THE UNIVERSITY OF SYDNEY

FINC5001 Foundations in Finance
Major Assignment

Weighting: 20%

Due date: Sunday 15ᵗʰ October 11:59 PM

You currently work as a team at a major investment bank and have been tasked by the Investment Management Division (IMD) to analyse a stock that will be incorporated into a portfolio with other assets from the same market. You will need to prepare a professional business report that will be submitted to the Investment Management Division (IMD) that answers the questions proposed in this investment brief as well as a final recommendation.

Stock Details [17 marks]

1. Select a publicly listed company that is a constituent of the S&P/ASX 300 index (Australia), S&P 500 Index (US), Russell 1000 Index (US), or CSI 300 Index (China) that has at least 10 consecutive years of dividend history from 2013-2022. **The selected company cannot be one which is listed on the last page of the Assignment instructions.** Describe the company that you have chosen, so that the IMD has a comprehensive understanding of its operations and risks *(If the company did not pay dividends in 2020 due to COVID-19 but paid dividends in every other year, including 2022, this will be allowed).*

2. Find three news articles from June 1ˢᵗ to September 10ᵗʰ, 2023 about your chosen company and briefly summarise each article (1-2 sentences). Briefly explain how the event(s) detailed in the news articles have affected your company.

3. List the Global Industry Classification Standard (GICS) sector, industry, and sub-industry for your chosen company. List one other public company that is in the same sub-industry as your chosen company and briefly describe its operations. This competitor does **not** have to be listed in any of the indices nor is subject to the restrictions in part 1.

4. Present a table of a current "stock quote" with the following characteristics: (1) Current Price, (2) 52 Week Range, (3) Market Cap, (4) Beta, (5) P/E Ratio, (6) EPS, (7) Forward Dividend and Yield, and (8) 1 year Target Estimate for both your chosen company and competitor. Interpret and compare each characteristic for your chosen company and its competitor for your IMD. Be specific about what the values for your company and competitor mean.

5. Compare the P/E ratio of your chosen company and the competitor to the average P/E ratio of the industry of your chosen company. Compare these numbers with the average P/E ratio of your chosen stock market index as well. Discuss in detail.

Summary Statistics and Risk Characterisation [22 marks]

6. Calculate the annual returns (from January 1st to December 31st for each year) for the market index that your chosen company belongs to for the last: (i) 5-year period, (ii) 10-year period, and (iii) 20-year period. Calculate the average annual return and standard deviation of annual returns over these 3 time periods using both the arithmetic and geometric averages (for the standard deviation, you can use just the arithmetic average). How have these values changed over time? What do you think these changes mean for the average investor? Discuss in detail.

7. List the current Government bond rates of the following maturities: (i) 1-year, (ii) 5-year, (iii) 10-year, (iv) 20-year, and (v) 30-year. List and graph the 10-year government bond rate over the time period 2012-2022. How has the 10-year rate changed over this period? In particular, has there been a shift in the 10-year rate from 2019-2022 (post-COVID-19)? Why do you think this has occurred? Discuss with references to the appropriate academic literature.

8. Calculate the annual returns (from January 1st to December 31st for each year) of your chosen company from 2013-2022. Annualise all dividends paid out. Calculate the average annual return and standard deviation of annual returns from 2013-2022 using both the arithmetic and geometric averages (for the standard deviation, you can use just the arithmetic average). How has your company performed over this period? Do the arithmetic and geometric averages differ for your company? Why or why not? Interpret these numbers for your manager.

9. Calculate the annual beta for your chosen company returns using the annual returns from 2013-2022 along with the annual returns and standard deviation of your market index. Compare your calculated annual beta with the beta found in your stock quote. Are these values the same or different? Explain and discuss why they may be similar and/or different. Calculate the annual beta for the subperiod between 2013-2019 (pre-COVID-

19) and compare this number with your other betas. Compare and discuss the stability (or instability) of your company's beta values with references to the appropriate academic literature.

10. Graph and compare the annual returns and standard deviation of your company with the market index. Discuss and relate this comparison to your company's beta(s). Does your beta calculation explain your company's returns with respect to the market? Explain in detail why this may or may not be the case for your company.

11. Using the Capital Asset Pricing Model (CAPM), calculate the required rate of return on equity for your chosen company using **all** the different government bond rates in part (7), as proxies for the risk-free rate. Select **one** of the annual return calculations calculated in part (6), as a proxy for the expected market returns and justify your choice. Discuss how appropriate your choices are as proxies for the theoretical values in the CAPM equation for your specific company.

Growth Rates and Valuation [28 marks]

12. Estimate the growth rate of your chosen company's cash flows by using the following three methods:

    (a) Calculate and list the annual growth rates for dividends from 2013-2022 (For any years within your sample with anomalous dividend growth rates discuss why this might have occurred. If your company did not pay dividends in 2020 due to COVID-19 just use the dividends in the prior year as a proxy). Calculate the arithmetic and geometric average annual growth rate of dividends over this period. Also calculate the arithmetic and geometric average annual growth rate of dividends for the subperiod between 2013-2019 (pre-COVID-19) and compare the values. Do you think your company's dividends will grow at these rates for the foreseeable future? Explain in detail why or why not.

    (b) Calculate and list the annual growth rates for net income from 2013-2022 (For any years within your sample with anomalous net income growth rates discuss why this might have occurred). Calculate the arithmetic and geometric average annual growth rate of net income over this period. Also calculate the arithmetic and geometric average annual growth rate of net income for the subperiod between 2013-2019 (pre-COVID-19) and compare the values. Do you think your company's net income will grow at these rates for the foreseeable future? Explain in detail why or why not.

    (c) Using the formula g = b * ROE, calculate and list the growth rates, plowback ratios, and ROE for the time period between 2013-2022 (For any years within your sample

with anomalous plowback ratios and/or ROE discuss why this might have occurred). Calculate the arithmetic and geometric average annual growth rate over this period (remove any rates that are negative from your sample). Also calculate the arithmetic and geometric average annual growth rate for the subperiod between 2013-2019 (pre-COVID-19) and compare the values (remove any rates that are negative from your sample). Do you think this method of calculating growth rates is useful for valuation for your specific company? Explain in detail why or why not.

13. Using the Discounted Cash Flow (DCF) models you have learnt in FINC5001, determine the intrinsic value of your chosen company using an appropriate required rate of return (*from part 11*) and (a) growth rate(s) (*from part 12*). Justify the choices and assumptions you have made in undertaking this calculation in detail and why you did not choose any other values instead. Discuss why you chose your valuation model and its key assumptions and why you believe your chosen rates satisfy these assumptions for your specific company. Do you think the GGM is preferred to a two-stage or multi-stage growth model for your company? Why? Explain all the questions above in detail. *(If you make deviations from the choices **in part 11 and/or part 12**, clearly justify why you made these changes and why these new values are more sensible for this analysis for your specific company).*

14. Draw a cash flow timeline (like discussed in the Modules) of your company's future dividends (*implied* by your valuation model **in part 13**) to support the discussion above. In the cash flow timeline, include annual projected cash flows up to at least the year 2026.

15. Calculate the Present Value of Growth Opportunities (PVGO) for your chosen company using the current stock price. Interpret this value for your company for your manager.

16. The values that you have utilised **in part 13** represent only one possible set of choices for a valuation model. Determine the intrinsic value of your chosen company using a range of values (+1% and -1% for your growth rates and +1% and -1% for your discount rate). You should have a total of 9 intrinsic value calculations like the table below:

g/r	+1%	0%	-1%
+1%			
0%		Base Case	
-1%			

For example, the top left slot would calculate an intrinsic value using both a growth rate and required rate of return that is 1% higher than your chosen rates **in part 13** (for any negative calculations just put N/A).

Recommendation [20 marks]

17. Using the DCF analyses performed *in parts 1-16*, make a recommendation, in one paragraph (max word count 200), for your chosen company as to whether to buy, sell, or hold this stock, using your analysis *in parts 13-14* as your main guide.

18. Large language models (LLM) such as ChatGPT have become a very powerful tool for financial analysis. Nevertheless, like any tool, using it without a solid understanding of underlying financial concepts may lead to misleading answers. Ask ChatGPT to make both a positive and negative stock recommendation for your chosen company. You will use this information *for part 19.* Summarize the ChatGPT input *in your own words* in one paragraph (max word count 150). Cite the output link for ChatGPT within the Appendix. Find the appropriate citations for any used in your summary. (*Example text*: *Give me a positive recommendation for Coca-Cola stock.*)

19. For which range of values for your future estimates of growth rates and discount rates would you suggest a *buy recommendation*, and which range of values would you suggest a *sell recommendation* (i.e. for growth rates greater/lower than X% and discount rates greater/lower than Y%, I recommend buy/sell)? Which of these ranges sound more reasonable to you and why? Does your original recommendation *in part 17* still sound reasonable? Using both your findings in this entire report along *with part 18,* discuss in detail why or why not. Within your discussion detail the limitations of your analysis and assumptions *relative* to your specific company chosen. For parts of the ChatGPT analysis that sound reasonable to you, be sure to find the proper citation. Also do not just copy and paste ChatGPT's output but summarize and take the key points you find reasonable for your analysis. You are also free to use external information outside of the ChatGPT analysis from *part 18* if you feel it bolsters your analysis.

20. Using your findings *in parts 17-19* make a *final recommendation*, in one paragraph (max word count 150), for your chosen company as to whether to buy, sell, or hold this stock.

Presentation and overall style of the report [5 marks]

Peer evaluation *(will be made available after the due date)* [8 marks]

- *List and date all your data sources. Depending on the day and time with which you collect the data, this will be different. For each set of data used in the report, present a screenshot of this data in the Appendix. For the ChatGPT analysis, provide the output link that ChatGPT provides.*

- *Justifications in the report should be made with references to appropriate academic literature.*

- *The Excel workbook needs to be properly formatted and appropriately labelled such that the instructors can read, interpret your calculations, and replicate all results presented in the report without assistance.*

- *With the rise of generative AI (i.e. ChatGPT), it has become apparent when students use these tools without citation as there are stylistic and tonal inconsistencies within student reports. Please keep a consistent style throughout. A good idea is to task one member (ideally your best writer) to keep the style of the report consistent. Any suspected misuse of generative AI or large stylistic inconsistencies in the report may be deducted a penalty of up to 15%, with significant breaches reported to the academic integrity team as stated below.*

Use of AI Rules:

Use of AI is permitted when specified	Penalties for minor breaches will be levied
You are permitted to use artificial intelligence (AI) tools i.e. ChatGPT to generate material that you will then evaluate and analyse **only for part 18 above.** You must indicate where AI tools have been used. AI generated text cannot be used or represented as original, self-authored work. Failure to declare the use of AI tools will be reported as a major breach of policy for investigation.	In line with the Academic Integrity Procedures (2022), minor breaches of academic integrity (including poor paraphrasing, failure to acknowledge the work of others or incorrect citations, use of AI tools where not permitted) may be subject to a penalty of up to 15% of total available marks at the point of grading. Major breaches of the Policy will be submitted for investigation to the Faculty's Academic Integrity staff.

Assessment Criteria:

1. Conforming with instructions (e.g. word length, font, other instructions)
2. Presentation, communication & style (written)
3. Clarity of expression (incl. accuracy, spelling, grammar, punctuation)
4. Referencing
5. Use of literature/knowledge of theory
6. Data/information gathering/processing
7. Conclusions
8. Analysis
9. Problem solving
10. Reflection/evaluation

Formatting and Presentation:

1. The maximum number of pages allowed is **25** pages with 1.5 line spacing and size 12 Arial or Calibri Font. It should have normal-sized (2.54cm) margins on all sides. **Please number the pages of your report.** Marks will be reduced by 5% for each page you exceed the page limit. Hence, your mark will be reduced to zero if the report exceeds 40 pages. You will be penalised for inappropriate formatting.

2. Text presented in **tables** and **graphs** do not need to follow this formatting requirement. However, these will still need to be professionally presented in the report.

3. Ensure you use proper academic referencing in supporting the ideas and discussion within your report. All reports must include a list of references in academic form using the **APA 7th** method. Further information on the APA referencing style can be found here: https://libguides.library.usyd.edu.au/citation/apa7. You will be penalised if you forget to reference your sources or use inappropriate referencing.

4. Pay particular attention to presentation. A component of your mark will be based on presentation. Avoid overdoing formatting and ensure that the report is very clear, logical, and professional. Pay attention to grammar. Clear and logical presentation is a major challenge in report preparation.

5. Preparing a concise report poses a major challenge. Brevity and conciseness are key ingredients of a highly successful report. Every part of the report should somehow add to the end result; otherwise, it is superfluous and distracting.

6. Use headings in the report to separate key ideas. Using paragraphs will also assist with structuring ideas.

7. The report must be submitted as a **PDF** document. You must submit the report electronically via the Turnitin link on Canvas. Excel spreadsheets with **all** your calculations must be submitted as a **.xlsx** workbook. You must submit **two files** electronically via the link on Canvas.

The page limit for the report is **25 pages**.

What is included in the 25 page limit?
- Report body
- Tables
- Diagrams

What is excluded from the 25 page limit?
- Title page
- Table of contents
- Executive summary
- Reference list
- Appendices (*For each set of data used in the report, present a screenshot of this data in the Appendix*)

Marking Guide:

Company A selection, description, and news articles	**/7 marks**
Financial data – company and competitor	**/10 marks**
Returns – market index, Government bonds, company	**/10 marks**
Beta calculation and discussion with risk and returns	**/7 marks**
Required rate of return on equity – company	**/5 marks**
Growth rates	**/12 marks**
Stock valuation	**/10 marks**
PVGO and sensitivity analysis	**/6 marks**
Final recommendation	**/20 marks**
Presentation and style of report	**/5 marks**
Peer evaluation	**/8 marks**

Penalties

Incorrect dating of data sources	*up to -10 marks*
Incomplete screenshots of data sets in Appendix	*up to -10 marks*
Inappropriate use of literature	*up to -10 marks*
Incorrect referencing	*up to -10 marks*
Failure to comply with formatting requirements	*up to -10 marks*

Poorly presented report, tables, graphs	*up to -10 marks*
Missing/incorrect ChatGPT output link	*up to -20 marks*
Suspected minor breaches of academic integrity (see above)	*up to -15 marks*
Incorrect selection of companies	*-50 marks*
Failure to submit Excel file with calculations	*-25 marks*
*Failure to complete peer evaluation (**individual deduction**)*	*-15 marks*
Each page over the 25 page limit	*-5 marks per page*

TOTAL MARKS   **/100 marks**

List of Prohibited US-listed Stocks:

1. 3M (MMM)
2. Abbott Laboratories (ABT)
3. American Express (AXP)
4. Amgen (AMGN)
5. Apple Inc (AAPL)
6. AT&T Inc (T)
7. Bank of America (BAC)
8. Best Buy Co Inc (BBY)
9. Boeing (BA)
10. Caterpillar Inc (CAT)
11. Chevron Corporation (CVX)
12. Cisco Systems (CSCO)
13. Citigroup Inc (C)
14. Coca-Cola Co (KO)
15. ConocoPhillips (COP)
16. Colgate-Palmolive (CL)
17. Costco (COST)
18. Domino's Pizza Inc (DPZ)
19. Dow Inc. (DOW)
20. Estee Lauder (EL)
21. Exxon Mobil Corp (XOM)
22. FedEx Corporation (FDX)
23. Goldman Sachs (GS)
24. Hershey Co (HSY)
25. The Home Depot (HD)
26. Honeywell (HON)
27. HP Inc (HP)
28. IBM (IBM)
29. Intel (INTC)
30. Johnson & Johnson (JNJ)
31. JPMorgan Chase (JPM)

32. Kellogg Company (K)
33. Lockheed Martin Corporation (LMT)
34. Mastercard Inc (MA)
35. McDonald's (MCD)
36. Merck & Co (MRK)
37. Microsoft (MSFT)
38. Nike, Inc (NKE)
39. NVIDIA Corp (NVDA)
40. Oracle Corp (ORCL)
41. PepsiCo (PEP)
42. Pfizer Inc (PFE)
43. PPG Industries (PPG)
44. Procter & Gamble (PG)
45. Qualcomm Inc (QCOM)
46. Salesforce (CRM)
47. Starbucks (SBUX)
48. Target Corp (TGT)
49. The Coca-Cola Company (KO)
50. The Travelers Companies (TRV)
51. Texas Instruments Incorporated (TXN)
52. UnitedHealth Group (UNH)
53. United Parcel Service, Inc (UPS)
54. Verizon Communications (VZ)
55. Visa Inc (V)
56. Walgreens Boots Alliance (WBA)
57. Walmart (WMT)
58. The Walt Disney Company (DIS)
59. Wells Fargo & Co (WFC)
60. Yum! Brands, Inc (YUM)

List of Prohibited Australian-listed Stocks:

1. Australia and New Zealand Banking Group Ltd. (ANZ)
2. AGL Energy Limited (AGL)
3. BHP Group Ltd (BHP)
4. Commonwealth Bank of Australia (CBA)
5. CSL Limited (CSX)
6. Domino's Pizza Enterprises Ltd (DMP)
7. JB Hi-Fi Limited (JBH)
8. National Australia Bank Ltd (NAB)
9. Rio Tinto Ltd (RIO)
10. Telstra Corporation Ltd (TLS)
11. Wesfarmers Ltd (WES)
12. Westpac Banking Corp (WBC)
13. Woodside Energy Group Ltd (WDS)
14. Woolworths Group Ltd (WOW)

List of Prohibited Chinese-listed Stocks:

1. Kweichow Moutai Co, Ltd (600519:SS)