

INVESTMENT

ASSIGNMENT SEMESTER 2 2022



Preamble

The main purpose of the assignment from your perspective is to help you develop skills required at the Fellowship level. These skills are also required by employers.

The specific skills that are being developed and assessed in the assignment are the ability to

- apply subject material in an unfamiliar context;
- plan a valuation model;
- determine the appropriate assumptions for the model;
- build and manipulate a spreadsheet valuation model
- communicate relevant points in language appropriate to the audience, in a logical and coherent manner; and
- meet business standards for presentation of work in written materials and spreadsheets.

You will be required to apply knowledge to specific situations in the time-constrained end of semester examination. This assignment provides an opportunity for you to think more deeply and spend more time preparing a detailed answer. This assignment will also help you reflect on your writing skills. Whilst there is ample time to write any required report for the assignment, you should consider if you need to spend more time improving your writing skills to help you pass the examination.

The assignment will require you to create a set of assumptions for the model that you build. There is no single right answer, consequently you will be assessed on your reasoning and process. We therefore want to understand *how* you derived your assumptions. It is important that you describe what you did as the marker needs to understand if you are able to apply knowledge to the specific situation described in this assignment. We are also looking for you to demonstrate that you can deal with uncertainty in a reasonable way.

A key actuarial skill is to obtain a grasp of the qualitative nature of outputs from models and describe them in a non-technical manner. This assignment avoids complicated modelling and is designed to test your ability to deduce and communicate issues relating to the valuation of a listed equity, using simple models.



Marking Guide

This assignment represents 20% of the available marks for the Investment subject. Your assignment mark will be combined with your exam mark to determine your overall result for the subject.

If you choose not to submit an assignment, or if you do not submit a reasonable attempt, then you are still entitled to sit the examination, but it is unlikely that you will reach pass standard.

It is anticipated that you will spend between 15 and 20 hours to complete the assignment. This is a guide as some students will spend more than this and some students will spend less.

A detailed rubric is provided with the assignment question and will be used by the markers to assess your performance. The rubric has been posted on the LMS to guide you as to what is required to achieve full marks for each part of the assignment. You should check that the components of your answer cover the items in the rubric.

Submission

The deadline for submission is **12:00pm (AEST) on 15th August 2022**. In general, late submissions will not be accepted. You should allow for the possibility of potential delays by preparing and submitting your work in advance of the deadline. The submitted documents must consist of a Word file and an excel file. Files in other formats will not be marked. The naming convention for both files is:

2022_S2_Assignment_Investment_identifier (extension for excel or Word as appropriate).

The identifier will be your candidate number that will be sent to you during the semester.

File format and coversheet

If an assessment is submitted in a format with an incorrect file name or an incorrect format (e.g., the file name has no candidate number or the file is submitted as, say, a word document when a pdf document was required), you may be required to resubmit your assessment. This may cause you to submit late and hence incur a late submission penalty. You should therefore follow all assessment instructions provided.



Plagiarism

By submitting your answer document, you are implicitly stating that the work is your own.

Remember that an important aspect of being a professional actuary is to always act with integrity. Committing plagiarism by copying another person's work or not properly referencing other sources used in your assignment is a breach of the Integrity principle under the Actuaries Institute's Code of Conduct.

The Education Manager or Chief Examiner will refer any suspected plagiarism to the Executive General manager Education for review. Depending on findings, a complaint regarding the member may be made to the Institute's Conduct Committee. Your subject marks may not be released until any such matter is resolved.

Penalties

Deadline

Penalties will be applied to late submissions without prior approval.

If you submit an assessment after the due date (whether that is the original due date or any extended due date you have been granted), the following penalties apply:

- within 24 hours of due date and time: 10% x maximum mark available;
- 1 to 2 days late: 20% x maximum mark available;
- 2 to 3 days late: 30% x maximum mark available;
- 3 to 4 days late: 40% x maximum mark available;
- 4 to 5 days late: 50% x maximum mark available;
- >5 days late: 100% x maximum mark available (i.e. assessment score = 0).

Incorrectly formatted submissions

There is no direct penalty if an assessment is submitted in a format with an incorrect file name or an incorrect format (e.g. submitted as a word document when a pdf document was required).

However, if a submission does not include a relevant identifier (candidate number) in the file name, or an incorrect identifier is used, then it may take time to identify you as the student and ask you to resubmit your work with an appropriate identifier.



If you fail to submit in the file format that was required, then you may be required to resubmit your work with the correct file format, particularly relevant to modelling or coding assignments.

If either situation arises then this will probably cause you to submit late and hence incur the late submission penalties outlined above. Students should therefore follow all assessment instructions provided.

Assignment Context

You are an equity analyst at Pragmatic Investments (PI), an investment management company, which manages portfolios of listed equities. PI has a policy of using discounted cash flow models, other than the Gordon Growth Model, to value listed equities, which are purchased for portfolios with the intention of holding them for at least five years unless there is a compelling reason to sell before then.

You have been asked to prepare a valuation of the ordinary shares issued by BHP Group Limited (BHP), a mining company, which is listed on the ASX (ASX code: BHP). The purpose of the valuation is to assist in the consideration of BHP, by the portfolio managers at PI, for inclusion in their portfolios.

It has been reported that, in the most recent full financial year, BHP Group reported Net Profit after Tax (NPAT) that was up 42.08% to \$11,304m for the year ended 30 June 2021. Revenues from ordinary activities were \$60,817m, up 42% from the previous year. Earnings Per Share (EPS) was 223 cents compared with 157 cents in the previous year. Net operating cash flow was \$27,234m compared with \$15,706m in the previous year. The final dividend per share (DPS) declared was 200 cents, taking the full year DPS to 301 cents compared with 120 cents in the previous year.

Financial and other information about BHP that is relevant to the valuation has been provided in the LMS.



Assignment Questions (Total 100 marks)

You have been asked to prepare: a valuation of the ordinary shares issued by BHP for consideration by the portfolio managers at Pragmatic Investments, using a discounted cash flow (DCF) model.

You are required to prepare:

- a concise report that explains
 - the valuation model used;
 - the assumptions required in the model; and
 - how you have estimated the parameters relating to each assumption.
- an excel spreadsheet that provides your estimate of the value per BHP share

The report should be no more than 2000 words including any words that are contained in tables.
(Quality of report writing counts for 10 marks in this assignment.)

The questions to be answered are:

- 1) Explain, with your reasons, why you have selected:
 - a) the discounted cash flow model used to value the BHP shares; and
 - b) the cash flow being valued. **(10 marks)**
- 2) Describe the assumptions that are required in the model that relate to:
 - a) the future time periods over which the cash flow or its components will be projected;
 - b) the cash flow at each time period, that is being valued; and
 - c) the discount rate used in the valuation. **(10 marks)**
- 3) Explain how you have derived the cash flows used in the valuation model from the information provided and any assumptions that you have made. **(15 marks)**
- 4) Explain how you have allowed for uncertainty relating to the cash flows which are being valued and how this has affected the valuation that you have made. **(10 marks)**
- 5) Explain how you have derived the discount rate used in the valuation model. **(15 marks)**





- 6) Describe the sensitivity of the valuation of BHP shares to changes in the discount rate.
(10 marks)
- 7) Prepare a valuation of BHP shares in spreadsheet form with either a scenario or sensitivity analysis to test the effect of uncertainty in the assumptions on your valuation. **(10 marks)**
- 8) Propose a maximum price at which BHP shares should be bought and a minimum price at which they should be sold.
(10 marks)

END OF ASSIGNMENT