Question Book for

Final Examination 2-2013

TOPIC 1: Investment Criteria and Decision

Problem 1 Bumble's Bees, Inc., has identified the following two mutually exclusive projects:

Year	Cash Flow (A)	Cash Flow (B)
0	- $37,000	-$37,000
1	19,000	6,000
2	14,500	12,500
3	12,000	19,000
4	9,000	23,000

a. What is the IRR for each of these projects? Using the IRR decision rule, which project should the company accept? Is this decision necessarily correct?
b. If the required return is 11 percent, what is the NPV for each of these projects? Which project will the company choose if it applies the NPV decision rule?
c. Over what range of discount rates would the company choose project A? Project B? At what discount rate would the company be indifferent between these two projects? Explain.

Problem 2 Old Country, Inc., imposes a payback cutoff of three years for its international investment projects. If the company has the following two projects available, should it accept either of them? If the company has a discount rate of 14 percent, how could this affect investment decision?

Year	Cash Flow (A)	Cash Flow (B)
0	-$50,000	-$ 70,000
1	35,000	15,000
2	21,000	22,000
3	10,000	31,000
4	5,000	240,000

Problem 3 Slow Ride Corp. is evaluating a project with the following cash flows:

Year	Cash Flow
0	-$18,000
1	5,800
2	6,500
3	6,200
4	5,100
5	4,300

The company has a 15 percent cost of capital, should the company accept this project? Assuming that reinvestment rate of this project is equal to cost of capital, calculate MIRR of the project and decide if the company should accept?

Problem 4 Consider the following two mutually exclusive projects:

Year	Cash Flow (A)	Cash Flow (B)
0	$350,000	$35,000
1	25,000	17,000
2	70,000	11,000
3	70,000	17,000
4	430,000	11,000

Whichever project you choose, if any, you require a 15 percent return on your investment.

a. If you apply the payback criterion, which investment will you choose? Why?
b. If you apply the discounted payback criterion, which investment will you choose? Why?
c. If you apply the NPV criterion, which investment will you choose? Why?
d. If you apply the IRR criterion, which investment will you choose? Why?
e. If you apply the profitability index criterion, which investment will you choose? Why?
f. Based on your answers in (a) through (e), which project will you finally choose? Why?

Topic 2: Bond Valuation

Problem 5 Jenny's Inc's bonds have 12 years remaining to maturity. Interest is paid annually, the bonds have a $1,000 par value, and the coupon interest rate is 8%. The bonds have a yield to maturity of 9%. What is the current market price of these bonds?

Problem 6 Manny Corporation's bonds have 12 years remaining to maturity. Interest is paid annually, the bonds have a $1,000 par value, and the coupon interest rate is 10%. The bonds sell at a price of $850. What is their yield to maturity?

Problem 7 The Garraty Company has two bond issues outstanding. Both bonds pay $100 annual interest plus $1,000 at maturity. Bond L has a maturity of 15 years, and Bond S has a maturity of 1 year.

a. What will be the value of each of these bonds when the going rate of interest is (1) 5%, (2) 8%, and (3) 12%? Assume that there is only one more interest payment to be made on Bond S.
b. Why does the longer-term (15-year) bond fluctuate more when interest rates change than does the shorter-term bond (1 year)?

Problem 8 A 10-year, 12% semiannual coupon bond with a par value of $1,000 may be called in 4 years at a call price of $1,060. The bond sells for $1,100. (Assume that the bond has just been issued.)

a. What is the bond's yield to maturity?
b. What is the bond's current yield?
c. What is the bond's capital gain or loss yield?
d. What is the bond's yield to call?

TOPIC 3: Common Stock Valuation

Problem 9 A stock is trading at $80 per share. The stock is expected to have a year-end dividend of $4 per share ($D_1$ = $4), and it is expected to grow at some constant rate g throughout time. The stock's required rate of return is 14%. If markets are efficient, what is your forecast of g?

Problem 10 You are considering an investment in Crisp Cookware's common stock. The stock is expected to pay a dividend of $2 a share at the end of this year (D_1 = $2.00); its beta is 0.9; the risk-free rate is 5.6%; and the market risk premium is 6%. The dividend is expected to grow at some constant rate g, and the stock currently sells for $25 a share. Assuming the market is in equilibrium, what does the market believe will be the stock's price at the end of 3 years (i.e., what is P_3)?

Problem 11 Assume that the average firm in your company's industry is expected to grow at a constant rate of 6% and that its dividend yield is 7%. Your company is about as risky as the average firm in the industry, but it has just successfully completed some R&D work that leads you to expect that its earnings and dividends will grow at a rate of 50% [$D_1 = D_0(1 + g) = D_0(1.50)$] this year and 25% the following year, after which growth should return to the 6% industry average. If the last dividend paid (D_0) was $1, what is the value per share of your firm's stock?

Problem 12 Simpkins Corporation is expanding rapidly, and it does not pay any dividends because it currently needs to retain all of its earnings. However, investors expect Simpkins to begin paying dividends, with the first dividend of $1.00 coming 3 years from today. The dividend should grow rapidly—at a rate of 50% per year—during Years 4 and 5. After Year 5, the company should grow at a constant rate of 8% per year. If the required return on the stock is 15%, what is the value of the stock today?

TOPIC 4: Introduction to Risk, Return and Portfolio Theory

Problem 13 A stock's return has the following distribution:

Demand for the Company's Products	Probability of This Demand Occurring	Rate of Return If This Demand Occurs (%)
Weak	0.1	−50%
Below average	0.2	-5
Average	0.4	16
Above average	0.2	25
Strong	0.1	60

Calculate the stock's expected return, standard deviation, and coefficient of variation.

Problem 14 Consider the possible rates of return that you might earn next year on a $50,000 investment in stock A or on a $50,000 investment in stock B, depending upon the states of the economy: recession, normal, and prosperity.

For stock A:

State of Economy	Return (R_i)	Probability (P_i)
Recession	-5%	0.2
Normal	20%	0.6
Prosperity	40%	0.2

For stock B:

State of Economy	Return (R_i)	Probability (P_i)
Recession	10%	0.2
Normal	15%	0.6
Prosperity	20%	0.2

Calculate the stocks' expected return, variance, and standard deviation. Then, identify which stock is more attractive to invest?

Problem 15 What is the standard deviation of the following two-stock portfolio?

	Weighting	Standard Deviation	Correlation
Stock A	60%	0.11	0.7
Stock B	40%	0.14	

TOPIC 5: Cost of Capital

Problem 16 Shi Importer's balance sheet shows $300 million in debt, $50 million in preferred stock, and $250 million in total common equity. Shi's tax rate is 40%, $R_d = 6\%$, $R_{ps} = 5.8\%$, and $R_s = 12\%$. If Shi has a target capital structure of 30% debt, 5% preferred stock, and 65% common stock, what is its WACC?

Problem 17 David Ortiz Motors has a target capital structure of 40% debt and 60% equity. The yield to maturity on the company's outstanding bonds is 9%, and the company's tax rate is 40%. Ortiz's CFO has calculated the company's WACC as 9.96%. What is the company's cost of equity capital?

Problem 18 On January 1, the total market value of the Tysseland Company was $60 million. During the year, the company plans to raise and invest $30 million in new projects. The firm's present market value capital structure, shown below, is considered to be optimal. There is no short-term debt.

Debt	$30,000,000
Common equity	30,000,000
Total capital	**$60,000,000**

New bonds will have an 8% coupon rate, and they will be sold at par. Common stock is currently selling at $30 a share. The stockholders' required rate of return is estimated to be 12%, consisting of a dividend yield of 4% and an expected constant growth rate of 8%. (The next expected dividend is $1.20, so the dividend yield is $1.20/$30 = 4%.) The marginal tax rate is 40%.

a. In order to maintain the present capital structure, how much of the new investment must be financed by common equity?
b. Assuming there is sufficient cash flow for Tysseland to maintain its target capital structure without issuing additional shares of equity, what is its WACC?
c. Suppose now that there is not enough internal cash flow and the firm must issue new shares of stock. Qualitatively speaking, what will happen to the WACC? No numbers are required to answer this question.

TOPIC 6: Capital Structure

Problem 19 The Rogers Company is currently in this situation: (1) EBIT = $4.7 million; (2) tax rate, T = 40%; (3) value of debt, D = $2 million; (4) R_d = 10%; (5) R_s = 15%; (6) shares of stock outstanding, n = 600,000; and stock price, P = $30. The firm's market is stable and it expects no growth, so all earnings are paid out as dividends. The debt consists of perpetual bonds.

a. What is the total market value of the firm's stock, S, and the firm's total market value, V?
b. What is the firm's weighted average cost of capital?
c. Suppose the firm can increase its debt so that its capital structure has 50% debt, based on market values (it will issue debt and buy back stock). At this level of debt, its cost of equity rises to 18.5% and its interest rate on all debt will rise to 12% (it will have to call and refund the old debt). What is the WACC under this capital structure? What is the total value? How much debt will it issue, and what is the stock price after the repurchase? How many shares will remain outstanding after the repurchase?

Problem 20 Lighter Industrial Corporation (LIC) is considering a large-scale recapitalization. Currently, LIC is financed with 25% debt and 75% equity. LIC is considering increasing its level of debt until it is financed with 60% debt and 40% equity. The beta on its common stock at the current level of debt is 1.5, the risk-free rate is 6%, the market risk premium is 4%, and LIC faces a 40% federal-plus-state tax rate.

a. What is LIC's current cost of equity?
b. What is LIC's unlevered beta?
c. What will be the new beta and new cost of equity if LIC recapitalizes?

Problem 21 Beckman Engineering and Associates (BEA) is considering a change in its capital structure. BEA currently has $20 million in debt carrying a rate of 8%, and its stock price is $40 per share with 2 million shares outstanding. BEA is a zero-growth firm and pays out all of its earnings as dividends. The firm's EBIT is $14.933 million, and it faces a 40% federal-plus-state tax rate. The market risk premium is 4%, and the risk-free rate is 6%. BEA is considering increasing its debt level to a capital structure with 40% debt, based on market values, and repurchasing shares with the extra money that it borrows. BEA will have to retire the old debt in order to issue new debt, and the rate on the new debt will be 9%. BEA has a beta of 1.0.

a. What is BEA's unlevered beta? Use market value D/S when unlevering.
b. What are BEA's new beta and cost of equity if it has 40% debt?
c. What are BEA's WACC and total value of the firm with 40% debt?

TOPIC 7: Derivatives and Risk Management

Problem 22 Kent Hotels has warrants that allow the purchase of three shares of its outstanding common stock at $50 per share. The common stock price per share and the market value of the warrant associated with that stock price are shown in the table.

Common stock price per share	Market value of warrant	Theoretical warrant value
$42	$2	
46	8	
48	9	
54	18	
58	28	
62	38	
66	48	

a. For each of the common stock prices given, calculate the theoretical warrant value.
b. Why does market value of warrant differ from the theoretical warrant value? What is the rationale behind that makes such value happen?
c. If the expiration date of the warrants is quite close, what would the pattern of different value in **b** look like in your view?

Problem 23 Eastern Clock Company has an outstanding issue of convertible bonds with a $1,000 par value. These bonds are convertible into 50 shares of common stock.

a. What is the conversion price of this bond if holders make an exchange?
b. Calculate the conversion value of the bond when the market price of common stock is $30, $35, $40, and $45 per share.
c. Assume the bond was sold at par and the common stock at the issue date was $35, what are the conversion premium and percentage of conversion premium?

Problem 24 Ed Martin, the pension fund manager for Stark Corporation, is considering purchase of a put option in anticipation of a price decline in the stock of Carlisle, Inc. The option to sell 100 shares of Carlisle, Inc., at any time during the next 90 days at a striking price of $45 can be purchased for $380. The stock of Carlisle is currently selling for $46 per share.

a. Ignoring any brokerage fees or dividends, what profit or loss will Ed make if he buys the option, and the lowest price of Carlisle, Inc., stock during the 90 days is $46, $44, $40, and $35?
b. What effect would the fact that the price of Carlisle's stock slowly from its initial $46 level to $55 at the end of 90 days have on Ed's purchase?
c. In light of your findings, discuss the potential risks and returns from using put options to attempt to profit from an anticipated decline in share price.