

Exam 2- Fall 2002 FINC 4531 Answer Key Closed Book

1. c. Shareholder Wealth Maximization.
2. Debt instrument, with a limited life, usually pays a coupon, usually matures a principal value of \$1000, does not have voting rights, but has priority over equity in bankruptcy.
3. equal to and less than
4. It is the mix of debt and equity that minimizes the Weighted Average Cost of Capital, and (the Why) therefore maximizes firm value.
5. A. True
6. d. $k_s > WACC > k_d$.

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1. a. 6.50%
 $28.40 = (2(1+g))/(.14-g)$
 2. $PV = -1187, N = 25 \times 2 = 50, PMT = 110/2 = 55, FV = 1000$, and $I = 4.5465$ for 6 month rate, $4.5465 \times 2 = 9.09\% = YTM$
 3. a. Calculate Lissa's total dividends for 2002 if its dividend payment is set to force dividends to grow at the long-run growth rate in earnings.
 $\$2,000,000 \times 1.05 = \$2,100,000$
 - b. Calculate Lissa's total dividends for 2002 if it continues its 2001 dividend payout ratio.
 $2,000,000/26,000,000 = 2002 \text{ dividend}/22,000,000$
 $\rightarrow 2002 \text{ dividend} = \$1,692,307.69$
 - c. Calculate Lissa's total dividends for 2002 if it uses a pure residual dividend.
Dividends = Net Income – Equity Portion of Capital Budget = $22,000,000 - (8,000,000 \times 80\%) = \$15,600,000$
 - d. What is Lissa's optimal dividend policy? Why?
Lissa's dividends have been far too low and need to be dramatically increased as the optimal dividend policy is the Long-Run Residual policy. Of the three choices above, C is preferred as it is pays the amount that is closest to the long-run residual policy.
4. Note there was a typographical error listing Assets as \$4,000 rather than \$6,000, however as this is a book value it would not have impacted the solution.

What is the firm's leverage/debt ratio?

Convert balance sheet to market value, thus debt = $5 * 1085 = 5425$, and equity = 500 shares (from 500 equity/\$1 par) * 27 = 13500, and you ignore retained earnings.

Thus the market value balance sheet is $18925 = 5425 + 13500$, and the debt ratio is $5425/18925 = 28.7\%$

What is Rollins' cost of debt%?

$PV = -1085, FV = 1000, N = 17 * 2, PMT = 90/2 = 45$, and therefore $I = 4.036 * 2 = 8.07\%$

What is Rollins' cost of retained earnings using the CAPM approach?

$R_s = 6 + 1.1(12 - 6) = 12.6\%$

What is the firm's cost of retained earnings using the DCF approach?

$R_s = d_1/p_0 + g = ((2 * (1 + 8\%))/27) + 8\% = 16\%$

Using your CAPM estimate of the cost of retained earnings, what is Rollins' WACC?

$(28.7\% * 8.07\%) + ((1 - 28.7\%) * 12.6\%) = 11.3\%$.

Note, had a tax rate been given, then the equation would be $(28.7\% * 8.07\% * (1 - \text{tax rate})) + ((1 - 28.7\%) * 12.6\%) =$

5. (10 points) Deliman Chicken has the following balance sheet; Assets 4000 = Debt 1000 plus Equity 3000. The firm is, zero-growth firm with 50 shares selling for \$60 each. The firm pays no taxes and pays out all earnings as dividends. The firm's debt is selling at par and has a coupon rate of 8%. Last year the firm's EBIT was \$425.

a. Under the current capital structure, what is the WACC?

Easiest method is Operating Income / Firm Value = $425/4000 = 10.625\%$

Harder way is to solve for return on equity creating an income statement
EBIT (425) – Interest Expense ($1000 * 8\% = 80$) = Earnings before Taxes (345) – Taxes (0) = Net Income (345), Since firm is 0% growth, $r_s = ROE = 345/3000 = 11.5\%$, then solve for WACC

$1000/4000 * 8\% + 3000/4000 * 11.5\% = 10.625\%$

b. What is the current market value of the firm?

\$4000

Now assume the firm issues \$1000 of equity to repurchase all of the outstanding debt.

c. What is the firm's new WACC?

Since this is a perfect markets world, then by theory, WACC does not change and this 10.625%

d. What is the firm's new Dividend per share?

New shares were issued at \$60, thus $1000/60=16.666$ new shares, thus total shares = $50 + 16.666 = 66.66$, EBIT now equals Net Income since there is no more interest expense, thus dividends = \$6.375.

An alternate way it to realize that dividend yield = dividend / price per share. Since firm is 0 growth and all earnings are paid out as dividend, therefore $r_s = \text{dividend yield} + \text{capital gains}$ becomes $r_s = \text{dividend yield}$, since the firm is all equity, $WACC = r_s = \text{dividend yield} = 10.625\%$. Therefore $60 * 10.625\% = 6.375$

e. What is the firm's new cost of common equity (%)?

See d above, 10.625% since firm is all equity, then $WACC = r_s$.

6. a. (2 points) What is the value of the firm's tax shield due to the use of perpetual debt?

$$T * D = 35\% * 90 = \$31.50$$

b. (2 points) What is the current expected return on the firm's equity?

You must create an income statement, EBIT (30) – Interest Expense ($90 * 7\% = 6.30$) = Earnings Before Taxes (23.70) – Taxes ($23.70 * 35\% = \$8.295$) = Net Income (15.40),
 $R_s = ROE = 15.40/95 = 16.2\%$