

Capital Structure Questions

Question 1

List the three assumptions that lie behind the Modigliani–Miller theory in a world without taxes. Are these assumptions reasonable in the real world? Explain.

Question 2

Bruce & Co. expects its EBIT to be \$185,000 every year forever. The firm can borrow at 9 percent. Bruce currently has no debt, and its cost of equity is 16 percent. If the tax rate is 35 percent, what is the value of the firm? What will the value be if Bruce borrows \$135,000 and uses the proceeds to repurchase shares? What is the cost of equity after recapitalization? What is the WACC? What are the implications for the firm's capital structure decision?

Question 3

Ms. Kraft owns 50,000 shares of the common stock of Copperhead Corporation with a market value of \$2 per share, or \$100,000 overall. The company is currently financed as follows:

	Book Value
Common stock (8 million shares)	\$2 million
Short-term loans	\$2 million

Copperhead now announces that it is replacing \$1 million of short-term debt with an issue of common stock. What action can Ms. Kraft take to ensure that she is entitled to exactly the same proportion of profit as before?

Question 4

The common stock and debt of Northern Sludge are valued at \$50 million and \$30 million, respectively. Investors currently require a 16% return on the common stock and an 8% return on the debt. If Northern Sludge issues an additional \$10 million of common stock and uses this money to retire debt, what happens to the expected return on the stock? Assume that the change in capital structure does not affect the risk of the debt and that there are no taxes.

Question 5

Gaucha Services starts life with all-equity financing and a cost of equity of 14%. Suppose it refinances to the following market-value capital structure:

Debt (D)	45% at $r_D = 9.5\%$
Equity (E)	55%

Use MM's proposition 2 to calculate the new cost of equity. Gaucha pays taxes at a marginal rate of $T_c = 40\%$. Calculate Gaucha's after-tax weighted-average cost of capital.

Question 6

Executive Chalk is financed solely by common stock and has outstanding 25 million shares with a market price of \$10 a share. It now announces that it intends to issue \$160 million of debt and to use the proceeds to buy back common stock.

- a. How is the market price of the stock affected by the announcement?
- b. How many shares can the company buy back with the \$160 million of new debt that it issues?
- c. What is the market value of the firm (equity plus debt) after the change in capital structure?
- d. What is the debt ratio after the change in structure?
- e. Who (if anyone) gains or loses?

Question 7

Hubbard's Pet Foods is financed 80% by common stock and 20% by bonds. The expected return on the common stock is 12% and the rate of interest on the bonds is 6%. Assume that the bonds are default-risk free. Draw a graph that shows the expected return of Hubbard's common stock (r_E) and the expected return on the package of common stock and bonds (r_A) for different debt-equity ratios.

Question 8

For each of the following statements indicate whether the statement is true or false and explain why.

- a. It is obvious that firms should use as much debt as possible. It is cheaper than using equity and interest on debt is also tax deductible.
- b. In a no tax world, Modigliani and Miller's two propositions inherently contradict each other.
- c. The costs of financial distress are typically borne by a firm's debt holders.

Question 9

Ronald Masulis analysed the stock price impact of exchange offers of debt for equity or vice versa. In an exchange offer, the firm offers to trade freshly issued securities for seasoned securities in the hands of investors. Thus, a firm that wanted to move to a higher debt ratio could offer to trade new debt for outstanding shares. A firm that wanted to move to a more conservative capital structure could offer to trade new shares for outstanding debt securities. Masulis found that debt for equity exchanges were good news (stock price increased on announcement) and equity for debt exchanges were bad news.

- a. Are these results consistent with the trade-off theory of capital structure?
- b. Are the results consistent with the evidence that investors regard announcements of:
 - i. stock issues as bad news and
 - ii. stock repurchases as good news?
- c. How could Masulis's results be explained?

Question 10

Here are book and market value balance sheets of the United Frypan Company (UF):

Book			Market				
Net working capital	\$20	\$40	Debt	Net working capital	\$20	\$40	Debt
Long-term assets	\$80	\$60	Equity	Long-term assets	\$140	\$120	Equity
	\$100	\$100			\$160	\$160	

Assume that MM's theory holds with taxes. There is no growth, and the \$40 of debt is expected to be permanent. Assume a 40% corporate tax rate.

- How much of the firm's value is accounted for by the debt-generated tax shield?
- How much better off will UF's shareholders be if the firm borrows \$20 more and uses it to repurchase stock?

Question 11

Compute the present value of interest tax shields generated by these three debt issues. Consider corporate taxes only. The marginal tax rate is $T_c = 0.35$.

- A \$1000, one-year loan at 8%
- A five-year loan of \$1000 at 8%. Assume no principal is repaid until maturity.
- A \$1000 perpetuity at 7%.

Question 12

Due to large losses incurred in the past several years, a firm has £2 billion in tax loss carryforwards. This means that the next £2 billion of the firm's income will be free from corporate income taxes. Security analysts estimate that it will take many years for the firm to generate £2 billion in earnings. The firm has a moderate amount of debt in its capital structure. The firm's CEO is deciding whether to issue debt or equity to raise the funds needed to finance an upcoming project. Which method of financing would you recommend? Why?

Question 13

Janetta Corp. has an EBIT rate of £975,000 per year that is expected to continue in perpetuity. The unlevered cost of equity for the company is 14 percent, and the corporate tax rate is 35 percent. The company also has a perpetual bond issue outstanding with a market value of £1.9 million.

- What is the value of the company?
- The CFO of the company informs the company president that the value of the company is £4.8 million. Is the CFO correct?

Question 14

Edwards Construction currently has debt outstanding with a market value of £85,000 and a cost of 9 percent. The company has EBIT of £7,650 that is expected to continue in perpetuity. Assume there are no taxes. What is the value of the company's equity?

Question 15

Consider a company with the following balance sheet;

Assets	Liabilities
Total Assets = 200	Equity = 120
	Long Term Debt = 60
	Short Term Debt = 20

Assume that the debt betas are zero. And that the coupons are 9% for long term debt and 8% for short term debt. The risk free rate of interest is 5% and the expected return on the market as a whole is 15%. The beta of the equity of the company is 1.5. The company maintains the ratio of its liabilities in the current form.

The company has an environmentally hazardous project that costs \$2 million in capital outlays now, last for 10 years. At the end of each of these 10 years the project generates net operating cash flows of \$450,000. At the end of year 10 the company also has to pay for some clean-up connected with this project of \$1 million.

- Determine the company's required rate of return on equity.
- Determine the company's cost of capital using the method unlevering betas as well as weighted average cost of capital.
- What is the NPV of the project? Should the company take it?
- Suppose the company could lease rather than buy the equipment connected with this project. This would reduce capital expenditure on outlay to \$500,000 today, but the company would still be responsible for the clean-up costs. The lease payments are certain to be \$200,000 per year. Should the company lease?

Question 16

Suppose two companies X and Z have exactly the same operating characteristics and their business risks are perfectly correlated. They differ only in the way they finance their operations. Both companies will be liquidated exactly one year from now and shareholders will receive a liquidating dividend at the end of the year. Company X is expected to pay a liquidating dividend of \$55 million, but this is uncertain, so shareholders discount this dividend at a rate of 10%. Z has issued bond to finance its operations. Currently Z's securities are trading as follows;

Bonds	\$10 million
Shares	\$42 million

The bonds are AAA rated and expected return is the same as on the risk free asset which is 5%.

- Suppose company X has 250,000 shares outstanding. What is the current share price of X?
- What is the total valuation of company's Z's assets today?

c. Show how you can set up an arbitrage portfolio in order to benefit from any mispricing of companies X and Z relative to each other.

Question 17

ABC Industries is currently financed with a 12.5% debt. The CEO decides that the proportion of debt in the current capital structure is too low because investor's in ABC stock demand a higher rate of return. ABC issues debt and pays out all proceeds as a special dividend to shareholders. The current rate of return on ABC equity is 16%, only slight higher than the 14% currently expected on the stock market index. Suppose the risk free rate is 6% and ABC has 10 million shares outstanding for a price of \$18 per share.

For answering the following questions, assume all assets are priced on the SML.

- a. What are the equity beta and the debt beta of ABC if the debt has an expected return of 6%?
- b. What is the cost of capital of ABC? Answer this question by using both methods, namely unlevering betas and the weighted average cost of capital.
- c. Suppose the CEO wishes to realize a target expected return of 20% through leveraging and paying the proceeds as a special dividend. How much debt should the company issue, assuming that all debt can be issued at an expected return equal to the risk-free-rate? What is the cost of capital now?

Question 18

MVP Inc., a manufacturing firm with no debt outstanding and a market value of \$100 million is considering borrowing \$ 40 million and buying back stock. Assuming that the interest rate on the debt is 9% and that the firm faces a tax rate of 35%, answer the following questions:

- a. Estimate the annual interest tax savings each year from the debt.
- b. Estimate the present value of interest tax savings, assuming that the debt change is permanent.
- c. Estimate the present value of interest tax savings, assuming that the debt will be taken on for 10 years only.
- d. What will happen to the present value of interest tax savings, if interest rates drop tomorrow to 7% but the debt itself is fixed rate debt?

Question 19

A business in the 45% tax bracket is considering borrowing money at 10%.

- a. What is the after-tax interest rate on the debt?
- b. What is the after-tax interest rate if only half of the interest expense is allowed as a tax deduction?
- c. Would your answer change if the firm is losing money now and does not expect to have taxable income for three years?

Question 20

ABC Inc. is a manufacturing company, which has accumulated a net operating loss of \$ 2 billion over time. It is considering borrowing \$ 5 billion to acquire another company.

a) Based upon the corporate tax rate of 36%, estimate the present value of the tax savings that could accrue to the company.

b) Does the existence of a net operating loss carry forward affect your analysis? (Will the tax benefits be diminished as a consequence?)