THE UNIVERSITY OF MELBOURNE

FNCE10002 Principles of Finance
Semester 1, 2019

Capital Budgeting II
Tutorial Questions for Week 9

*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] You are the owner and manager of the 400-seat Roma Majestic Cinema in Geelong. Recently you were approached by the Royal Victorian Mozart Society to see whether you would be interested in having the society perform a one-night-only concert at the cinema every two years. The first concert will be scheduled almost immediately (year 0) and you are guaranteed repeat business in years 2 and 4. Because the society is an amateur group, the musicians are not paid but the cinema will have to meet all operating costs such as advertising, the wages of the ushers, electricity, and so on. In return, the cinema also retains all the revenue from ticket sales. Knowing that there is a strong unmet demand for listening to Mozart's music in Geelong, you estimate that you will be able to sell 75% of the tickets, of which two-thirds will be at the standard price of $60 per ticket in year 0 and one-third at the premium price of $80 per ticket also in year 0. Ticket prices are then expected to increase at a rate of 5% per annum. The operating cost of a one-night concert is currently estimated to be $7,000 and these operating costs are expected to increase at a rate of 6% per annum. You have been advised that if you decide to proceed with the proposal you will need to make immediate improvements to the cinema's acoustics at a cost of $35,000. Such improvements are essential to attract a music-loving audience but will also attract some extra cinema patrons and hence produce a small increase in the net cash inflows to the cinema side of the business. The present value of these increased net cash inflows has been estimated at $12,500.

The required rate of return for this proposal is 15% p.a. Ignore any tax issues and complete the following table. *Show all calculations*.

Year	Cash inflows	Cash outflows	Net cash flows	Present value of cash flows
0				
2				
4				

Estimate the proposal's net present value. What decision would you make and why?

A2. Your firm is considering a project that would require purchasing $7.2 million worth of new equipment. Calculate the present value of the depreciation tax shield associated with this equipment if the firm's corporate tax rate is 30%, the appropriate cost of capital is 9% and the equipment can be depreciated in the following manner.

a) Straight-line over a 10-year period, with the first deduction taken at the end of year 1.

b) Straight-line over a 5-year period, with the first deduction taken at the end of year 1.

c) Fully as an immediate deduction today.

Part II: Submission of Answers Not Required

B. Short Answer Questions

Provide brief responses to the following questions.

B1. TXT Answer each part separately.

a) To finance a certain project, a company must borrow money at 10 per cent interest. How should it treat interest payments when it analyzes the project's cash flows? *Explain*.

it is financial cost

b) What are the tax consequences of selling an investment asset for more than its book value? Does this have an effect on project cash flows? What is the effect if the asset is sold for less than its book value? *Explain*.

see it as a gain → increase in tax

see it as a loss → tax-deductible expense

c) Why must *incremental* after-tax cash flows rather than *total* cash flows be evaluated in project analysis? *Explain*.

we need to focus on the influence on whether the project is accepted or not → incremental cash flows

d) Differentiate between *sunk costs* and *opportunity costs*. Which of these costs should be included in incremental cash flows, and which should be excluded? *Explain*.

sunk cost should not be included since it has happened in the past

opportunity cost should not be included. ?

e) Why is it important to consider cannibalization in situations where a company is considering adding substitute products to its main product line? *Explain*.

since adding substitute products will affect the original product's cash flow

B2. EXM For each statement indicate whether it is true or false and *briefly* explain why.

a) The weighted average cost of capital will lie between the cost of debt and cost of equity of the firm.

r_D r_E

T

$r_e > r_p > r_D$ $r_D \leq WACC \leq r_E$

b) Once the weighted average cost of capital has been estimated it is unlikely that it will change if the risks associated with the projects a firm invests in do not change.

F change capital structure

c) When evaluating a project the weighted average cost of capital requires that the internal rate of return also be calculated for comparison purposes. → we can use NPV or IRR we don't always need to use IRR

X F

C. Problems

C1. KLP Ltd is deciding whether to expand its production facility located in Melbourne. The expansion will cost $30 million and management has projected the following cash flows (in millions of dollars) associated with the first two years of the project.

$ct = (Rt - Oct) - (Rt - Oct - Dt) \times tc$

	Year 0	Year 1	Year 2
Revenues		$100.0	$160.0
Operating costs (ex. Depreciation)		$50.0	$60.0
Depreciation		$14.0	$12.0
Increase in net working capital		$4.0	$8.0
Capital expenditure	$30.0	$0.0	$0.0
Marginal corporate tax rate		30%	30%

a) Calculate the incremental after-tax earnings for this project in years 1 and 2.

Year 1: $(100-50)-(100-50-14)\times 30\% = 39.2$ m Year 2: $(160-60)-(160-60-12)\times 30\% = \$73.6$ m

b) Calculate the net after-tax cash flows (that is, free cash flows) for this project in years 1 and 2.

C2. EXM Digem Mines must choose between two alternative machines A and B which perform the same function but which have lives of 2 and 4 years, respectively. The initial cost of machine A is $30,000 and its annual operating costs are expected to be $6,000. The initial cost of machine B is $42,000 and its annual operating costs are expected to be $9,000. Assume that the projects are repeatable and there are no constraints on the availability of funds. Digem will use a discount rate of 10% p.a. to evaluate the two machines.

$N = 4$

for A = 30000 6000 6000 6000 6000

for B = 42000 9000 9000 9000 9000

a) Calculate the net present values of the two machines using the constant chain of replacement assumption and the lowest common multiple method. Which machine should Digem choose and why?

b) Redo your analysis in part (a) using the constant chain of replacement assumption and the perpetuity method. Which machine should Digem choose now? Comment on any differences between the method used here and that used in part (a).

C3. EXM STR Ltd has 12,000 bonds outstanding, each with a face value of $100. The bonds pay an annual coupon of 12% and the most recent coupon has just been paid. The bonds will mature in 6 years and currently have a yield to maturity of 15%. It has 100,000 preference shares outstanding which are currently trading at $8.75. The dividend rate on the preference shares is 14% and each share has a face value of $10. It also has 2 million ordinary shares outstanding which are currently trading at $3.06. STR has just paid a dividend of $0.50, and investors expect earnings and dividends to grow to a constant rate of 4 percent in the foreseeable future. There are no company taxes and management considers its present capital structure to be optimal and has no plans to change it.

a) Determine the cost of the various capital components and STR's before-tax weighted average cost of capital.

b) You show your calculations to a colleague, who argues that the dividend growth model is an unreliable way of estimating the cost of equity capital. She suggests you use the capital

asset pricing model. You take her advice and you estimate STR's beta to be 1.8, the risk-free rate to be 5% and the expected market risk premium to be 8%. Calculate STR's new before-tax weighted average cost of capital.

c) Under what circumstances is it appropriate for STR to use the weighted average cost of capital estimated above as the discount rate to evaluate its projects? *Explain*.

project with similar risk to whole business