

Van Horne Chapter 4. The Valuation of Long-Term Securities (continued)

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**The Role of Bond Maturity (See Valuation Spreadsheet 181016.)**

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The longer the bond maturity, the greater the change in bond price for a given change in the market required rate of return.

Example 4.74. Assume that the required rate of return on both the 5 and 15 year, 10% annual coupon paying bonds *fall* from 10% to 8%. What happens to the changes in bond prices?

The 5 year bond price has *risen* from \$1,000 to \$1,080 for the 5 year bond (+8.0%).

The 15 year bond price has *risen* from \$1,000 to \$1,171 (+17.1%). *Twice as fast!*

For a given change in the market required rate of return, the price of a bond will change by proportionally more, the lower the coupon rate.

**The Role of the Coupon Rate (See Valuation Spreadsheet 181016.)**

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Example 4.78. Assume that the market required rate of return on two equally risky 15 year bonds is 10%. The annual coupon rate for Bond H is 10% and Bond L is 8%.

What is the rate of change in each of the bond prices if market required rates fall to 8%?

The price on Bond H and L prior to the change in the market required rate of return is \$1,000 and \$848 respectively.

The price for Bond H will rise from \$1,000 to \$1,171 (+17.1%).

The price for Bond L will rise from \$848 to \$1,000 (+17.9%). *Faster Increase!*

**Determining the Yield on Preferred Stock**

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$$P_0 = \text{Div}_P / k_P$$

$$k_P = \text{Div}_P / P_0$$

Example 4.81. Assume that the annual dividend on each share of preferred stock is \$10. Each share of preferred stock is currently trading at \$100. What is the *yield* on preferred stock?

$$k_P = \$10 / \$100.$$

$$k_P = 10\%.$$

**Determining the Yield on Common Stock**

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Assume the constant growth model is appropriate. Determine the yield on the common stock.

$$P_0 = D_1 / (k_e - g)$$

Solving for  $k_e$  such that  $k_e = (D_1 / P_0) + g$

Example 4.83 Assume that the expected dividend ( $D_1$ ) on each share of common stock is \$3. Each share of common stock is currently trading at \$30 and has an expected growth rate of 5%. What is the *yield* on common stock?

$$k_e = (\$3 / \$30) + 5\%$$

$$k_e = 10\% + 5\% = 15\%$$

## Van Horne Chapter 5. Risk and Return

### Return

Income received on an investment plus any change in market price, usually expressed as a percent of the beginning market price of the investment.

$$R = \frac{D_t + (P_t - P_{t-1})}{P_{t-1}}$$

The stock price for Stock A was \$10 per share 1 year ago. The stock is currently trading at \$9.50 per share and shareholders just received a \$1 dividend. What return was earned over the past year?

$$R = [\$1.00 + (\$9.50 - \$10.00)]/\$10.00 = [\$1.00 + (-\$0.5)]/\$10 = \$0.5/\$10 = .05 \text{ or } 5\%$$

### Risk

The variability of returns from those that are expected.

- What rate of return do you expect on your investment (savings) this year?
- What rate will you actually earn?
- Does it matter if it is a bank CD or a share of stock?

$$\bar{R} = \sum_{i=1}^n (R_i)(P_i)$$

$\bar{R}$  is the expected return for the asset,  
 $R_i$  is the return for the  $i^{\text{th}}$  possibility,  
 $P_i$  is the probability of that return occurring,  
 $n$  is the total number of possibilities.

Stock BW			
$R_i$	$P_i$	$(R_i)(P_i)$	
-0.15	0.10	-0.015	The expected return, $\bar{R}$ , for Stock BW is .09 or 9%
-0.03	0.20	-0.006	
0.09	0.40	0.036	
0.21	0.20	0.042	
0.33	0.10	0.033	
<b>Sum</b>	<b>1.00</b>	<b>0.090</b>	

### Standard Deviation, Coefficient of Variation, Certainty Equivalent, Portfolio Expected Return and Standard Variation

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