Winter 2013

ADM 2350
FINANCIAL MANAGEMENT
Assignment #2

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GENERAL INSTRUCTIONS: Your assignment must be **sent electronically** in **doc, docx,** or **pdf** format **to the TUTOR for your section**. Your **tutor must RECEIVE** your assignment by **no later than noon on Friday, February 15, 2013**. Late assignments will **NOT** be accepted. To ensure that your tutor receives the assignment on time, **it is STRONGLY recommended that you electronically submit your assignment before midnight on the evening of Thursday, February 14, 2013 at the latest.** Unless there are system problems with doc-depot, the professors' solution set will be posted on doc-depot by no later than 6 PM of the due date. This assignment counts 5% of your course grade. You are encouraged to work on this assignment in teams of up to 5 students **from the same section of this course**. *However,* you may turn in an individual assignment if you prefer. Each assignment must be typed and contain the student name(s) and student number(s) on each page. A scanned statement of integrity must be electronically attached to each assignment (See pages 11-12 of the course syllabus). Each individual whose name appears on the assignment must sign the statement of integrity.

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1. (10 marks) Wilhem's Camera Shop, Inc., has two bond issues outstanding. The first issue has an annual coupon rate of **8%** and **20** years to maturity. The second has an annual coupon interest rate of **6.044%** and **8** years to maturity. Both issues are semi-annual pay bonds. **To the nearest whole percent**, what yield to maturity would result in the same current price for the bonds?

   HINT #1: Conceptually, the desired yield to maturity represents the crossover discount rate or Fisher rate that generates the same PV of future cash flows for the bonds.

   HINT #2: If you are **NOT** using a financial calculator, the approximate YTM formula may be useful in first finding the common current price B and then finding the desired YTM. Note that since it is an approximation formula, it also works for semi-annual pay bonds by ignoring the semi-annual pay feature.

$$YTM = \frac{\left[I + \left(\frac{(F-B)}{n} \right) \right]}{\left[\frac{(2B+F)}{3} \right]}$$

2. (20 marks) The Dwindling Reserves Oil Company (DROC) expects to pay a **$1,728.00** per share dividend **for fiscal 2013, fiscal 2014 and fiscal 2015**. Then DROC expects to pay a **$2,488.32** per share dividend **for fiscal 2016 and fiscal 2017**. Thereafter, dividends are expected to **DECLINE** by a compound rate of **20%** per year. Investor's require a **20%** rate of return.
   a. (4 marks) What is a fair market price per share **to the nearest dollar** for DROC's stock at the **BEGINNING** of fiscal 2018?
   b. (4 marks) What is a fair market price per share **to the nearest dollar** for DROC's stock at the **BEGINNING** of fiscal 2016?
   c. (4 marks) What is a fair market price per share **to the nearest dollar** for DROC's stock at the **BEGINNING** of fiscal 2013?
   d. (4 marks) If an investor bought the stock at the **BEGINNING** of fiscal 2013 and sold it at the **BEGINNING** of fiscal 2014, what would be the investor's expected dividend yield, capital gains yield, and total yield?
   e. (4 marks) If an investor bought the stock at the **BEGINNING** of fiscal 2017 and sold it at the **BEGINNING** of fiscal 2018, what would be the investor's expected dividend yield, capital gains yield, and total yield?

3. (25 marks) Richard and Sarah Woods want to buy a new home. The home that they wish to purchase is selling for **$500,000**. The CIBC is willing to provide Richard and Sarah with a **$400,000** mortgage. Richard and Sarah have accumulated $100,000 that they will use to pay the difference in the purchase price and the mortgage. The bank quotes them a nominal annual interest rate of **3.00 percent** that is based on **semi-annual compounding** for a **5-year term** and **30-year amortization period**. Since Richard and Sarah work for the University of Ottawa, they are both paid semi-monthly (i.e. twice a month). So, they elect to make semi-monthly payments. Thus, they will be making **EXACTLY 24** payments per year.
   a. (5 marks) What is the effective annual rate that the CIBC is offering on the mortgage? You need to calculate the effective annual rate in decimal form as 0.0xxxxxxx or in percentage form as x.xxxxxx% to ensure that you can calculate the semi-monthly payment in part c. to the nearest penny.
   b. (5 marks) What is the effective semi-monthly rate that the CIBC is offering? Calculate the effective semi-monthly rate in decimal form as 0.00xxxxxx or in percentage form as 0.xxxxxx% to ensure that you can calculate the semi-monthly payment in part c. to the nearest penny.
   c. (5 marks) To the nearest penny, what is the semi-monthly payment that Richard and Sarah must make?
   d. (5 marks) To the nearest penny, what will be the **PRINCIPAL OUTSTANDING** or **REMAINING BALANCE** after the **SECOND** payment is made?

e. (5 marks) Before purchasing their home, both Richard and Sarah become employees of the Government of Canada. Since they now will both be paid biweekly (i.e. once every two weeks), they elect to change the frequency of mortgage payments to biweekly. That is, for simplicity, assume that they will make **EXACTLY 26** payments per year. Using the concept of compound interest but without actually doing any calculation, explain whether each biweekly payment will be more than, equal to, or less than (**24/26**) times the semi-monthly payment that you previously calculated.

4. (20 marks) The stock of Box Technologies (BT) currently sells for **$110.00** per share. The dividend just paid, D_0, was **$10** per share, and dividends are currently growing at a compound rate of **10 percent**. The coupon interest rate is **4 percent** on newly issued **20-year** Government of Canada bonds selling at par. The expected return on the market portfolio for the coming year is **14 percent**. ST's current stock beta is **1.60**. BT is considering the following 3 investments:

Investment #1:

BT could buy Dragon Software (DS) by exchanging BT shares for DS shares. This would **LOWER** the expected growth rate of BT shares from **10 percent** to **7 percent** and its stock beta from **1.60** to **1.10**.

Investment #2:

BT could enter the consumer electronics market with a 3-D handicam. This would **RAISE** the expected growth rate of BT shares from **10 percent** to **12.5 percent** and its stock beta from **1.60** to **1.85**.

Investment #3:

BT could start producing industrial robots. This would **LOWER** the expected growth rate of BT shares from **10 percent** to **5 percent** and its stock beta from **1.60** to **0.60**.

a. (8 marks) Assuming that BT wants to undertake at most one of these three investments, do you recommend the status quo (i.e. no investment) or one of the investments? **Provide a justification for your recommendation**.

b. (6 marks) What would the **growth rate** for BT shares have to be under the DS acquisition for BT to be indifferent between the DS acquisition and the status quo? (Do **NOT** consider the 3-D handicam or the industrial robot investments in this analysis.)

c. (6 marks) What would the **beta** for BT shares have to be under the 3-D handicam investment for BT to be indifferent between the 3-D handicam and the industrial robot investments? (Do **NOT** consider the DS acquisition or the status quo in this analysis.)

i5. (20 marks) The expected return of MM is **15 percent** and the expected return of NG is **25 percent**. Their standard deviations are **10 percent** and **20 percent**, respectively. The correlation coefficient between these two stocks is **0.20**.

a. (5 marks) What is the **expected return** and **standard deviation** of a portfolio composed of **20 percent MM** and **80 percent NG**?

b. (5 marks) What is the **expected return** and **standard deviation** of a portfolio composed of **80 percent MM** and **20 percent NG**?

c. (10 marks) What is the **expected return** and **standard deviation** of a portfolio composed of the **fraction w in MM** and **(1 – w) in NG** that has **minimum standard deviation**?

6. (5 marks) The current price of a share of stock is **$50**. The price is expected to rise to **$55** in one year and pay an annual dividend of **$2** during the year. The **RF** is **5 percent** and the **ER_M** is **15 percent**. The beta of the stock is **1.50**. Determine whether the stock is overvalued, undervalued, or properly valued. That is, does the stock lie below, above, or on the **SML**?