

Calculation - Present Value of Bond

VM

(r)

i) Coupon bond [Mention coupon rate and time.]

ii) Zero coupon bond [missing coupon rate].

iii) Perpetual bond. [time is missing]

_coupon bond: $V_f = (I \times V_f) + V_f = VM$

$$i) V_B = I \times \left[\frac{1 - \frac{1}{(1+kd)^n}}{kd} \right] + \frac{MV}{(1+kd)^n}$$

having short time
annual/simple interest

$$ii) V_B = \frac{I}{m} \times \left[\frac{1 - \frac{1}{(1+\frac{kd}{m})^{nm}}}{\frac{kd}{m}} \right] + \frac{MV}{(1+\frac{kd}{m})^{nm}}$$

compound interest

iii) Zero coupon bond:

$$iii) V_B = \frac{MV}{(1+kd)^n}$$

$$iv) V_B = \frac{I}{kd}$$

I = amount of interest

$$I = FV \times CR$$

kd = expected / required rate of return (না থাকল
always 10%)

V_B = value of bond

n = time

m = number of compounding

MV = maturity value

MV - directly mentioned

If not mentioned, face value will be M

If premium rate given,

$MV = FV + \left(\frac{FV \times PR}{1 + (b+d)} \right)$

$FV = \text{Face value}$

$PR = \text{Premium Rate}$

If discount rate given

$MV = FV - \left(\frac{FV \times DR}{1 + (b+d)} \right)$

$DR = \text{Discount Rate}$

$\therefore MV = \frac{FV}{1 + (b+d)}$

$$\frac{MV}{FV} = \frac{1}{1 + (b+d)}$$

$$\frac{FV}{MV} = 1 + (b+d)$$

Ans: 1. P & I method for MV

Yield from Bond

① ~~YTM~~ → P

① Yield to Maturity, YTM

② Yield to call, YTC

③ Current Yield, CY

* Formula

$$\textcircled{1} \text{ YTM} = \frac{\frac{I}{m} + \frac{MV - NSV}{n}}{\frac{MV + NSV}{2}} \times 100$$

[i: Yearly interest]

$$\textcircled{2} \text{ YTM} = \frac{\frac{I}{m} + \frac{MV - NSV}{n}}{\frac{MV + NSV}{2}} \times 100$$

[i: Compound Interest]

$$\textcircled{3} \text{ YTC} = \frac{\frac{CP - NSV}{n}}{\frac{CP + NSV}{2}} \times 100$$

Bond entwertet und erholt auf Basis der
erwarteten ZR

$$④ CY = \frac{I}{NSV} \times 100$$

Here,

CP = Call Price

$CP = FV + (FV \times PR)$ [∴ Premium]

$CP = FV + (FV \times DR)$ [∴ Discount]

NSV = Net Sales Value

$= SV - FC$ [∴ FC = Flotation Cost]

SV = Sales Value

$= \boxed{SV - B(SV \times FR)}$ [∴ FR = Flotation Rate]

→ If floatation cost
is given in %.