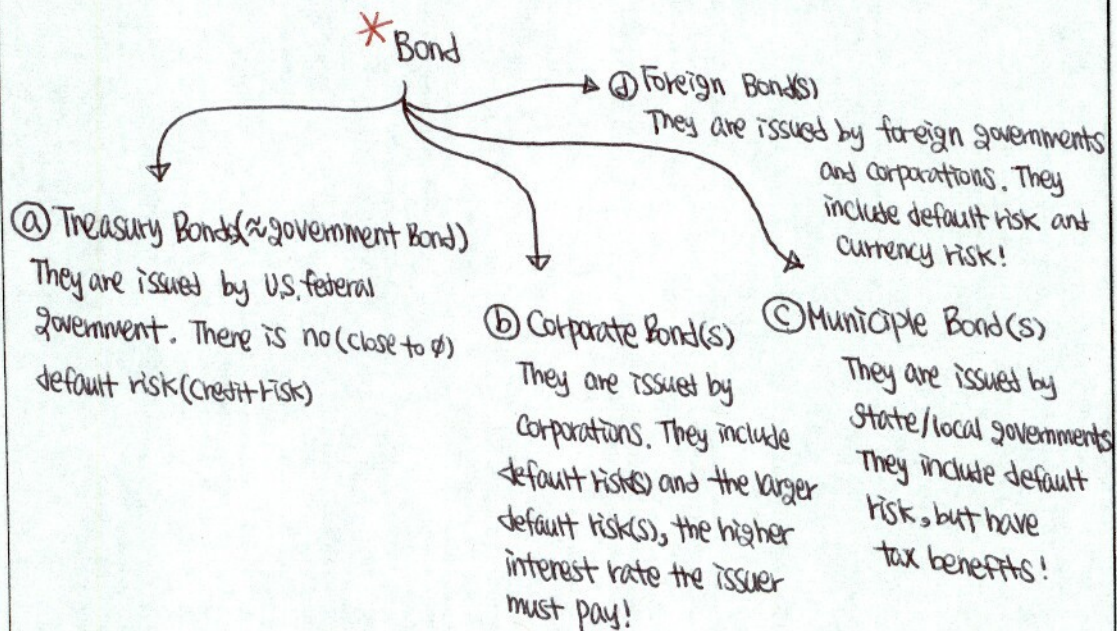


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• Bond Valuation

① A bond is a long-term contract under which a borrower agrees to make payments of interest and principle, on specific dates, to bondholders.



② Some characteristics of Bonds

(a) Par value or (stated) Face value; usually \$1,000

✓ it represents the amount of money the firm borrows and promises to repay on the maturity date.

(b) Coupon interest rate

✓ the yield paid by a fixed-income security

* ex) Kristen Corporation's bonds have a \$1,000 par value, and they pay \$100 in interest each year. The bond's coupon interest is \$100. That is, its coupon interest rate is 10% ($= \$100 / \$1,000$)

✓ The coupon payment, which is fixed at the time the bond is issued, remains in force during the life of the bond.

(c) Maturity date

✓ Bonds usually have a specific maturity date on which the par value must be paid.

* ex) CJ Corporation's bonds issued on January 5, 2011, will mature on

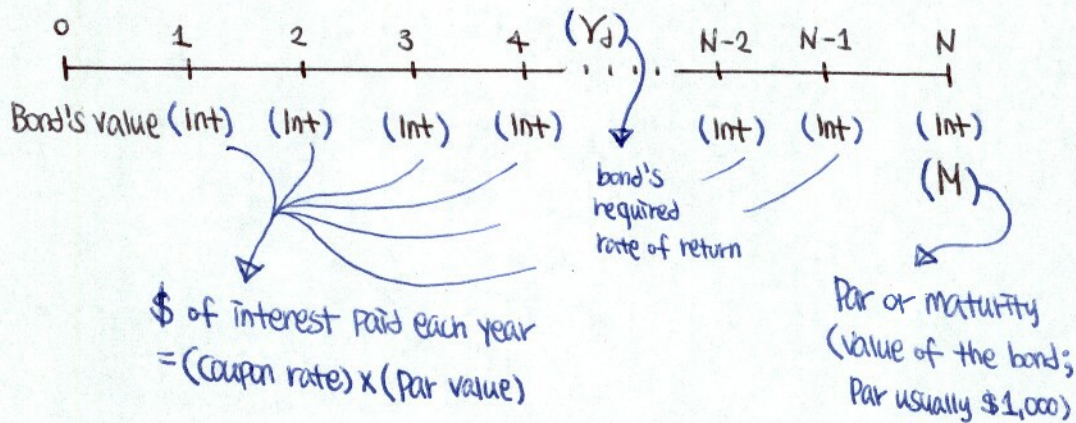
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January 5, 2026. Thus, they have a 15-year maturity at the time they are issued.

③ How to value a bond?

The value of any financial assets - a stock, a bond, a lease - and any physical assets - an apartment, a building, a machinery - is simply the present value of the cash flows the asset is expected to produce.



$$V_{\text{Bond}} = \frac{\text{INT}}{(1+r_d)^1} + \frac{\text{INT}}{(1+r_d)^2} + \dots + \frac{\text{INT}}{(1+r_d)^N} + \frac{M}{(1+r_d)^N}$$

$$= \sum_{t=1}^N \frac{\text{INT}}{(1+r_d)^t} + \frac{M}{(1+r_d)^N} = \text{INT} \left[\frac{1}{r_d} - \frac{1}{r_d(1+r_d)^N} \right] + \frac{M}{(1+r_d)^N}$$

*ex) Shea Corporation issued a 15-year bond with an annual coupon rate of 10% and a par value of \$1,000. Find/calculate the value of its bond.

$$V_{\text{Bond}} = \frac{\$100}{(1+10\%)^1} + \frac{\$100}{(1+10\%)^2} + \dots + \frac{\$100}{(1+10\%)^{15}} + \frac{\$1,000}{(1+10\%)^{15}} = \$1,000$$

* (N I/Y PV PMT FV)

15 10 -1000 100 1000

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④ Yield to maturity (YTM), Yield to call (YTC), and Current Yield (CY)

- ① What rate of interest would you earn on your investment if you bought the bond and held it to maturity? Yield to maturity (YTM) is the interest rate discussed by investors when they talk about rate of return.

(YTM is usually same as the market rate of interest, r_d)

ex) \boxed{N} $\boxed{I/Y}$ \boxed{PV} \boxed{PMT} \boxed{FV}
14 5 (1494.93) 100 1,000

- ② If current interest rates are well below an outstanding bond's coupon rate, then a callable bond is likely to be called, and investors will estimate its expected rate of return as the yield to call (YTC) rather than as the yield to maturity (YTM).

- ③ Current Yield (CY) is calculated by dividing annual interest payment by its current price of bond.

ex) Anthony Corporation's bonds with a 10% coupon are currently selling \$985, then its current yield would be:

$$\frac{\$100}{\$985} = 0.1015 = 10.15\%$$

* Compared with YTM, CY provides information regarding the amount of cash income that a bond will generate in a given year, but it does not provide an accurate measure of the total expected return of bond, YTM.

(Current Yield (CY) + Capital Gain Yield = Yield to Maturity)

