FINA 0025 –Financial Management
Tutorial 10 - Questions

These questions do not need to be submitted and will be discussed at the tutorial. Note that detailed answers to these questions will only be provided in tutorials. This policy is in place to ensure that you attend your tutorial regularly and receive timely feedback from your tutor. If you are unsure of your answers you should check with your tutor, a pit stop tutor or the lecturer.

A. Short Answer Questions

Provide brief responses to the following questions.

A1. 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 debtholders.

d) The probability of financial distress will be negligible for firms with low levels of debt. So, a low level of debt will not result in any increase in the cost of equity.

B. Problems

For full credit you need to show all your calculations, including formulas used.

B1. Firms A and B are identical in every respect except that firm A has no debt in its capital structure while firm B has $2,000,000 in debt outstanding on which the interest rate is 8% p.a. The following information is provided for firms A and B.

	Firm A	**Firm B**
Earnings before interest	$700,000	$700,000
Interest on loan	----	$160,000
Earnings available to shareholders	$700,000	$540,000
Cost of equity	14%	16%
Market value of equity*	$5,000,000	$3,375,000
Market value of debt	-----	$2,000,000
Total market value	$5,000,000	$5,375,000

*Market value of equity, EU = VU = 700000/0.14 = $5,000,000.
Market value of equity, EL = 540000/0.16 = $3,375,000.

Assume that an investor owns $10,000 worth of firm B.s shares. Show how this investor can increase his income via riskfree arbitrage. What will happen to the market values of these firms and why? (*Hint:* How would you implement a .buy low and sell high. strategy here?
What level of “homemade leverage” would be required to mimic the leverage of firm B?

B2. Consider a firm that operates in the perfect capital market of Modigliani and Miller (MM). The firm.s earnings before interest is $2,000,000 p.a. in perpetuity. Debt can be issued at the riskfree rate of 4% p.a., and the interest rate on debt is not influenced by the firm’s capital structure. Initially, the firm has $5,000,000 of debt. It then decides to double its debt level to $10,000,000, and use the $5,000,000

raised to repurchase and equivalent amount of equity. If the firm had no debt its cost of equity would be 8% p.a.

a) Complete the table below and show all your calculations for the two capital structures.

	Initial Capital Structure	**New Capital Structure**
Earnings before interest	$2,000,000	$2,000,000
Market value of debt	$5,000,000	$10,000,000
Total value of the firm	(i)	(v)
Market value of equity	(ii)	(vi)
Interest payable	(iii)	(vii)
Earnings available to shareholders	(iv)	(viii)

b) Graph the relationship between the overall cost of capital (k_0), expected cost of equity (*k*e), and cost of debt (*k*d) for the firm at the two debt levels. *Be sure to clearly label all parts of the graph*.

c) What are the implications of your findings for the firm.s optimal capital structure? *Explain*.

B3. The following information relates to the ACB Ltd which is considering the following two alternative capital structures. Use the assumptions underlying Modigliani and Miller's zero tax method and assume that all cash flows are perpetual.

	All Equity	**Debt and Equity**
Earnings before interest	$600,000	$600,000
Interest on debt		$150,000
Earnings to shareholders	$600,000	$450,000
Cost of equity	15%	18%
Market value of equity*	$4,000,000	$2,500,000
Market value of debt		$1,500,000
Market value of the firm	$4,000,000	$4,000,000

*Market value of equity, *E*U = *V*U = 600000/0.15 = $4,000,000.
Market value of equity, *E*L = 450000/0.18 = $2,500,000.

Assuming zero personal taxes, compute the total market value of the firm for the two capital structures where the corporate tax rate is 30%. (*Hint:* Note that the market value of the unleveraged firm will change as the after tax earnings to shareholders will change.)

B4. Assume that Modigliani and Miller's perfect capital markets assumptions hold and a firm's interest rate on debt is 10%, its return on equity is 25% and its debt-to-equity ratio is 25%.
a) Compute the firm's overall cost of capital.
b) How would the cost of equity change if the firm.s debt-to-equity ratio changes to 50%?
c) Assume that the riskfree rate is 10% and the market risk premium is 7.5%. How has the equity's beta changed with the debt-to-equity ratio changing from 25% to 50%?