

Project Assignment

1. Introduction

This assessment consists of three parts - group report, individual report and individual presentation. Students who failed to complete all components of this assessment will receive ZERO marks.

2. Group Project (12.5% of unit mark)

Due Week 10 Monday (12 Oct 2020 23:30 AEST)

You are working in the investment team of a wealth management company “Invest ‘Em All Asset Management”. Your team is developing some trading strategies for a mutual fund. The strategies are based on Markowitz’s mean-variance portfolio optimisation. You are trying to construct several portfolios and writing a report to the senior management.

Use the data file provided in the following analysis. The data file contains daily adjusted closing prices and number of outstanding shares of ASX20 Index and its constituents from **Jan 2016 to Jun 2020**. Prices are dividend adjusted.

Suppose you are now at the beginning of 2018. Use two years of historical data, i.e. Jan 2016- Dec 2017, to estimate the model parameters needed for Markowitz’s mean-variance model in constructing the required portfolios. Then use the data in 2018 to find out the performance of the portfolios in 2018 as if you have invested at the beginning of 2018. We call this scenario 1. Repeat this work in other scenarios listed below.

Scenarios	Historical Data	Performance testing period
1	Jan 2016-Dec 2017 ($r_f=1.5\%$)	Jan 2018 – Dec 2018 ($r_f=1.5\%$)
2	Jan 2017-Dec 2018 ($r_f=1.5\%$)	Jan 2019 – Dec 2019 ($r_f=1.0\%$)
3	Jan 2018-Dec 2019 ($r_f=1.0\%$)	Jan 2020 – Jun 2020 ($r_f=0.5\%$)

Tasks:

1. Provide background information of Markowitz’s mean-variance portfolio optimisation framework, including model assumptions, economic theories, etc.
2. Prepare the data and estimate the model parameters.
3. Construct the following portfolios:
 - a. Optimal portfolio using the 20 constituents (short selling allowed);
 - b. Optimal portfolio using the 20 constituents (No short selling);
 Use the risk-free rate provided in the above table.
4. Calculate and compare the performance of the portfolios in the performance testing periods. You should present the results of the 6 portfolios which you may name them 1a, 1b, 2a, 2b, 3a and 3b respectively. Discuss any observations.
5. Discuss the difficulty of practical implementation of the above portfolios.
6. Suggestions and recommendations.

Report (Page limit: 10):

1. Executive summary
2. Address all tasks in previous section
3. Conclusion
4. Appendix (if any)(You may put charts or tables here)
5. References

You are suggested to use 7-8 pages for part 1-3, 1-2 pages for Appendix and 1 page for references. Cover page or content page are not counted in the page limit.

Submission:

You are required to submit your report in Word document or PDF format and your calculations in Excel file. Details on submission are in the section "Assessment Criteria and Checklist".

Note: You need to present the results in the report, even though you submit your calculations in Excel. Excel file will not be marked.

Individual Project (6.25% of unit mark)

Due Week 10 Friday (16 Oct 2019 23:30 AEST)

The senior management of Invest 'Em All has agreed to implement the long-short strategy that you developed in the group report (i.e. Portfolio a). The senior would like to provide custom made investment solutions to the clients. This investment solution will be a portfolio of the risk-free asset and the optimal risky portfolio. Write a proposal to the senior management to address the following tasks.

Tasks:

1. Provide details related to investor utility.
2. Suggest how one's utility can be optimised under the mean-variance portfolio framework.
3. Uses the average of the digits in your student ID as your risk aversion coefficient to find your optimal portfolio. Comment on this portfolio and list out the assumption that you have made in the calculation. (E.g if your student ID is 45678901, your risk aversion coefficient is $A=5$)
4. Other comments or discussions you find relevant.

Report (Page limit: 4 including appendix):

1. Executive Summary
2. Address all tasks in previous section
3. Conclusion
4. Appendix (if any)
5. References

You are suggested to use 2-3 pages for part 1-3, the remaining will be Appendix and references. Cover page or content page are not counted in the page limit.

Submission:

You are required to submit your report in Word document and your calculations in Excel file. Details on submission are in the section "Assessment Criteria and Checklist".

Note: You need to present the results in the report, even though you submit your calculations in Excel. Excel file will not be marked.

3. Individual Presentation (6.25% of unit mark)

Due Week 11 Friday (23 Oct 2019 23:30 AEST)

Present your research, findings and recommendations in max 5 PowerPoint slides. You should outline your contribution in the group report and provide details of your individual report. (Cover page or 'Thank you' page are not counted in the page limit)

You need to submit a recording of your presentation. The presentation can be recorded by mobile phone or webcam, etc. You have **7 minutes** to present your work. Your face and voice should be recorded clearly. You don't have to do any video editing as this was supposed to be a face-to-face presentation if there was no pandemic.

Submission:

You are required to submit your presentation slides in PowerPoint document or PDF format and the presentation recording must be in common video format (preferably mp4, mpg, mov or avi). Refer to the section "Assessment Criteria and Checklist" for more details.



4. Scoring Rubrics for Group Project

Category	4 (75-100%)	3 (65-74%)	2 (50-64%)	1 (0-49%)
Organisation (10%)	Content is well organised using headings or bulleted lists to group related materials.	Uses headings or bulleted list to organise, but the overall organisation of topics appears flawed.	Content is logically organised for the most part.	There was no clear or logical organisational structure, just lots of facts.
Subject Knowledge (30%)	The team clearly understood the topic in-depth. Presented their information forcefully and convincingly.	The team clearly understood the topics in-depth and presented their information with ease.	The team seemed to understand the main points of the topic and pretend those with ease.	The team did not show an adequate understanding of the topic.
Citing Resources (10%)	Source information collected for all graphics, facts and quotes. All documented in desired format.	Source information collected for all graphics, facts and quotes. Most documented in desired format.	Source information collected for graphics, facts and quotes, but not documented in desired format.	Very little or no source information was collected.
Technical results, statistics/Numerical Accuracy (40%)	Every major point was well supported with numerical results, statistics and/or examples. Numerical results are accurate.	Every major point was adequately supported with numerical results, statistics and/or examples. Most numerical results are accurate.	Every major point was adequately supported with numerical results, statistics and/or examples, but the relevance of some was questionable. Some numerical results are accurate.	Not every point was supported. Many inaccurate numerical results.
Spelling and Grammar (10%)	No spelling and grammatical errors spotted.	A few spelling and grammatical errors spotted.	Some spelling and grammatical errors spotted.	Many spelling and grammatical errors spotted.



5. Scoring Rubrics for Individual Project

Category	4 (75-100%)	3 (65-74%)	2 (50-64%)	1 (0-49%)
Organisation (10%)	Content is well organised using headings or bulleted lists to group related materials.	Uses headings or bulleted list to organise, but the overall organisation of topics appears flawed.	Content is logically organised for the most part.	There was no clear or logical organisational structure, just lots of facts.
Subject Knowledge (30%)	The student clearly understood the topic in-depth. Presented information forcefully and convincingly.	The student clearly understood the topics in-depth and presented information with ease.	The student seemed to understand the main points of the topic and presented those with ease.	The student did not show an adequate understanding of the topic.
Citing Resources (10%)	Source information collected for all graphics, facts and quotes. All documented in desired format.	Source information collected for all graphics, facts and quotes. Most documented in desired format.	Source information collected for graphics, facts and quotes, but not documented in desired format.	Very little or no source information was collected.
Technical results, statistics/Numerical Accuracy (40%)	Every major point was well supported with numerical results, statistics and/or examples. Numerical results are accurate.	Every major point was adequately supported with numerical results, statistics and/or examples. Most numerical results are accurate.	Every major point was adequately supported with numerical results, statistics and/or examples, but the relevance of some was questionable. Some numerical results are accurate.	Not every point was supported. Many inaccurate numerical results.
Spelling and Grammar (10%)	No spelling and grammatical errors spotted.	A few spelling and grammatical errors spotted.	Some spelling and grammatical errors spotted.	Many spelling and grammatical errors spotted.



6. Scoring Rubrics for Individual Presentation

Category	Scoring Criteria	Marks
Content (40 marks)	Language used is suitable for the target audience.	10
	Presentation contains accurate information.	10
	Material included is relevant to the overall message/purpose.	10
	There is an obvious conclusion summarizing the presentation.	10
Presentation (60 marks)	Speaker maintains good eye contact, uses a clear and audible voice.	10
	Delivery is poised, controlled, and smooth.	10
	Visual aids are well prepared, informative, effective, and not Distracting and length of presentation is within the assigned time limits.	20
	Information was well communicated.	20

7. Assessment Criteria and Checklist

1. Each group has a minimum of 4 and a maximum of 5 members. All group members are equally responsible for the entire submitted assignment.
2. Group Analysis Report submission:
 - a. Group Analysis Report is due at **11.30 pm AEST, Monday of Week 10**. Each group needs to submit an Excel file and a Word file for the solutions. **The excel file is to be submitted via iLearn and word/pdf file via Turnitin.**
 - b. Word report must be **text recognizable**. Reports that are not text recognizable and **cannot be scanned by turnitin will not be marked**
 - c. The report has to be **structured** by using **headings** and **subheadings**. Do not repeat the question text.
 - d. Marks are allocated based on answers provided in Word document. Solutions presented in Excel but not in Word document will receive **zero mark**. Solutions presented in Word document but are not supported by calculations in Excel will receive **zero mark**.
 - e. Groups that do not submit the group analysis report will receive **zero mark for the whole assignment, that is 25% of the total unit marks**.
 - f. **No extensions will be granted**. There will be a **deduction of 10%** of the total available marks made from the total awarded mark for **each 24 hour** period or part thereof that the submission is late (for example, 25 hours late in submission - 20% penalty). This penalty does not apply for cases in which an application for special consideration is made and approved. No submission will be accepted after solutions have been posted.
 - g. List all the references you have used and refer to them in the text using Harvard reference style.
 - h. Maximum number of pages for the Word report is **10 pages all inclusive**. Reports that are not proof-read will be marked down. Grammar and sentence structure are important.
3. Individual Analysis Report submission:
 - a. Your individual analysis report is due **11.30pm AEST, the Friday of Week 10**. It is composed of two documents: a written **Word document** (report) that contains a description of your work, the rational for your calculations, the solutions and an interpretation of your results and an **Excel file** in which you present your calculated solutions. The word report is submitted through Turnitin and the excel file via iLearn.
 - b. Marks are allocated based on answers provided in Word document. Solutions presented in Excel but not in Word document will receive **zero mark**. Solutions presented in Word document but are not supported by calculations in Excel will receive **zero mark**.
 - c. **Word report** must be **text recognizable**. Reports that are not text recognizable and **cannot be scanned by turnitin will not be marked**.
 - d. The report has to be **structured** by using **headings** and **subheadings**. Do not repeat the question text
 - e. **List** all the references you have used and refer to them in the text using Harvard reference style.



- f. Individuals who do not submit the individual analysis report will receive **zero mark for the whole assignment, that is 25% of the total unit marks.**
 - g. **No extensions will be granted.** There will be a deduction of 10% of the total available marks made from the total awarded mark for each 24 hour period or part thereof that the submission is late (for example, 25 hours late in submission - 20% penalty). This penalty does not apply for cases in which an application for special consideration is made and approved. No submission will be accepted after solutions have been posted.
 - h. Maximum number of pages for the Word report is **5 pages all inclusive.** Reports that are not proof-read and presented as a business report style will be marked down. Grammar and sentence structure are important.
4. Individual oral presentation:
- a. The presentation submission is due **11.30pm AEST, the Friday of Week 11.** It is composed of two files: a **video file** (presentation recording) that records your presentation in person and a **presentation file** (presentation slides) that you use in the presentation.
 - b. Individuals have to take a video of their presentations. The video can be recorded by a mobile phone or webcam on any computer. Your face should be shown clearly on the video. The video and the presentation slides should be submitted to the designated link on iLearn.
 - c. Individuals who do not submit the presentation will receive **zero mark for the whole assignment, that is 25% of the total unit marks.**
 - d. **No extensions will be granted.** There will be a deduction of 10% of the total available marks made from the total awarded mark for each 24 hour period or part thereof that the submission is late (for example, 25 hours late in submission - 20% penalty). This penalty does not apply for cases in which an application for special consideration is made and approved. No submission will be accepted after solutions have been posted.