

Question 1

The Stock of Embarcadero Corp. is currently selling for \$10 per share. Earnings per share are expected to be \$2. The company has a policy of paying out 50% of the Earnings as Dividends. The rest is retained and invested in projects that earn a 20% rate of return per year. This situation is expected to continue indefinitely.

- a) Assuming the price of the stock reflects its intrinsic value, what is the rate of return enjoyed by the investors in stock of Embarcadero? How does it split between dividend yield and capital gains? (5 pts)
- b) What would the price be if the company paid all the Earnings as Dividends? (5 pts)
- c) What would the price be if the company retained all the Earnings and paid no Dividends? (5 pts)

Question 2

The investment bank where you work opened an overseas office. The location was in the principality of Berchetsgaden. The main reason was the nice ski resorts, because the stock market is very small and has only a limited number of companies. The information on the stock market in Berchetsgaden is the following

Name	# shares	Price per Share
Bischofswiesen AG	50,000	\$24
Marktschellenberg AG	80,000	\$32
Ramsau Groupe	45,000	\$25
Schönau IG	50,000	\$22
Wittelsbachs Technologie	100,000	\$45

The first three firms are considered to be “Value” firms and the last two are considered to be “Growth” firms.

You were asked to travel to Berchetsgaden to help the Director of Financial Operations, Baron Jans-Görg Freiherr von Schümli-Flümli to create stock portfolios that the potential clients could be interested in. He was only appointed to the position because he is the first cousin to the Prince of Berchetsgaden and not for his knowledge in finance.

The Baron would like to create a VALUE Portfolio, a GROWTH Portfolio and a MARKET Portfolio. These three portfolios would be value weighted portfolios of the value, growth and all stocks respectively. He is just not sure what the exact composition of the portfolios should be.

- a) What is the composition of the three portfolios? (5 pts)
- b) Is it possible to replicate the MARKET portfolio by combining the VALUE and GROWTH portfolios? If so, which combination will achieve that result? (5 pts)
- c) Suppose the Beta for the GROWTH portfolio is 1.5. What is the Beta of the VALUE Portfolio? (5 pts)

Note: If you were not able to solve part b) assume you can replicate the Market Portfolio with a portfolio composed with 50% GROWTH and 50% VALUE.

Question 3

Neon Corporation's stock returns have a covariance with the market portfolio of 0.048. The standard deviation of the returns on the market portfolio is 20% and the expected market risk premium is 7.5%. The company has bonds outstanding with market value of \$30 million and yield to maturity of 8%.

The company also has 5 million shares outstanding, each selling for \$20. The CEO considers this debt-equity ratio optimal and plans that, as a whole, all projects should follow this financing rule. The corporate tax rate is 35% and Treasury Bills currently yield 6%.

The company is considering the purchase of additional equipment that would cost \$40 million. The expected unlevered cash flows from the equipment are \$13 million for 5 years. Purchasing the equipment will not change the risk level of the firm.

- a) Should Neon purchase the equipment? (10 pts)
- b) Suppose the company decides to fund this particular purchase entirely with debt. Should you use a different cost of capital for this project? Why? (5 pts)
- c) Neon is considering entering the Halogen business. It is just not sure of what cost of capital to use if it decides to enter the business.

The benchmark firm is Halogen Corporation. The market information about this firm is as follows:

- Beta of Stock: 1.5
- Debt/.Equity: 0.4
- Corporate tax rate: 35%

According to this information, what cost of capital should you use? (8 pts)

- d) Some members of the board feel that there is no need to use a different cost of capital rate, because the two businesses are essentially the same. So you agree? What potential mistakes can you make if you use the rate found in part a) to evaluate the projects in part c)? (4 pts)

Question 4

Seger, Inc., is an unlevered firm with expected annual earnings before taxes of \$35 million in perpetuity. The current required return on capital is 20% and the firm distributes all of its earnings as dividends. The company has 1.5 million shares of common stock outstanding and is subject to a corporate tax rate of 35%.

The firm is planning a recapitalization under which it will issue \$40 million of perpetual bonds. These bonds are sold at par and have a 9% coupon rate. The proceeds from this issue will be used to buy back shares.

- a) Calculate the value of the company before the recapitalization plan is announced. What is the value of the equity? What is the price per share? (10 pts)
- b) What is the value of the company once the recapitalization plan is announced? What is the value of the equity? What is the price per share? Assume that the markets are semi-strong form efficient. (5 pts)
- c) How many shares will be repurchased? What is the value of the equity after the repurchase is complete? What is the price per share? (5 pts)
- d) A few months after the recapitalization was complete, some analyst reports were published saying the company was using too much debt relative to what is advisable. For that reason, the rating of the bonds was lowered into the category of “Speculative” and the yield of the bonds increased to 12%. However, the overall level of risk of the firm’s operations did not change.

What is the new market value of the bonds? What is the new market value of the equity? What is the new price per share? How do you explain these changes in the values of the Debt and Equity? (8 pts)

- e) Repeat parts b) and c) assuming that the markets are not semi-strong form efficient. (5 pts)

Question 5

Cachaça Corp., is Brazilian owned firm that exports Caipirinha to the United States. The information about the firm is as follows:

- Required return of stockholders: 19.16%
- Debt/Equity ratio: 0.45
- Annual Sales: \$23 million
- Variable Costs: 60% of Sales
- Corporate Tax Rate: 40%

Brazilian equity investors are known for traditionally not caring about the interests of the Bondholders of the firm. Their only concern is to provide for the interest payments in order to not going into administration. As such, Cachaça Corp., only cares to make sure it generates enough income in order to cover the \$1,057,990 of interest payments it is required to honor every year.

- a) You work as a consultant for the committee of stockholders of Cachaça Corp. They wanted to know how much their position is worth. (10 pts)
- b) Also they asked you how much their rate of return would be if they got rid of all the Bonds in the Firm. (5 pts)