Advanced Corporate Finance
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Problem Set #2
Due Date: March 7, 2018

Question 1.

Note: this is quite difficult (depending on how many investment classes you've taken and how familiar you are with regressions!) and thus not required for full points. To run regressions with multiple independent variables in Excel, you'll need to install the "Data analysis add-in"

Please see the return data in the associated spreadsheet.
a. What has been the average annualized monthly return on Apple stock between January 1981 and December 2017?

b. Estimate Apple's equity cost of capital using:

i) CAPM
ii) The Fama-French 3-factor model
iii) The Fama-French 5-factor model
iv) The Fama-French 5-factor model, but only using Apple return data after 2000 (about half of Apple's life)

Why are all these values different? Which value should Apple's managers use for determining their cost of equity?

c. Using your estimate from CAPM (i) above, what's Apple's asset beta and asset cost of capital? How would you go about calculating Apple's asset cost of capital using the FF3-model (ii) above?

Question 2.

You would like to estimate WACC for a new airline business. Based on its industry asset beta, you have already estimated an unlevered cost of capital for the firm of 9%. The new business will be 25% debt financed, and you anticipate its debt cost of capital at that leverage will be 6%.

What will be the equity cost of capital? If the corporate tax rate is 40%, what is your estimate of the new business' WACC?

Question 3.

Grummon Corporation has issued zero-coupon corporate bonds with a five-year maturity. Investors believe there is a 20% chance that Grummon will default on these bonds. If Grummon does default, investors expect to receive only 50 cents per dollar they are owed (you can assume the default happens at the time of maturity, at which time the investors receive the recovery). If investors require a 6% expected return on their investment in these bonds, what will be the price and yield on these bonds?

Question 4.

a) Explain why bond issuers might voluntarily choose to put restrictive covenants into a new bond issue.
b) Explain why the yield on a convertible bond is lower than the yield on an otherwise identical bond without a conversion feature.

Question 5.

Summit Systems will pay a dividend of $1.50 at the end of this year.

a. According to the dividend discount model, and if you expect Summit's dividend to grow by 3% per year, what is the estimated price per share if the cost of equity capital is 11%?
b. Holding everything else the same, what discount rate would correspond with an estimated stock price of $25?

Question 6.

Heavy Metal Corporation is expected to generate the following free cash flows over the next five years:

Year	1	2	3	4	5
FCF ($ millions)	53	68	78	75	82

After this, the free cash flows are expected to grow at the industry average of 4% per year. Using the discounted free cash flow model and a weighted average cost of capital of 14%:

a. Estimate the enterprise value of Heavy Metal.

b. If Heavy Metal has no excess cash, debt of $300 million, and 40 million shares outstanding, estimate its share price.

Question 7.

a. PepsiCo has a stock price of $52.66 and EPS of $3.20. Its competitor, the Coca-Cola Company, has EPS of $2.49. Estimate the value of a share of Coca-Cola stock using only this data.

b. What do you need to assume for this to be a good valuation?

Question 8.

Hardmon Enterprises is currently an all-equity firm with an expected return (*i.e.*, cost of capital) of 12%. It is considering a leveraged recapitalization in which it would borrow and use the money repurchase existing shares.

a. Suppose Hardmon borrows to the point that its debt-equity ratio is 0.50. With this amount of debt, the debt cost of capital is 6%. What will the expected return of equity be after this transaction?

b. Suppose instead Hardmon borrows to the point that its debt-equity ratio is 1.50. With this amount of debt, Hardmon's debt will be much riskier. As a result, the debt cost of capital will be 8%. What will the expected return of equity be in this case?

c. A senior manager argues that it is in the best interest of the shareholders to choose the capital structure that leads to the highest expected return for the stock. How would you respond to this argument?

Question 9.

Acort Industries owns assets that will have an 80% probability of having a market value of $50 million in one year. There is a 20% chance that the assets will be worth only $20 million. The current risk-free rate is 5%, and Acort has an unlevered/asset cost of capital of 10%.

a. If Acort is unlevered, what is the current market value of its equity?

b. Suppose instead that Acort has debt with a face value of $20 million due in one year. According to MM1, what is the value of Acort's equity in this case?

c. What is the expected return of Acort's equity without leverage? What is the expected return of Acort's equity with leverage?

d. What is the lowest possible realized return of Acort's equity with vs. without leverage?