

Numerical Examples of Coupon Yield, Current Yield and Yield to Maturity Relationships

1. Formula for solving for yield to maturity in an annual pay bond:

$$P = \frac{c}{(1+r)} + \frac{c}{(1+r)^2} + \dots + \frac{c+F}{(1+r)^t}$$

N.B. You may use internal rate of return (IRR) function to solve for yield to maturity.

2. For $C=80$, $t=4$ and $F=1000$, we have

$$P = \frac{80}{(1+r)} + \frac{80}{(1+r)^2} + \frac{80}{(1+r)^3} + \frac{1080}{(1+r)^4}$$

3. For a bond selling at par:
If $P = \$100$ per $\$100$ Face Value, then substituting $P = 1000$ produces

$$(1) C/F = .08 \quad (2) C/P = .08 \quad (3) YTM = IRR = .08$$

$$\text{or } CF = C/P = YTM$$

4. For a bond selling at a discount:
If $P = \$90$ per $\$100$ Face Value, then substituting $P = 900$ produces

$$(1) C/F = .08 \quad (2) C/P = .0888 \quad (3) YTM = IRR = .1123$$

$$\text{or } C/F < C/P < YTM$$

5. For a bond selling at a premium:
If $P = \$110$ per $\$100$ Face Value, then substituting $P = 1100$ produces

$$(1) C/F = .08 \quad (2) C/P = .0727 \quad (3) YTM = IRR = .0516$$

$$\text{or } C/F > C/P > YTM$$