies

High Yield Bond…

These bonds are issued by companies or financing vehicles with relatively weak balance sheets. They carry ratings below triple B. Default is a distinct possibility. As a result, high-yield bond prices are more closely tied to the health of corporate balance sheets. They track stock prices more closely than investment-grade bond prices. "High-yield doesn't provide the same asset-allocation benefits you get by mixing high-grade bonds and stocks," observes Charles Schwab, Chief Investment Officer, Steve Ward

Foreign Bonds…

These securities are something else altogether. Some are dollardenominated, but the average foreign bond fund has about a third of its assets in foreign-currency-denominated debt. With foreign-currency-denominated bonds, the issuer promises to make fixed interest payments -- and to return the principal -- in another currency. The size of those payments when they are converted into dollars depends on exchange rates. If the dollar strengthens against foreign currencies, foreign interest payments convert into smaller and smaller dollar amounts (if the dollar weakens, the opposite holds true). Exchange rates, more than interest rates, can determine how a foreign bond fund performs.

Mortgage-Backed Bonds…

Mortgage-backed bonds, which have a face value of $25,000 compared to $1,000 or $5,000 for other types of bonds, involve "prepayment risk." Because their value drops when the rate of mortgage prepayments rises, they don't benefit from declining interest rates like most other bonds do.

Municipal Bonds…

Municipal bonds -- often called "munis" are issued by U.S. states and local governments or their agencies, and they come in both the investment-grade and high-yield varieties. The interest is tax-free, but that doesn't mean everyone can benefit from them. Taxable yields are higher than muni yields to compensate \ investors for the taxes, so depending on your bracket, you might still come out ahead with taxable bonds

Illustration of Bond Value…

5 year Rs. 1000 par value bond, bearing a nominal rate of interest of 7% per annum. The investor's required rate of return is 8%. We are required to find out the purchase price investor is willing to pay for the Bond now… The investor will receive Rs. 70 as interest every year for 5 years and Rs. 1000 on maturity (i.e. at the end of 5th year). We can determine the present value of the Bond (B0) like this: B0=70/(1.08) + 70/(1.08)2 + 70/(1.08)3 + 70/(1.08)4 + 70/(1.08)5 +1000/(1.08)5 □B0 = 70x3.993+1000x0.681 = 279.51+681= Rs. 960.51 Therefore the investor will not be willing to pay more than Rs. 960.51 today for this bond.

Yield to Maturity (YTM) & Current Yield…

The YTM is a measure of a Bond's rate of return that considers both the interest income and any capital gain or loss. YTM is bond's internal rate of return. Current yield is the annual interest divided by Bond's Current value. For an example, the annual interest is Rs. 60 on current investment of Rs. 883.40. Therefore the current yield is: 60/883.40 = 6.8% YTM Excel application YTM excel application.xlsx

Yield to Call…

A number of companies issue bonds with buy back or call provision. Thus a bond can be redeemed or called before maturity. We can find the yield or the rate of return of a bond that may be redeemed before maturity. The procedure for calculating yield to call is the same as for yield to maturity.

Example of Yield to Call

As an example, consider a callable bond that has a face value of $1,000 and pays a semiannual coupon of 10%. The bond is currently priced at $1,175 and has the option to be called at $1,100 five years from now. Note that the remaining years until maturity does not matter for this calculation. Using the above formula, the calculation would be set up as: $1,175 = ($100 / 2) x {(1- (1 + YTC / 2) ^ -2(5)) / (YTC / 2)} + ($1,100 / (1 + YTC / 2) ^ 2(5)) Through an iterative process, it can be determined that the yield to call on this bond is 7.43%

Yield to Worst….

In bond investment, the term yield to worst (YTW) denotes the lowest possible amount of interest which can be earned on a callable bond. Bond coupon payments may increase over its term (see: Step Up Bond), or interest may accrue throughout the bond term rather than being paid out as coupons (see: Accrual Bond). If a bond is callable, it can be terminated by the bond issuer before it matures. When a callable step-up bond or accrual bond is terminated before its maturity date, the average annual interest earned on the bond will be lower than they would have been had the issuer allowed the bond holder to keep the bond until it matured. In most cases, callable bonds can only be terminated at predetermined intervals – typically at the end of each year. The YTW of a callable bond shows the interest rate which would apply if the issuer terminated the bond at the earliest possible interval. Yield to Worst (YTW) example…

Yield to Worst (YTW) example….

We buy a Rs. 1000 bond which has a 5-year term and a 5% annual interest rate. The bond is an accrual bond, so annual coupons are added to the bond principal and earn interest the following year (compounding interest). The bond is callable at the end of each anniversary year. If we keep the bond for the full 5-year term, we would receive Rs.1276.30 (Rs. 1000 plus Rs. 276.30 interest) when the bond matured. However, if the bond's issuer terminated the bond on the nearest possible call date 1 year from the time we bought it, we would get just Rs. 1050 (Rs. 1000 plus Rs.50 interest). In this case, the bonds YTW is Rs. 50

Calculating present Value of a Bond….

We will take an example here… The Govt is proposing to sell a 5-year bond of Rs. 1000 at 8% of interest per annum. The bond amount will be amortized equally over its life. If an investor has a minimum required rate of return of 7%, what is the Bonds present value for him?

Solution: Present Value of Bond.xlsx

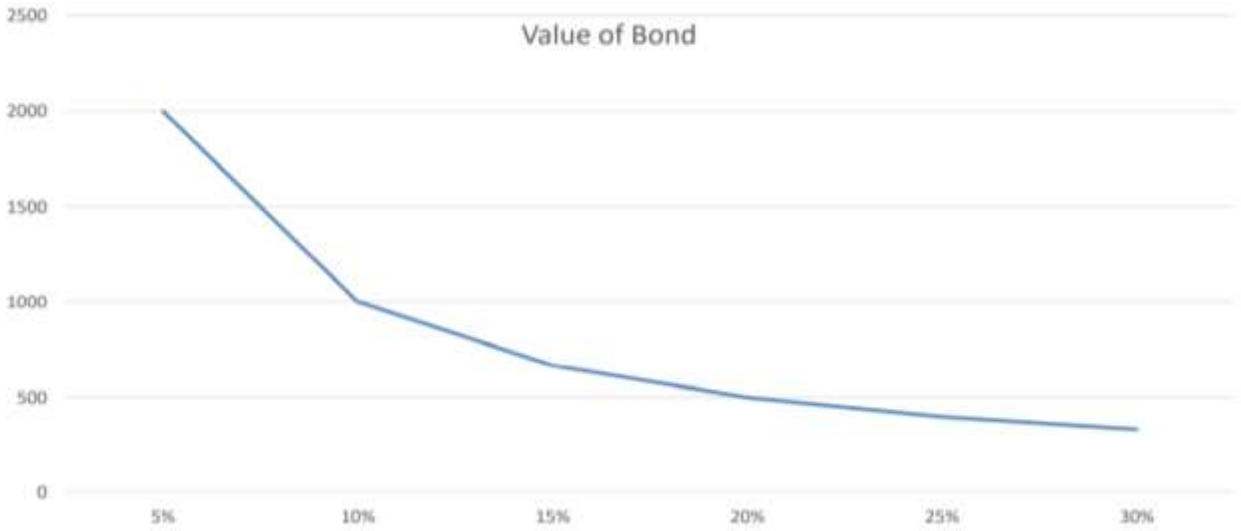
Pure Discount Bond….

Pure Discount Bond provides for the payment of a lump sum amount at a future date in exchange for a current price of the Bond. The difference between face value and its purchase price gives the return or YTM of the bond. This is also called Deep Discount Bond or Zero Interest Bond or Zero Coupon Bond. Eg- IDBI in 1992 issued bond of a face value Rs. 100000, which was sold for Rs. 2700 with a maturity period of 25 years. If an investor holds the IDBI deep discount Bond for 25 years, he would earn an explicit interest rate of : $2700=100000(1+i)25$. After calculating we get, $i=15.54\%$

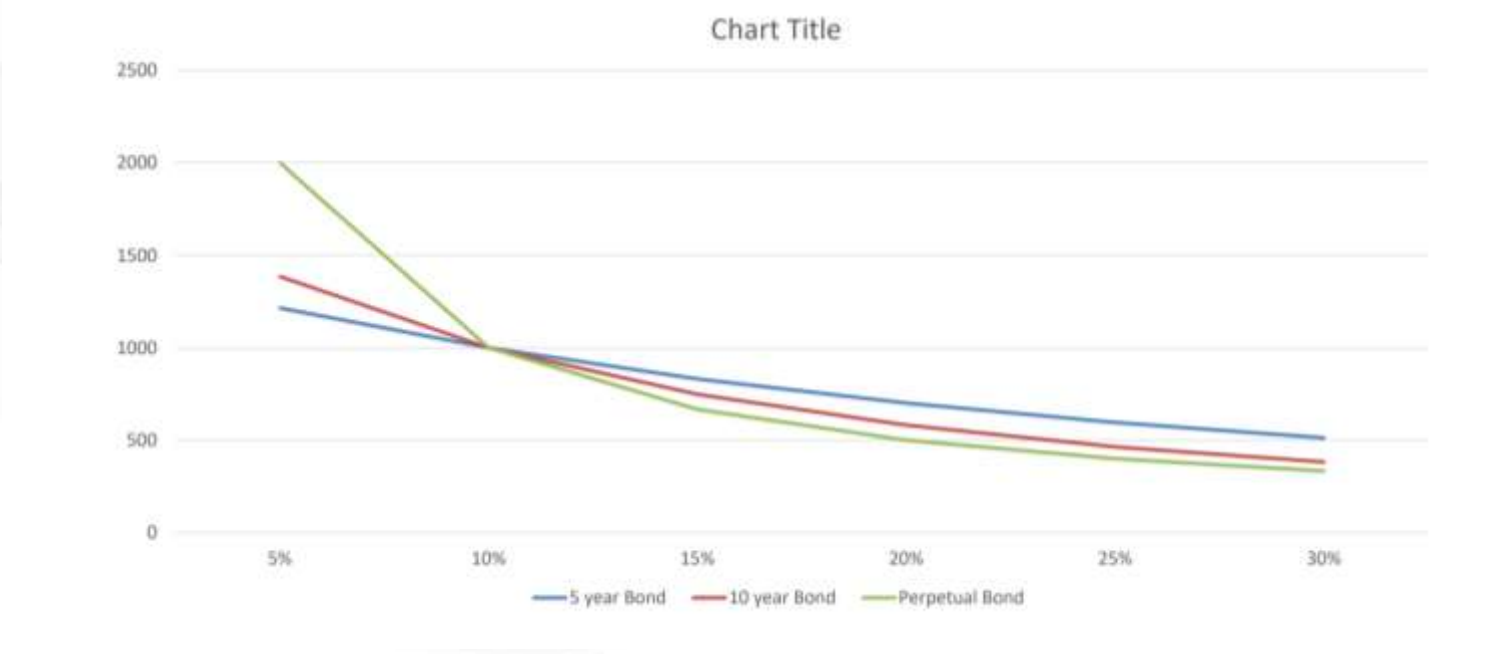
Value of a Zero Coupon Bond…

Value of a zero coupon bond= PV of the amount on maturity Eg.. IDBI issued a Zero Coupon Bond in 1998 @ Rs. 12750 to be redeemed after 30 years at a face value of Rs. 500000. The ROI of the bond is 13%. Solution: IDBI bond with a face value of Rs. 500000 with a maturity of 30 years. Suppose the current market yield on the similar bond is 9%. The present value of IDBI zero coupon bond as : B0 =500000/(1.09)30 =37685.57 Therefore the present value of this bond is Rs. 37,685.57, which is getting sold at Rs. 12750. So, this investment makes business sense.

Value of a Bond & Interest Rate- relation…



Value of a Bond, interest rate and maturity relation…..



Thank You