

Quiz 4 Solutions

Security Analysis - Finance 40610

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Fall Semester 2006

Instructions: Please answer all of the questions completely and show all of your work. You may use a formula sheet and a calculator. The quiz is worth 25 points.

1. (18 points) Last year, Bed Bath & Beyond had a return on capital (ROC) of 13% and a reinvestment rate of 24%. The firm has increased ROC by about 1% per year in the recent past. For the next four years, you expect the firm to continue to improve ROC by 1% per year and to maintain a reinvestment rate of 24%. The WACC is 9% and the *after-tax* EBIT last year was \$1973.

- a) (5 points) Calculate the fundamental growth rate in EBIT in year one.

$$g_{EBIT} = (\text{Reinvestment Rate} \times \text{ROC}) + \Delta \text{ROC}$$
$$= (.24)(.14) + \left(\frac{.14 - .13}{.13} \right) = 3.36\% + 7.69\% = 11.05\%$$

- b) (5 points) After year four, you expect the firm to reach stable growth, during which it will maintain the industry average ROC of 17% and stable growth in EBIT at 4% per year. Calculate the reinvestment rate required during the stable growth stage in order to maintain stable growth rate.

$$g_{EBIT} = (\text{Reinvestment Rate} \times \text{ROC})$$
$$\text{So, Required Reinvestment} = \frac{g}{\text{ROC}} = \left(\frac{.04}{.17} \right) = 23.53\%$$

- c) (8 points) Based on your answers to parts (a) and (b), calculate the terminal value of cash flows as of year four. Assume the growth rate you estimated in (a) applies to the first four years. (Note: you do not need to calculate firm value – only the terminal value).

$$TV_4 = \frac{CF_5}{R - g} = \frac{EBIT_5(1 - T)(1 - \text{Reinvestment Rate})}{R - g}$$

Note : you would normally need to subtract taxes from EBIT. However, in this problem, I have given you the aftertax EBIT from year zero.

$$= \frac{1973(1.1105)^4(1.04)(1 - .2353)}{.09 - .04} = \frac{3120.58(1 - .2353)}{.09 - .04} = \frac{2386.31}{.05} = \$47,726.15$$

2. (7 points) You are valuing a firm using a free cash flow to equity (FCFE) model. You have collected the following information for the firm.

EBIT	1972.8
Net Income	572.8
Capital Expenditures	220.4
Depreciation	111.1
Increase in Working Capital	79.5
Debt-to-Capital	53.0%
Return on Capital (ROC)	13.0%
Return on Equity (ROE)	26%
Tax Rate	38.0%

- a) (7 points) Use the information above to calculate the Equity Reinvestment Rate.

$$\begin{aligned} \text{Equity Reinvestment Rate} &= \frac{(\text{Total Reinvestment})(1 - \delta)}{\text{Net Income}} \\ &= \frac{(220.4 - 111.1 + 79.5)(1 - .53)}{572.8} = 15.49\% \end{aligned}$$

Although I did not ask for it here, you could also calculate the fundamental growth rate in Net Income :

$$g_{\text{NetIncome}} = (.1549)(.26) = 4.05\%$$