

YOUR NAME \_\_\_\_\_

Key

EXAM 2 FINC 4531 FALL 2006

YOU HAVE 75 MINUTES TO COMPLETE BOTH PARTS OF THIS EXAM

Instructions:

- 1) The part of the exam is closed book and closed notes. No scrap paper is allowed; use the back of the exam if necessary.
- 2) Partial points are based on readily observable evidence that you know at least part of the solution concept. The more evidence presented (and the clearer the evidence), the better the chance for partial points. In other words, SHOW ALL WORK!
- 3) If you have additional time remaining, give your work one last check.
- 4) True/False questions are worth 2 points. Multiple-choice questions are worth 3 points. Short answer/Fill in the Blanks questions usually take less than three sentences and are worth 4 points.

1. This class often uses the term "yield to maturity" when discussing bond valuation. For a bond trading at a discount with semi-annual coupon payments, the "yield to maturity" is closest to:

- a. the bond's nominal rate.
- b. the bond's effective rate.
- c. the bond's current yield.
- d. the bond's coupon rate.
- e. none of the above.

A

2. The constant dividend growth model may be used to find the price of a stock in all of the following situations except:

- a. when the expected dividend growth rate is less than the discount rate.
- b. when the expected dividend growth rate is negative.
- c. when the expected dividend growth rate is zero.
- d. when the expected dividend growth rate is more than the expected return.
- e. the constant growth model works in all known circumstances, it never fails.

D

3. Briefly list the major conclusions of the M&M with tax theory of capital structure?

1. optimal C.S. is 100% debt  
 2. As  $w_d \uparrow$  vs  $\pi_{rd} \uparrow$  WACC  $\downarrow$  Firm Value  $\uparrow$

3. cause of Firm Value increase is wealth transfer from bond to share holders

4. The firm's financial risk is largely determined by the amount of debt in its capital structure.

- A) True
- B) False

A

5. Historically which of the following BEST describes the correct order of returns? (lowest to highest)? Assume the corporate bonds, preferred stock and common stock is for a single (the same) company.

- a. T-bills, T-bonds, Corporate bonds, Preferred Stocks, Common Stocks
- b. T-bills, T-bonds, Corporate Bonds, Common Stocks, Preferred Stocks
- c. T-bonds, Corporate bonds, T-bills, Common Stocks, Preferred Stocks
- d. Preferred Stocks, T-bills, T-bonds, Corporate bonds, Common Stocks
- e. Common Stocks, Preferred Stocks, Corporate Bonds, T-bills, T-bonds

A

6. List 4 'real-world' factors that would affect a firm's choice of capital structure?

- Ability to Service Debt
- Ability to fully use tax shields
- Desired Access to Capital Markets
- Ability of Assets to Support Debt

Dynamic Factors of C.S. over time

7. What is the optimal capital structure? Why is this policy optimal?

The optimal C.S. is the mix of debt & equity that minimizes WACC and therefore maximises firm value.

✓

YOUR NAME \_\_\_\_\_

EXAM 2 / FINC 4531 FALL 2006

YOU HAVE 75 MINUTES TO COMPLETE BOTH PARTS OF THIS EXAM

Key

Instructions:

- 1) The part of the exam is open book and open notes.
- 2) Partial points are based on readily observable evidence that you know at least part of the solution concept. The more evidence presented (and the clearer the evidence), the better the chance for partial points. In other words, SHOW ALL WORK!

1. (10 points) Rolling Corporation is constructing its Cost of Capital schedule. The firm is at its target capital structure. Its bonds have a 7 percent coupon, paid semiannually, a current maturity of 8 years, and sell for \$1038.40. Rolling's beta is 1.2, the risk-free rate is 4.7 %, and the market risk premium is 7.8 %. Rolling is a constant growth firm, which just paid a dividend of \$1.55, sells for \$25.00 per share, and has a growth rate of 7.5 %. The firm's tax rate is 35%.

The firm's book value balance sheet is as follows:

Asset	\$6,900	Long Term Debt	\$21,000
		Equity (\$1.00 par)	\$12,800
		Retained Earnings	-\$26,900

a. What is the firm's leverage ratio?

$$\frac{D}{TA} = \frac{21806}{21806 + 320000} = 0.38\%$$

b. What is Rolling's after-tax cost of debt?

$n=16$   $FV=1000$   $I = 3.1\% \times 2 = 6.38(1-35\%) = 4.15\%$

c. What is Rolling's cost of retained earnings using the Discounted Cash Flow approach?

$$\frac{1.55}{25} \times 1.075 + 0.075 = 14.17\%$$

d. What is Rolling's cost of retained earnings using the Capital Asset Pricing Model approach?

$$CAPM = r_f + \beta(r_m - r_f) = 4.7 + 1.2(7.8) = 14.06\%$$

e. Using your DCF estimate of the cost of retained earnings, what is Rolling's WACC?

$$WACC = w_d r_d (1-T) + w_s r_s = (0.0638)(4.15) + (1-0.0638)(14.17) = 13.52$$

2. (Point values are as listed) Use the following information for the next several questions. Consider a world of perfect capital markets. This world has no corporate or personal taxes, all investors have homogeneous expectations, no bankruptcy costs, and M&M's no-tax theory of capital structure is true.

Company Y is financed has the following market value balance sheet:

Assets = \$455	Liabilities = \$181
	Equity = \$274

$$\begin{array}{r} 43.22 \\ - 9.96 \\ \hline 33.27 \\ \hline 33.27 \end{array}$$

The firm had \$43.22 in EBIT last year. The firm has 50 shares outstanding. The firm expects this same return for the foreseeable future. The firm is a zero growth firm, that pays out all excess earnings as dividends. Any time the firm changes its capital structure, it changes only the debt/equity mix and does not change its total assets. The firm's liabilities consists entirely of perpetual debt. The firm's debt is risk-less, selling at par, and has a 5.5% yield. If the firm were to change its capital structure, new debt would still have a 5.5% yield. The expected return on the market portfolio is 12%. Given this information, answer the following questions:

a. (3 points) What is the firm's return on equity?

$$\frac{33.27}{274} = 12.14\%$$

b. (3 points) What is the firm's current weighted average cost of capital.

$$9.999\% = 9.50\%$$

c. (3 points) What is the current price per share?

$$\frac{43.22}{50} = 5.48$$

d. (3 points) What is the beta of the firm's levered equity?

$$12.14 = 5.5 + \beta(12 - 5.5) \Rightarrow \beta = 1.02$$

Now assume that the above firm issues enough equity to repurchase all of the firm's debt. This change in capital structure reveals no new information about future firm prospects.

e. (3 points) What is the overall firm's new return on equity?

WACC unchanged 9.50%

f. (3 points) Write out the firm's new balance sheet?

$$455 = 0 + 455$$

3. (4 points) ZAL Company's earnings and dividends are expected to remain unchanged for the next two years. After 2 years, dividends are expected to grow at a 10 percent annual rate forever. The last dividend paid was \$3.00, and the required rate of return is 15 percent. What should be the current market value of ZAL stock?

- a. \$49.04    b. \$54.78    c. \$57.09    d. \$60.14    e. None of the above is within \$5.00 of the answer.

Handwritten calculations for Q3:  
 $3.00 \times 1.10 = 3.30$   
 $3.30 \times 1.10 = 3.63$   
 $3.63 / 0.15 = 24.2$   
 $24.2 + 3.00 = 27.2$   
 (Note: The handwritten answer is 54.78, which is double the calculated value, possibly due to a typo or misinterpretation of the question.)

4. (4 points) What is the current price of a firm's 12 percent, \$100 par value preferred stock with a required rate of return of 8%?

- a. \$120    b. \$130    c. \$140    d. \$150    e. \$160

Handwritten calculation for Q4:  
 $12 / 0.08 = 150$

5. Now consider a DIFFERENT COMPANY in a world that of perfect capital markets, with one change, CORPORATE TAXES DO EXIST. This world has no personal taxes, all investors have homogeneous expectations, no bankruptcy costs, and M&M's with corporate taxes theory of capital structure is true. Company Y is financed has the following market value balance sheet:

Assets = \$ 110                      Liabilities = \$0  
 Equity = \$110

The firm had \$20.17 in EBIT last year. The firm has 20 shares outstanding. The firm expects the same return/profits for the foreseeable future. The firm is a zero growth firm, that pays out all excess earnings as dividends. Any time the firm changes its capital structure, it changes only the debt/equity mix and does not change its physical/fixed assets. Liabilities consist only of the firm's debt. The debt is riskless, perpetual, selling at par, and has a 5% pre-tax yield. If the firm were to change its capital structure, new debt would still have a 5% pre-tax yield. The firm's tax rate is 35%. Given this information, answer the following questions:

a. (3 points) What is the current weighted average cost of capital (WACC)?

$$13.11 / 110 = 11.91\%$$

b. (3 points) What is the firm's current dividends per share?

$$13.11 / 20 = \$0.6555$$

Handwritten calculation for Qa and Qb:  
 $20.17 - 0 = 20.17$   
 $20.17 - 7.05 = 13.11$

Now assume the firm issues \$80 in debt and repurchases \$80 in equity.

c. (3 points) Write out the firm's new balance sheet after all of the changes.

$$V_L = V_U + TD = 110 + 28 = 138 \quad 138 = 80 + 58$$

d. (3 points) What is the firm's Weighted Average Cost of Capital?

$$\left(\frac{80}{138}\right)(5\%)(1-35\%) + \left(\frac{58}{138}\right)(11.2\%) = 9.50\%$$

e. (3 points) What is the return on levered equity?

$$10.51 / 58 = 18.12\%$$

(3 points) What is the beta of the debt?

0, debt is riskless

per  
 port  
 low  
 from  
 A

Handwritten calculation for Qc and Qd:  
 $20.17 - 4.00 = 16.17$   
 $16.17 - 5.66 = 10.51$