

1. Patel Technologies has 2 bond issues outstanding, a 7 year bond and a 16 year bond. The bonds both make semi annual pymts, are of equal risk and have the same YTM. The 7 year bond was originally issued 8 years ago with a 9.2% coupon rate, and it currently sells for \$970.25. If the 16 year bond (issued 4 years ago) pays 10.8% coupon, what is the value of the 16 year bond?

$$YTM = \frac{\text{Annual coupon payment} + \frac{(\text{face value} - \text{current price})}{\text{years to maturity}}}{\frac{(\text{face value} + \text{current price})}{2}}$$

$$YTM = \frac{46 + \frac{(1000 - 970.25)}{14}}{\frac{(1000 + 970.25)}{2}} \times 2 = 9.77\%$$

$$C \times \left[\frac{1}{r} - \frac{1}{r(1+r)^t} \right] + \frac{\text{Face Value}}{(1+r)^t}$$

$$= 54 * (1/0.048852 - 1/(0.048852 * (1+0.048852)^{32})) + (1000/(1+0.048852)^{32})$$

$$= 1082.48$$

2. Schubert Fabric is expected to pay a \$1.20 dividend at the end of the year. The required return on Schubert Fabric's stock is 11% and its dividend is expected to grow at a constant rate of 7% per year. Chapman Tech is expected to pay a \$1.50 dividend at the end of the year. Chapman Tech's dividend yield and capital gains yield both equal 6%. Rust Petroleum's current stock price is \$15 per share, its required return is 13% and its dividend yield is 8%.

Which stock has the highest expected dividend? Current stock price? Required return?

Dividend yield and capital gains yield?

Schubert Fabric

Expected Dividend = \$1.2

$$P_0 = \frac{DIV_1}{r - g} = 1.2 / (.11 - .07) = \$30$$

Required return = 11%

Dividend yield = $1.2 / 30 = 4\%$

Capital Gains yield = $11\% - 4\% = 7\%$

Chapman Tech

Expected Dividend = \$1.5

$$P_0 = \frac{DIV_1}{r - g} = 1.5 / (.12 - .06) = \$25$$

Required return = $6\% + 6\% = 12\%$

Dividend yield = 6%

Capital Gains yield = 6%

Rust Petroleum

Expected Dividend = $\$15 \times 8\% = \1.2

$P_0 = \$15$

Required return = 13%

Dividend yield = 8%

Capital Gains yield = $13\% - 8\% = 5\%$

3. Swinton Mining has seen its business slowly wind down. It recently paid a dividend of \$1.80 per share, but analysts expect the dividend to decrease by 6% per year. If Swinton's required return is 9.5%, what is Swinton's current expected dividend yield? Would Swinton's dividend yield increase or decrease over time? What is Swinton's expected stock price in one year?

$$P_0 = \frac{DIV_1}{r - g} = (1.8 * 0.94) / (0.095 + 0.06) = \$10.92$$

$$\text{Dividend yield} = 9.5\% + 6\% = 15.5\%$$

Dividend yield would be the same over time.

$$P_1 = 10.92 * 0.94 = \$10.26$$

4. Portman Industries just paid a dividend of \$2 per share. Portman expects the coming year to be very good, and its dividend is expected to grow by 15% over the year. After the next year, though, Portman's dividend is expected to grow at a constant rate of 6.4% per year. If Portman's required return is 10.4%, what is the firm's current stock price?

$$P_0 = \frac{DIV_1}{1+r} + \frac{DIV_2}{(1+r)^2} + \dots + \frac{DIV_H}{(1+r)^H} + \frac{P_H}{(1+r)^H}$$

$$= (2 * 1.15) / (1.104) + ((2 * 1.15 * 1.064) / (0.104 - 0.064)) / 1.104$$

$$= \$57.5$$

5. Goodwin Technologies is a relatively young company. Goodwin has been wildly successful, but it has yet to pay a dividend. An analyst has forecasted that Goodwin is likely to pay its first dividend three years from now. She expects Goodwin to pay a \$2.50 dividend at that time ($D_3 = \$2.50$), and she believes the dividend will grow at a constant rate of 7% per year. If Goodwin's required return is 12.9%, what is Goodwin's expected stock price at the time that

constant growth begins? What is Goodwin's current intrinsic value? What is Goodwin's current expected dividend yield? What is Goodwin's current expected Capital gains yield? What are Goodwin's expected dividend and capital gains yield in 2 years (the year before firm begins paying dividends)?

Expected Stock price at the time that constant growth begins = $2.5 / (.129 - .07)$
= \$42.37

$$P_0 = \frac{DIV_1}{1+r} + \frac{DIV_2}{(1+r)^2} + \dots + \frac{DIV_H}{(1+r)^H} + \frac{P_H}{(1+r)^H}$$

$$= 0 + 0 + (2.5 / (.129 - .07)) / 1.129^3$$

$$= \$29.44$$

Current dividend yield = 0

Current Capital Gains yield = 12.9%

After 2 years dividend yield = 12.9% - 7% = 5.9%

After 2 years Capital Gains yield = 7%