

LG 5**LG 6****ST6-1**

Bond valuation Lahey Industries has outstanding a \$1,000 par-value bond with an 8% coupon interest rate. The bond has 12 years remaining to its maturity date.

IRF

- If interest is paid *annually*, find the value of the bond when the required return is (1) 7%, (2) 8%, and (3) 10%.
- Indicate for each case in part a whether the bond is selling at a discount, at a premium, or at its par value.
- Using the 10% required return, find the bond's value when interest is paid *semiannually*.

N 1, 25, 85

Q 1: Par value = 1000, coupon rate = 8%, n = 12

a) 1) r = 7% CF = 1000 * 8% = 80

$$P_0 = \frac{CF}{y} \left[1 - \frac{1}{(1+y)^n} \right] + \frac{Par}{(1+y)^n}$$

$$= \frac{80}{,07} \left[1 - \frac{1}{(1,07)^{12}} \right] + \frac{1000}{(1,07)^{12}} = \boxed{1079,43}$$

2) r = 8%

$$P_0 = \frac{80}{,08} \left[1 - \frac{1}{(1,08)^{12}} \right] + \frac{1000}{(1,08)^{12}} = \boxed{1000}$$

3) r = 10%

$$P_0 = \frac{80}{,1} \left[1 - \frac{1}{(1,1)^{12}} \right] + \frac{1000}{(1,1)^{12}} = \boxed{863,8}$$

- b) r = 7%, P₀ = 1079,43 sells at premium
- r = 8%, P₀ = 1000 sells at par value
- r = 10%, P₀ = 863,8 sells at discount

c) r = 10%

$$P_0 = \frac{CF}{y} \left[1 - \frac{1}{(1+\frac{y}{2})^{2n}} \right] + \frac{Par}{(1+\frac{y}{2})^{2n}}$$

$$= \frac{80}{,1} \left[1 - \frac{1}{(1,05)^{24}} \right] + \frac{1000}{(1,05)^{24}} = \boxed{862,4}$$