THE UNIVERSITY OF
MELBOURNE

FNCE10002 Principles of Finance
Semester 1, 2019

Valuation of Equity Securities
Tutorial Questions for Week 4

*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} Cooperton Mining has just announced it will cut its dividend next year from $4.00 to $2.50 per share and use the extra funds to expand its operations. Prior to the announcement, Cooperton's dividends next year were expected to grow at an annual rate of 3% forever and its current share price is $50.00. With the new expansion plan, Cooperton's dividends next year are expected to grow at an annual rate of 5% forever.

r_E

   a) Assuming that Cooperton's required rate of return is *unchanged* by the new expansion, what share price would you expect *after* the announcement?

   $$r_E = g + \frac{D_{n+1}}{P_n} = 3\% + \frac{\$2.5}{50} = 0.08$$

   b) Is the expansion of operations a positive *NPV* investment? *Explain*. (*No calculations required.*)

$E_0 = \$3.00$

A2.^{EXM} Nano Technologies Ltd's most recent earnings per share were $3.00 and it has a history of paying out 40% of earnings as dividends. This payout ratio is expected to continue in the foreseeable future and Nano's earnings and dividends per share are expected to grow at a constant annual rate of 5% forever. Assume that investors expect a 12% p.a. return on equity from Nano.

$2 = 40\%$

a)   What price should Nano's stock sell for today?

b)   Your colleague, Noah Tall has suggested that perhaps a constant growth rate of 5% in dividends and earnings is too optimistic. He suggests that it is more likely that *earnings* would initially *decline* at a rate of 10% per year over the next 3 years in view of the long development period for Nano's recent high technology venture and then grow at the previously estimated rate of 5% per year. Assuming the dividend payout ratio remains unchanged at 40%, reestimate Nano's price using Noah's assumptions.

c)   How sensitive are the price estimates to the assumptions made? *Explain*. (*No calculations required.*)

A3.[TXT]   Answer each part separately.

a)   Argaiv Towers has outstanding an issue of preference share with a par (or face) value of $100. It pays an annual dividend equal to 8% of par value. If the required return on Argaiv preferred equity is 6%, and if Argaiv pays its next dividend in one year, what is the market price of the preferred equity today?

b)   AMC's preference shares pay a dividend of $10 each year. If the shares sell for $60 each and the next dividend will be paid in one year, what return do investors require on AMC preference shares?

c)   Silaic Tools has issued preference shares that offer investors a 10% annual return. One share currently sells for $80, and the next dividend will be paid in one year. What is the value of the dividend?

Part II: Submission of Answers Not Required

B.   Short Answer Questions

Provide brief responses to the following questions.

B1.[EXM]   Indicate whether the following statements are *true* or *false.* Provide a *brief* explanation in each case.

a)   The constant dividend growth model is ideally suited for valuing high-growth stocks.

b)   In the constant dividend growth model, g refers to the growth rate of past dividends.

c)   In the constant dividend growth model, we assume that $(r_E - g)$ must be greater than or equal to zero.

B2.[EXM]   Briefly explain how the price-earnings ratio of a stock will change if *each* of the following factors changes as indicated, *assuming other factors are unchanged*.
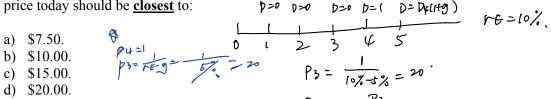
a)   The dividend growth rate increases.

b)   The dividend retention rate decreases.

c)   The earnings per share decreases.

C.   Multiple Choice Questions

For each question pick the *most reasonable* response based *only* on the information provided.

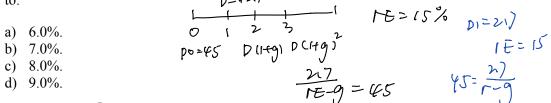C1.[EXM] You are valuing the ordinary shares of HCA Ltd which is not expected to pay a dividend for the next 3 years and then pay a dividend of $1.00 per year which is expected to grow at a constant rate of 5% per annum forever. If investors require a return of 10% p.a. HCA Ltd's price today should be **closest** to:

a) $7.50.
b) $10.00.
c) $15.00.
d) $20.00.

C2.[EXM] The dividends per share of HDG Ltd next year is $2.70 which are expected to grow at a constant rate per year forever. The expected return on this stock is 15% and its price today has been estimated at $45.00. Based on this information, the constant growth rate in dividends is **closest** to:
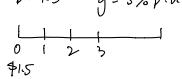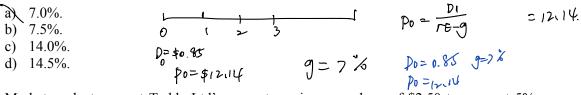
a) 6.0%.
b) 7.0%.
c) 8.0%.
d) 9.0%.

C3.[EXM] ODY Ltd has just paid a dividend of $1.50 and analysts expect the dividend to grow at 5% p.a. forever. If the expected return on this stock is 15%, its price today should be **closest** to:

a) $10.00.
b) $10.50.
c) $15.00.
d) $15.75.

C4.[TXT] Gail Dribble is analyzing the ordinary shares of Petscan Radiology. Petscan's shares pay a dividend once each year and it just distributed this year's $0.85 dividend. The market price of the share is $12.14. Gail estimates that Petscan will increase its dividends by 7% per year forever. Based on this information, the expected return on the firm's shares is **closest** to:

a) 7.0%.
b) 7.5%.
c) 14.0%.
d) 14.5%.

C5.[EXM] Market analysts expect Tadda Ltd's current earnings per share of $2.50 to grow at 5% per annum forever. The firm is also expected to payout 40 percent of these earnings forever. If the expected return on this stock is 20%, the price of Tadda Ltd's shares today should be **closest** to:
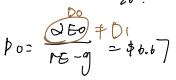
a) $6.67.
b) $7.00.
c) $16.67.
d) $17.50.

D. Problems and Case Studies

D1. Refer to the case study "Valuing Computershare Ltd." covered in class which related to estimating the firm's share price using the constant dividend growth model.

    a) Estimate the share price of Computershare Ltd. at the end of years 1 through 5. Next, estimate the share price at the end of years 10, 20, 50 and 100. Finally, calculate the present value of these prices back to year 0. What happens to the share price as *n* becomes large? What are the present values of these price levels today? (*Hint:* In the constant dividend growth model, how does the share price change moving forward in time?)

    b) Re-estimate the share price of Computershare Ltd based on the following assumptions of the future growth rate in dividends:

        (i) $g = 5.50\%$ p.a.
        (ii) $g = 5.75\%$ p.a.
        (iii) $g = 6.25\%$ p.a.
        (iv) $g = 6.50\%$ p.a.

    Provide a brief comment on the sensitivity of the share price estimates to different assumptions about the growth rate in dividends.

a) $g = 6\%$. $r_E = 8\%$ $P_2 = \dfrac{D_1(1+g)^2}{r_E - g} = \$25.73$ $P_3 = \$27.274$ $P_5 = \$30.645$

$D_1 = \$0.658$ $P_4 = \$28.91$

$P_1 = \dfrac{D_2}{r_E - g} = \dfrac{D_1(1+g)}{r_E - g} = \$24.274$ $P_0 = \dfrac{P_1}{1+r_E} = \$22.476$

$P_{10} = \dfrac{D_{11}}{r_E - g} = \dfrac{D_1(1+g)^{10}}{r_E - g} = \$41.010$ $P_0 = \dfrac{P_{10}}{(1+r_E)^{10}} = \$18.996$

$P_{20} = \dfrac{D_{21}}{r_E - g} = \dfrac{D_1(1+g)^{20}}{r_E - g} = \$73.443$ $P_0 = \dfrac{P_{20}}{(1+r_E)^{20}} = \$15.7571$

$P_{50} = \dfrac{D_{51}}{r_E - g} = \dfrac{D_1(1+g)^{50}}{r_E - g} = \$421.822$ $P_0 = \dfrac{P_{50}}{(1+r_E)^{50}} = \$8.994$

$P_{100} = \dfrac{D_{101}}{r_E - g} = \dfrac{D_1(1+g)^{100}}{r_E - g} = \$7770.018.$ $P_0 = \dfrac{P_{100}}{(1+r_E)^{100}} = \$3.532$

$n \uparrow \quad P_n \uparrow \quad P_0 \downarrow.$

b). (i) $g = 5.50\%$ p.a $P_1 = \dfrac{D_1(1+g)}{r_E - g} = \$19.3776$ $P_0 = \dfrac{R_0 \quad P_1}{(1+r_E)}$

$g = 5.75\%$ p.a $P_1 = \dfrac{D_1(1+g)}{r_E - g} = \$21.526$

$g = 6.25\%$ p.a $P_1 = \$27.8071$

$g = 6.50\%$ p.a $P_1 = \$32.518$