THE UNIVERSITY OF MELBOURNE

FNCE10002 Principles of Finance
Semester 1, 2019

Capital Structure and Payout Policy I
Tutorial Questions for Week 10

*This tutorial is divided into two parts. The answers to the questions in Part I need to be submitted at the **beginning** of your tutorial. All answers must be **handwritten** and in **original** (photocopies/emails will not be accepted). Please follow the instructions on the Tutorial Hand-in Sheet available on the LMS via the Tutorials link. The answers to questions in Part II do not need to be submitted and will be discussed in your tutorial. Please make sure that you have worked through these questions and are prepared to discuss them if called upon by your tutor.*

Note that questions flagged as "EXM" are past exam questions that I've used in this subject or subjects similar in scope to this subject, while those flagged as "TXT" are sourced from the textbook. Detailed answers to the questions in Part II will only be provided in tutorials. Brief answers may be provided via the LMS after a time lag. This policy is in place to ensure that you attend your tutorials regularly and receive timely feedback from your tutor. If you are unsure of any answer you should check with your tutor, a pit stop tutor, online tutor or me.

Part I: Answers to be Submitted to Your Tutor

A. Problems

A1.[EXM] Consider a firm that operates in the perfect capital market of Modigliani and Miller (MM) with no taxes. 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 borrowed to repurchase an equivalent amount of equity. When the firm had no debt in its capital structure its cost of equity was 8% p.a.

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

Cash flow like perpetuity	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 on debt	(iii)	(vii)
Earnings available to shareholders	(iv)	(viii)

b) Draw a rough graph of the relation between the overall cost of capital (r_O), expected cost of equity (r_E) and cost of debt (r_D) for the firm at the two debt levels. *Clearly label all parts of the graph*.

c) What are the implications of the above analysis for the firm's optimal capital structure? *Explain*.

A2. Braxton Enterprises currently has debt outstanding of $35 million and an interest rate of 8%. Braxton plans to *reduce* its debt by repaying $7 million in principal at the end of each year for the next five years when its debt will be fully paid. If Braxton's marginal corporate tax rate is 40%, what is the interest tax shield from Braxton's debt in each of the next five years?

Part II: Submission of Answers Not Required

B. Short Answer Questions

Provide brief responses to the following question.

B1. EXM For each statement indicate whether it is true or false and *briefly* explain why.

a) In a no-tax world, Modigliani and Miller's two propositions inherently contradict each other.

b) If a firm issues riskfree debt the risk of the firm's equity will not change. So, riskfree debt allows the firm to get the benefit of a low cost of debt without raising its cost of equity.

c) In the context of firms' capital structure decisions, Modigliani and Miller's proposition 1 states that the value of a firm's equity will rise in direct proportion to the level of debt in its capital structure.

C. Problems

C1. HDL Ltd is currently an all-equity financed firm with an expected cost of equity of 12%. It is considering a leveraged recapitalization in which it would borrow funds and repurchase its existing shares.

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

b) Suppose instead HDL borrows to the point that its debt-to-equity ratio is 1.50. With this amount of debt, HDL's debt will be much riskier. As a result, the cost of debt is expected to be 8%. What will the expected cost 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 shares. How would you respond to this argument? *Explain*.

C2. ABB Industries is an all-equity firm whose shares have an expected return of 10%. ABB does a leveraged recapitalization, issuing debt and repurchasing shares, until its debt-equity ratio is 0.6. Due to the increased risk, shareholders now expect a return on equity of 13%. Assuming no taxes and riskfree debt, what is the interest rate on the debt?

C3. EXM Yarra Mining has 50 million shares that are currently trading for $4.00 per share and $200 million worth of debt. The debt is riskfree and has an interest rate of 5% and the expected return of Yarra's shares is 11%. Suppose a mining strike causes the price of Yarra's shares to fall by 25% to $3.00 per share. The value of the riskfree debt is unchanged. Assuming there are no taxes and the systematic risk (that is, beta) of Yarra's assets is unchanged, what will happen to Yarra's equity cost of capital?

C4. EXM BBA Ltd has just issued $10 million in debt (at par or face value). The firm will pay interest-only on this debt. BBA's marginal tax rate is expected to be 30% for the foreseeable future.

a) Suppose BBA pays interest of 6% per year on its debt. What is its annual interest tax shield?

b) What is the present value of the interest tax shield, assuming the tax shield's risk is the same as that of the loan?

c) Suppose instead that the interest rate on the debt is 5%. What is the present value of the interest tax shield in this case?

Ten years have passed since BBA issued $10 million in perpetual interest-only debt with a 6% ~~annual coupon~~. Tax rates have remained the same at 30% but interest rates have dropped so BBA's current cost of debt capital is 4%.

d) What is BBA's annual interest tax shield now?

e) What is the present value of the interest tax shield now?