University of Guelph
Lang School of Business and Economics
DEPARTMENT OF ECONOMICS AND FINANCE

FIN*2000: Introduction to Finance Winter 2024
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Company Analysis

The purpose of this analysis is to estimate the cost of equity and the weighted average cost of capital for a real firm. You will apply some of the methods we will learn in class. In particular, you will be estimating the cost of equity capital using the dividend growth model (described in Chapter 7 of your text), estimating beta and using the Capital Asset Pricing Model (described in Chapter 12), and calculating a Weighted Average Cost of Capital (described in Chapter 13). This will introduce you to some of the sources available for financial data, provide the opportunity for manipulating real data to calculate variables which are extremely important in finance, and allow practice in using Excel or another spreadsheet program.

You work for the Gryph Company which is considering starting up a new division in an industry in which it currently has no operations. While one team has been assigned the task of determining the prospects of the new investment and the expected cash flows associated with it, you are charged with finding an appropriate rate for discounting those cash flows.

Your boss will send you an emailed memo letting you know what company you should analyze. This company will be in the industry of the proposed new division. Your task is to determine this company's current Weighted Average Cost of Capital. You will be collecting data related to this company, calculating the cost of equity capital in three different ways, and using those values to calculate the WACC. For simplicity, we will assume that it is January 1, 2024.

Please note that this is a term assignment, so you should be working on it throughout the semester. The assignment will be completed in two parts to help you manage your time. The first part of the analysis is due on **Wednesday, February 7**, and the second part is due on **Wednesday, March 13**. You can show parts to me earlier if you would like to have them checked so that you can fix any problems (but no later than one week before the submission date). You will be provided with Excel templates on CourseLink which you can use for submitting your data and calculations. You do not have to use the exact version of the templates, and will have to make some modifications for formatting, but you do need to use a spreadsheet program (you should **not** do the calculations by hand) and present your results in an easily understood format with sources and calculations (both as a formula and with numbers) shown.

You will be submitting this project in two parts, each of which will consist of two stages.

I. PEAR submission (50% of the weight for that part of the assignment)

Submit a pdf version of a spreadsheet with your data and results to PEAR.

Please make sure that all submissions are formatted and sized appropriately, with no inappropriate page breaks or spelling errors, so that they can be easily read and understood. Note that when you convert your files to pdf, they will be paged (similarly to what would happen if you printed the spreadsheet) and the paging may make your document difficult to follow. Therefore, you should check and fix your formatting before submitting. Note: A screenshot of your spreadsheet is not acceptable.

Submissions are due at 11:59 pm on Wednesday, February 7 for the first part and Wednesday, March 13 for the second part. There is an automatic 37-hour grace period until **1:00 pm** on the Friday. If you need an extension beyond Friday at 1:00 pm for compassionate reasons, you need to make your request before the Wednesday due date and you will have to submit your assignment by email to nbower@uoguelph.ca, and you will not be able to participate in the peer review process. The company you analyze must be the one you were assigned, or you will receive a 0 for that part of the analysis.

II. Review of submissions in PEAR (50% of the weight for that part of the assignment)

For each part of the assignment, you will be reviewing the submissions of 3 of your peers. These will be available beginning at 5:00 pm on Friday, February 9 and Friday, March 15 and will be due by 11:59 pm the following Wednesday (February 14 and March 20). The submissions you will be evaluating will be for the same company as you have been assigned so the data and results should be similar. If the submission you are evaluating is for a different company, you must inform Professor Bower or you will receive a 0 for your review. You will be reviewing the submissions based on the correctness and completeness of the data, calculations, and documentation, as well as on the presentation. It is very important that you also include comments with your evaluations to explain the marks you have given. You will also need to state at least one thing that was done well and one that needs improvement (be specific). You will access and complete these reviews through the PEAR link on courselink.

Half of your marks for each part of this assignment will come from the marks assigned by your peers. The other half will come from an assessment of the quality of your reviews. This assessment will be based on whether you have completed your reviews, provided comments, whether the comments are helpful and explain the marks you have given, and whether you have stated something that was done well and something that could use improvement.

Once the reviews are released, if you feel that you have been marked unfairly, you can request to have your submission remarked. In that case, all of your reviews will be discarded and the mark you will receive is the one given by the professor, regardless of

whether it is higher or lower than your original mark. You have one week from when the marks are released to request a remark.

Constant-Growth Dividend Discount Model (Due February 7)

For this section, you will use the constant-growth dividend discount model to estimate your company's expected rate of return. You will assume that the company is attempting to achieve a constant growth rate with its dividends and calculate that growth rate. The growth rate plus the expected dividend yield will give the expected rate of return.

Historical Growth:

Data Required:

- Quarterly dividends per share paid by your company (in **Canadian dollars**) for the period January 1, 2019 – December 31, 2023. Use the ex-dividend date (2 business days before the record date) as the date of the dividend. The date provided by Yahoo Finance is the ex-dividend date.
  - A good source is the company's website, although the reported dividends may not have been adjusted for splits, so you will have to make the adjustment.
  - Another good source is https://ca.finance.yahoo.com/ but it sometimes misses dividends, double lists dividends, or records them incorrectly, so it is best to verify by checking the company's website.
  - Only the regular quarterly dividends should be included. Do not include any extra or special dividends.
- The December 29, 2023 closing stock price for your company
  - This can be found on https://ca.finance.yahoo.com/, https://www.tsx.com, or many other financial websites.

Calculations:

- You will need to use dividends that cover a full year, so sum the four quarterly dividends paid in each January to December period for each of the 5 years of data you have collected.
  - In some cases, the company may have changed its dividend payment dates so that you may get a year with 5 dividends and/or a year with 3 dividends. You may need to make an adjustment so that you are always working with 4 dividends (i.e., move December up to January or January back to December).
  - Some companies may have paid extra dividends. This will appear either as an added dividend payment or as an extra-large dividend that has been lumped with the regular dividend. If it looks like this has happened with your company you will need to check the appropriate annual report to determine if it was an extra or special dividend, in which case you should not include it in your calculations (but do still show it in your data and make a note that it was an extra dividend).

- Make sure your data have been adjusted for splits. If you see the dividends have suddenly dropped by a large amount, it is likely that there has been a split and you will need to make an adjustment (for example, if it was a 2-for-1 split you will need to divide all the dividends prior to the split by 2).
- Calculate the annual growth rates of the dividends (i.e., the percentage change in dividends from one year to the next).
- Calculate the average of the annual growth rates to get your estimate of the growth rate.
- Estimate the total dividends that will be paid between January 2024 and December 2024, assuming that the firm maintains the average annual growth rate that you just calculated.
- Calculate the firm's expected rate of return using your calculated expected dividend, growth rate, and the December 29, 2023 **unadjusted** price.

Sustainable Growth:

Again, you will use the constant-growth dividend discount model to estimate your company's expected rate of return. This time, however, you will estimate the growth rate by calculating the sustainable growth rate.

Data Required:

- Most recently available financial statement information: Book Value of Equity (BVE), Net Income (NI), Earnings per Share (use Diluted EPS Excluding Extraordinary Items), and Dividend per Share (Note that these last three must be from an **annual** income statement. You are collecting dividend per share again to make sure that it matches the time period used for the EPS).
  - These can be found at https://ca.finance.yahoo.com/, http://www.tmxmoney.com/en/index.html, www.sedar.com, or on the company's website.
- The December 29, 2023 closing stock price for your company.

Calculations:

- Estimate the return on equity and the plowback ratio using the financial statement data you have collected.
- Estimate the sustainable growth rate using the return on equity and the plowback ratio.
- Estimate the total dividends that will be paid between January 2024 and December 2024, assuming that dividends grow at the sustainable growth rate. Use your previously calculated dividend for the 2023 calendar year from the Historical Growth section as your base.
- Calculate the firm's expected rate of return using your calculated expected dividend, growth rate, and the December 29, 2023 **unadjusted** price.

Report the data and results for these two sets of calculations on the DDM Template (or you can create your own). Make sure you include sources for your data and show the formulas you

used (using variable names) as well as the calculations (using your numbers). You will have to convert your document to Portable Document Format (PDF) before you submit it to PEAR (a screenshot is **not** acceptable). This ensures that everyone will be able to access and read it. Make sure you check your file after the conversion – the conversion has the same effect as printing the document and the results are not always what you expect. You may find that you have to go back and adjust your formatting. Do this before you submit your file to PEAR. It is your responsibility to make sure that you have properly uploaded the correct file to PEAR. If you are having technical difficulties, you will need to contact CourseLink support.

Capital Asset Pricing Model (CAPM) (Due March 13)

In this section, you will calculate the firm's expected rate of return using the capital asset pricing model. You will first need to calculate your company's beta and then use that in the CAPM formula to get the expected rate of return.

Data Required:

- Monthly closing stock prices (in **Canadian dollars**) for your company for the 4- year period January 1, 2020 – December 31, 2023.
  - A good source is https://ca.finance.yahoo.com/, as it allows you to search and download the entire period at once.
  - You can specify the date range, choose monthly prices, and download the information.
  - Use the Close price rather than the Adjusted Close price.
  - **Note**: Yahoo provides Open-High-Low-Close prices for each month and lists the date as the first trading date of the month. The closing price is from the last trading day of the month.
- Monthly closing prices for the S&P-TSX Composite Index for the period January 1, 2020 – December 31, 2023.
  - A good source is https://ca.finance.yahoo.com/. The company symbol will be ^GSPTSE. You can also click on S&P/TSX to get to the page.
  - Yahoo Finance may be missing some of the data when you download monthly prices. You will need to look at the daily prices to fill in the missing values.
- The yield on a 3-month Canada Treasury Bill for December 29, 2023.
  - You will find this at www.bankofcanada.ca.
  - From the dropdown menu under "Statistics", shoose "Interest Rates", then choose "Treasury Bill Yields". Click on "Look up the past ten years of data" for these series. Select your date and choose Treasury Bills, 3-Month, Daily. You will be given the yield as a percentage.

Calculations:

- Calculate each of the monthly returns for your stock over the 4 years from January 2020 to December 2023 (i.e., percentage change in price from month end to month end).
- Calculate each of the monthly returns for the S&P/TSX Composite Index over the same 4-year period.

- Create a scatter plot using Excel that shows the return on your company's stock and the return on the market index. Each point will represent one month (see Figure 12.2 in your text). Plot the characteristic line on the graph (the trendline). Make sure to label the axes.
- Calculate the standard deviation of company returns, the standard deviation of S&P/TSX returns, and the correlation coefficient of S&P/TSX and company returns.
- Calculate beta as the slope of the characteristic line on your graph (see a sample spreadsheet in section 12.1 of your text).
- Using the value of beta that you calculated, the yield on a three-month treasury bill for the risk-free rate, and 7 percent as the market risk premium (the average market risk premium over the last 90 years), calculate the expected rate of return based on the capital asset pricing model.

Report the data and results for these two sets of calculations on the CAPM Template. Make sure you include sources for your data and show the formulas you used (using variable names) as well as the calculations (using your numbers – note for the return calculation you only need to show one sample calculation). You should show the excel formulas that you used for standard deviation, correlation, and beta. Include a graph of your data and make sure you label the axes. You will have to convert your document to Portable Document Format (PDF) before you submit it to PEAR (submitting a screenshot is not acceptable). This ensures that everyone will be able to access and read it. Make sure you check your file after the conversion – the conversion has the same effect as printing the document and the results are not always what you expect. You may find that you need to go back and adjust your formatting. Make sure you check the formatting before you submit to PEAR. It is your responsibility to make sure that you have properly uploaded the correct file to PEAR. If you are having technical difficulties, you will need to contact CourseLink support.

Weighted Average Cost of Capital (WACC) (Due March 13)

In this section, you will calculate a return on debt for your firm and use that with the expected returns on equity that you calculated in the DDM and CAPM parts above to calculate a weighted average cost of capital. You will get three different values, one for each method you used to calculate the cost of equity.

Data Required:

- Most recently available annual financial statement information: Long-Term Debt and Number of Shares Outstanding.
  - These can be found at https://ca.finance.yahoo.com/, http://www.tmxmoney.com/en/index.html, www.sedar.com, or on the company's website.
- Your company's debt rating for Senior Debt.
  - Sometimes this will be listed on the company's website. Some other sites to check are moodys.com, fitchratings.com or standardandpoors.com. These sites may require registration, but, at least at the moment, they are free. A google search may also turn up the debt rating.

- The yield on a 10-year Government of Canada bond for December 29, 2023.
  - You will find this at www.bankofcanada.ca
- The closing stock price for your company on the date of the annual report.

Calculations:

- Estimate the return on the firm's debt by the following method:
  - Find the appropriate yield spread given the firm's debt rating (i.e., the extra yield over the equivalent term government bond) from http://pages.stern.nyu.edu/~adamodar/New_Home_Page/datafile/ratings.htm
  - Add the appropriate spread for your company's debt rating to the December 29, 2023 yield on 10-year Government of Canada bonds. If you cannot find a debt rating for you company, you can assume, you can assume that it has a BBB rating.
- Calculate the values of debt, equity and the firm.
  - Use the value of long-term debt from the most recent statement of financial position for the value of debt.
  - Calculate the value of the equity using the number of shares outstanding and the actual price from the date of the most recent annual report.
  - The value of the firm will be the sum of the debt and equity (ignore any preferred stock).
  - Also calculate the proportions of debt and equity to make it easier to check your WACC calculations.
- Calculate the weighted average cost of capital (WACC) for your firm three ways.
  - Once using the expected return on equity from the constant-growth dividend discount model - historical growth,
  - Once using the expected return on equity from the constant-growth dividend discount model - sustainable growth, and
  - Once using the expected return on equity from the capital asset pricing model (CAPM).
  - Use the book value of debt and the market value of equity and assume your company has a 26 percent corporate tax rate.

Report the data and results for these two sets of calculations on the WACC Template. Make sure you include sources for your data and show the formulas you used (using variable names) as well as the calculations (using your numbers). Also make sure that you report the values for expected rate of return on equity that you determined from the previous parts of this project. You will have to convert your document to Portable Document Format (PDF) before you submit it to PEAR (a screenshot is not acceptable). This ensures that everyone will be able to access and read it. Make sure you check your file after the conversion – the conversion has the same effect as printing the document and the results are not always what you expect. You may find that you need to go back and adjust your formatting. Make sure you check the formatting before you submit to PEAR. It is your responsibility to make sure that you have properly uploaded the correct file to PEAR. If you are having technical difficulties, you will need to contact CourseLink support.

Summary Memo (Due March 13)

Write a one page (at most) memo to your boss reporting your findings.

- Include an opening segment that states the problem and the purpose of the memo (your boss receives lots of memos and needs to know what this one is about). Make sure you state the name of the company you have analyzed and its industry.
- Provide the three rates of return that you calculated for your company.
- Provide the three weighted average costs of capital that you calculated.
- Provide a recommendation for what discount rate your company should use in evaluating its proposed investment.
- Provide a brief explanation of why you are recommending that rate.

There is no correct answer to what you should recommend for a discount rate. You should, however, provide a good explanation for why you are recommending the rate you have chosen.

Submit this memo as a PDF document to PEAR. The memo should be in proper business format, except that you should not put your name on the memo, as the PEAR evaluations should be anonymous (there are numerous sources you can check on line for formatting and content). It is your responsibility to make sure that you have properly uploaded the correct file to PEAR. If you are having technical difficulties, you will need to contact CourseLink support.