



Corporate Finance
Final Exam – Spring 2008/2009

2 hours and 15 minutes

This exam consists of 5 problems. Each problem is worth 4 points. This is a closed book exam. You are allowed one double-sided page of notes. Calculators are permitted. Good luck!

Print Name

Print Number

Problem 1

A company is borrowing \$100,000 today, which will be paid back through 12 quarterly constant installments. The loan interest rate is 8% (stated annually).

- a) What is the value of the installment (first installment will be paid three-months from today)? (1 point)
- b) What is the value of the first reimbursement (first installment will be paid three-months from today)? (1 point)
- c) What is the value of the installment if the first installment will be paid at the end of year 1? (1 point)
- d) What is the effective annual rate of the loan? (1 point)

Problem 2

Consider a project has with the following financials (corporate tax rate is 30%):

	Year 1	Year 2	Year 3
Revenues	800,000	1,000,000	1,200,000
COGS	500,000	600,000	800,000

Initial capital expenditures are 600,000 with a life of 3 years (straight-line depreciation). Working capital is 10% of next year revenues. Salvage value of fixed assets is equal to 100,000. Unlevered beta is 0.5, risk-free rate is 4% and expected market risk premium is 6%.

- a) What is NPV assuming the project is entirely financed by equity? (2 points)
- b) What is NPV assuming the project is financed with a debt-to-equity ratio of 0.5 and cost of debt of 5%? (1 point)
- c) What is NPV assuming that the project is financed with a 3-year loan of 200,000 at an interest rate of 2% (annual interest) and repayment at the end? (1 point)

Problem 3

Consider the following prices for zero-coupon bonds (face value of \$100):

Maturity (years)	Price
1	97.087
2	93.351
3	89.157
4	84.826

- a) What is the 4-year spot rate? (1 point)
- b) What is the forward rate from year 1 to year 4? (1 point)

- c) What is the price of a 4-year bond with a face value of \$100 and annual coupon payments at a rate of 3%? (2 points)

Problem 4

Suppose stock A has an expected return of 15% and a standard deviation of returns of 40% and stock B has an expected return of 10% and a standard deviation of returns of 30%. The correlation between the returns of A and B is 0.2. The risk-free rate is 3%.

- a) What is the standard deviation and expected return of a portfolio with 60% invested in stock A and 40% in stock B? (1 point)

Assume the CAPM holds and the market portfolio has an expected return of 12% and a standard deviation of 20% to answer questions b, c, d:

- b) What is the expected return and standard deviation of a portfolio on the Capital Market Line (CML) with a beta of 1.5? (1 point)
- c) What is the optimal portfolio, expected return and standard deviation for an investor with a quadratic utility function with a risk aversion coefficient of 3? (1 point)
- d) What is the price of a stock with earnings per share in the coming year of \$2.50, return on invested capital (ROIC) of 14%, payout ratio of 40%, and beta of 0.8? (1 point)

Problem 5

Are the following statements true or false? Please justify your answer (maximum of 3 lines).

- a) You should always pick the project with the maximum NPV among mutually exclusive projects. (1 point)
- b) Firms with more costs of financial distress should use a lower debt-to-equity ratio. (1 point)
- c) Shareholders never want to do projects with negative NPV. (1 point)
- d) Investors generally prefer share buybacks to cash dividends. (1 point)