

NAME: _____

THIS IS A TWO HOUR EXAM. YOU MUST STOP WRITING IMMEDIATELY WHEN THE END OF THE EXAM IS ANNOUNCED – PLEASE REMAIN SEATED AND WAIT FOR THE PROCTORS TO COLLECT THE EXAMS.

YOU ARE ALLOWED TO LEAVE ONLY AFTER HALF AN HOUR HAS PASSED SINCE THE START OF THE EXAM.

YOU *ARE ALLOWED* TO LEAVE BEFORE THE EXAM IS OVER IF YOU FINISH MORE THAN FIVE MINUTES EARLY (TURN IN YOUR EXAM TO ONE OF THE PROCTORS ON YOUR WAY OUT).

DO NOT TURN THIS PAGE UNTIL THE INSTRUCTION TO BEGIN IS GIVEN.

DO NOT SEPARATE THE PAGES OF THIS EXAMINATION.

BE SURE TO PUT YOUR NAME AND STUDENT ID NUMBER ON THE TOP OF THE NEXT PAGE OF THIS EXAMINATION.

REMEMBER TO SHOW ALL WORK.

PLEASE FOLLOW ALL DIRECTIONS.

The next page contains general instructions.

There are instructions accompanying the individual Problems.

Only Pari is able to answer your questions.

There are limits to the types of questions I will answer.

GOOD LUCK!

"Gentlemen prefer bonds."

Andrew Mellon.

Name: _____

Student Number: _____

Finance FINA 395

Mid Term II

Fall 2010

Instructor Parianen Veeren

November 14, 2010

65 points

This exam is composed of 5 multiple choice questions, 5 short problem (theory) and 4 multi-part word problems. Some of the sub-questions rely on information calculated in other parts of the question. Carry through errors will not be penalized. You have access to a financial calculator and you may have one 8½×11 inch “cheat sheet” with material on both sides. These sheets must be in human handwriting and may not be mechanically altered (i.e. reduced by a photocopier). Please use 6 decimals in your calculations and report only up to 4 decimals places in your final answer.

Show all work. Credit will not be given for answers without supporting information. Please limit the amount of extraneous information in your answers since it makes it difficult to ascertain your understanding. Use the backs of the pages for scratch. Do not write answers outside of the allotted space (i.e., **I do not read the backs of exams**).

EXAMS SHOULD BE WRITTEN IN INK**Read through the exam before starting. Good luck!**

Part 1 Multiple Choice _____ (10)

Short Problems _____ (15)

Part 2 Word Problems

Problem 1: _____ (10)

Problem 2: _____ (10)

Problem 3: _____ (10)

Problem 4: _____ (10)

Total: _____ (65)

Bonus _____ (3)

Question1: Jim Mayer has deposited \$14,000 in a guaranteed investment account with a promised rate of 6.785% compounded monthly. He plans to leave it there for 4 full years when he will make a down payment on a car after graduation. How much of a down payment will he be able to make?

- A) \$17,920.00
- B) \$18,435.33
- C) \$18,204.09
- D) \$18,351.14**
- E) None of the above.

Question2: The discount rate is adjusted:

- A) upward to reflect higher risk and to increase the future cash flows.
- B) upward to reflect higher risk and to reduce the future cash flows.
- C) downward to reflect higher risk and to increase the future cash flows.
- D) downward to reflect higher risk and to reduce the future cash flows.
- E) none of the above**

Question3: If its yield to maturity is less than its coupon rate, a bond will sell at a _____, and increases in market interest rates will _____.

- A) discount, decrease this discount.
- B) premium, increase this premium.
- C) premium, decrease this premium**
- D) discount, increase this discount.
- E) none of the above

Question4: David and Sons common stock sells for \$21 a share and pays an annual dividend that increases by 5% annually. The market rate of return on this stock is 9%. What is the amount of the last dividend paid by David and Sons?

- A) \$.77
- B) \$.80**
- C) \$.84
- D) \$.87
- E) \$.88

Short Problem 1:

Air Farce Inc. has invested heavily in its jets projects. As a consequence, its Capital Cost Allowance expense will be a few billion dollars every year for at least ten years. It expects to have a few hundred dollars as revenue for next decade. Should Air Farce Inc. increase its leverage to increase firm value? Assume that the corporate tax rate for every firm in this economy is 40%. Please **Explain** your answer. (3 Marks)

No, it can not increase value of the firm through leverage. It will not pay any taxes for next decade. Therefore there are no tax savings.

Short Problem 2:

What is the **significance** of free cash flow? (3 Marks)

Free Cash flow can lead to bad investments and acquisitions by the managers. They should pay this cash to shareholders as dividends or through stock repurchase.

Short Problem 3:

Describe pecking order. (3 Marks)

Firms first use internal cash, then issue debt and then issue equity.

Short Problem 4:

Please **discuss** this statement: Managers working in the best interest of shareholders will never invest in negative NPV project. (3 Marks)

They might invest in negative NPV projects when firms are in financial distress. In these cases very risky projects with negative NPV might be in the best interest of equity holders. However, these projects will not be in the interest of bond holders.

Short Problem 5:

List five actions by which firms can reduce financial distress. (3 Marks)

- 1. Selling major assets**
- 2. Merging with another firm**
- 3. Reducing capital expenditure and R & D**
- 4. Issuing new securities**
- 5. Negotiating with banks and creditors**
- 6. Exchanging debt for equity**
- 7. Filing for bankruptcy**

Problem 1:

- a) T-Partee Inc. is expected to have after tax cash flow of \$4.25 million next year. T-Partee Inc. has an equity cost of capital of 10% and a debt cost of capital of 6% and it pays a corporate tax rate of 35%. If T-Partee Inc. keeps a debt-equity ratio of 0.50, what is the value of the interest tax shield? (7 Marks)

$$R_S = 0.10$$

$$R_D = 0.06$$

$$T_c = 0.35$$

$$D/E = 1/2$$

$$WACC = 0.10 \cdot (2/3) + 0.06 \cdot (1/3) \cdot (1 - 0.35) = 0.079667$$

$$R_s = R_o + (R_o - R_D)(D/E) \cdot (1 - T_c) \text{ Using this equation, we get, } R_o = 0.090189$$

$$V_L = 4.25 / 0.079667 = 53.34$$

$$V_U = 4.25 / 0.090189 = 47.12$$

$$T_c B = V_L - V_U = 6.22 \text{ M}$$

- b) What will be the WACC for T-Partee Inc., if its managers decided to have optimal capital structure? (Please assume that taxes are the only ‘imperfection’ in this case). (3 Marks)

The firm should use 100% debt

$$WACC = 0.06 \cdot 1 \cdot 0.65 = 0.039$$

Problem 2:

- a) White Swan Inc. (WS) is an unlevered firm. WS has \$150 million in cash and expects future after tax cash flows of \$65 million per year forever. Management plans to use the cash to expand the firm's operations. This will increase future after tax cash flows by 12%. If the cost of capital for WS investment is 10%, how would a decision to use the cash to repurchase rather than the expansion change the share price? (5Marks)

$$NPV = -150 + 7.80/0.10 = 72 \text{ Million}$$

If the firm invests in expansion price will drop. If it does not i.e., if it repurchases, price will remain the same.

$$\text{Value of firm with Cash} = 150 + 6.5/0.1 = 800 \text{ Million}$$

$$\text{Value of firm with expansion} = 72.8/0.1 = 728 \text{ Million}$$

Do not expand.

- b) Kitty Mew Inc. follows a strict dividend payout policy. Its management believes that the optimal debt to equity ratio for the firm is 0.5. It expects its earnings to be \$ 225,000 next year. However, it needs to invest \$ 1,500,000 next year. How much new equity should Kitty Mew Inc. issue? (5 Marks)

$$D/E = 1/2$$

$$\text{Equity} = 1.5 \text{ M} * 2/3 = 1 \text{ Million}$$

$$\text{Retained earnings} = 225,000$$

$$\text{New equity issue} = 1,000,000 - 225,000 = 775,000$$

Problem 3:

Suppose you are the chief economist of Financistan. Currently, the corporate tax rate in this country is 30%. However, the president of Financistan wants to raise more money through introduction of personal taxes. You are tasked with setting tax rates for individual investors. Currently, they do not pay any taxes. The president suggested a tax rate of 20% on interest income. In addition to this tax, you are thinking about setting different rates of tax on dividend and other equity income. Please discuss the implications of different levels of this tax on the value of different firms that have issued debt. Please explain your answer. (Hint: Miller's Model). (10 Marks)

YOU HAVE TO BASICALLY EXPLAIN MILLER'S MODEL IN DETAIL WITH OR WITHOUT NUMBERS; A COMPLETE UNDERSTANDING OF MILLER'S MODEL IS WHAT IS REQUIRED OF THIS QUESTION.

Step 1: $T_s = 0 \Rightarrow \{1 - (1-T_s)(1-T_c)/(1-T_B)\}$ [per dollar]

Step 2: $T_s = T_B \Rightarrow \{1 - (1-T_s)(1-T_c)/(1-T_B)\} \Rightarrow \{1 - (1-T_c)\}$ [firm value will increase by $T_c B$]

Step 3: $0 < T_s < 20\% \text{ \& } 20\% < T_s < 100\% \Rightarrow \{1 - (1-T_s)(1-T_c)/(1-T_B)\}$ [firm value will not decrease in this case even if we set $T_s = 100\%$]

Step 4: $T_s = 100\% \Rightarrow$ Firm value will increase by B

Problem 4:

Junk Bond Corp. (JBC) has two different bonds and one class of shares currently outstanding. Bond A has a face value of \$100,000 and matures in ten years. The bond makes no payments for the first three years, and pays \$9,000 semi-annually for the last seven years. Bond B has a face value of \$160,000 and matures in ten years. This bond makes no payments over its life except the payment of face value at maturity.

Starting end of this year, JBC is expected to pay \$3/share in dividend every 2 years for the next 7 years, after which the company is going to pay an annual dividend with a constant growth rate of 5% for the following 2 years. Subsequently, the dividend is expected to grow at a rate of negative 4% forever. The yield to maturity for bonds with similar risk is 12. The cost of equity for JBC is 15%.

- A. What is the current price of bond A? (3 Marks)

$$\text{Bond A: } (1/1.06^6)[(9000/0.06)\{1 - 1/1.06^{14}\} + (100,000/1.06^{14})] = 90,153$$

- B. What is the current price of bond B? What would be the price of bond B if it were to mature in 6 years instead? (3 Marks)

$$\text{Current Price of bond B: } 160,000/1.06^{20} = 49,888.76$$

$$\text{Bond Price B if mature in 6 years: } 160,000/1.06^{12} = 79,515.1$$

- C. What is the current price of Junk Bond's stock? (4 Marks)

$$\text{2-year rate} = 1.15^2 - 1 = 0.3225$$

$$\text{PV} = 3/1.15 + (3/0.3225)\{1 - 1/1.3225^3\}(1/1.15) + (3*1.05)/1.15^8 + (3*1.05^2)/1.15^9 + \{(3*1.05^2*0.96)/(0.15-(-0.04))\}*(1/1.15^9) = 13.92$$

Bonus: 3 Marks

According to behavioural finance, why do some investors (for example retired persons) prefer dividends and not stock repurchase? Please explain your answer.

Lack of self control.

If they receive dividends, they do not have to sell shares. However, if they have to sell shares to meet their expenses, they might sell more than they need to.