

Module Title: Advanced Financial and Investment Management

Module Code: NBS-7049X

Reassessment Question

Title:

Investment Analysis of the FTSE 100 Listed Firms.

Objective:

To understand the key concepts, approaches, evidence and models of modern financial theory and practice.

Sample Data:

You will draw the necessary data for this coursework from databases such as Yahoo Finance, FAME, and Thomson Reuters Datastream.

For the five companies **British Land Company Plc (BLND.L)**, **The Berkeley Group Holdings plc (BKG.L)**, **ITV plc (ITV.L)**, **National Grid plc (NG.L)**, and **Pearson plc (PSON.L)** from the FTSE 100 index components, and download adjusted monthly closing stock prices for each one of the five firms over the recent period of **five years**. That is, your 61 monthly price observations should be **from December 2014 to December 2019** so that you can then obtain 60 discrete monthly return observations in total for each stock **from the end of January 2015 to the end of December 2019**.

Also, download adjusted monthly closing price levels for the **FTSE 100 Index** as a proxy for the UK market portfolio over the same 5-year period¹.

In order to determine the **risk-free rate of return**, assume a constant 3-month UK Treasury Bills monthly rate of 0.03% for the whole sample period.

¹ You can find its historical prices via Yahoo:
<https://finance.yahoo.com/quote/%5EFTSE%3FP/history?p=%5EFTSE%3FP>

Investment Analysis Description:

A young risk-averse investor in Norfolk is considering the strategic decision of investing in a portfolio of five FTSE 100 firms. She has not invested in any common stocks before and this investment of £50,000 would be her entire risky investment.

Considering the above investor's background, you are employed by a leading financial institution and have been asked to advise this client. You will prepare **an investment report** in Microsoft Word for her and record your data analysis work in **an Excel file**.

- The report, includes all of the following **five sections**, should not exceed **4,000 words** in total apart from contents list, abstract, references and appendices. Each section's word limit is provided separately.
- Each section provides requirement on the tables and figures you should **at least** include in the **main body** of the report, not in some appendix. Feel free to provide any additional table and figure that would be useful for your investment report.

Section 1. Collect your sample data to construct the following four 5-stock portfolios with short sales allowed:

- 1) equal-weighted portfolio (EWP);
- 2) market-value-weighted portfolio (VWP);
- 3) global minimum-variance portfolio (GMVP); and
- 4) optimal risky portfolio (P).

According to the selected five stocks and the given risk-free rate of return, build and draw the three items below in a single graph (type: scatter with smooth lines) of expected returns against standard deviations:

- a) the optimal capital allocation line;
- b) the minimum-variance frontier; and
- c) the efficient frontier.

Further, mark the positions of the five stocks and four portfolios in that graph.

Finally, discuss the features and characteristics of the four portfolios with the table and figure results obtained from the above steps.

Table: Four portfolios' weights, returns, standard deviations, and Sharpe ratios.

Figure: A single graph includes the optimal capital allocation line, the minimum-variance frontier, the efficient frontier, the five stocks and four portfolios.

(30 marks)

(Word limit: 1,200 words)

Section 2. Determine the proportion of the overall optimal complete portfolio (C) in the UK financial market that should be held in the optimal risky portfolio (P) of the five stocks along with the proportion that should be held in the risk-free asset (F).

- Assume that your client has the same risk aversion index as yours and that you should determine this by using the Charles Schwab Investor Profile Questionnaire². Transform the questionnaire Risk Tolerance Score “X” (0 to 40) into risk aversion index “A” (2 to 4) by using the following transformation: $A = 4 - X/20$. For example, a risk tolerance score of 30 becomes a risk aversion index of 2.5 ($= 4 - 30/20$).

Then draw a graph (type: scatter with smooth lines) to illustrate the relevant indifference curve, capital allocation line, risk-free asset (F), optimal risky portfolio (P), and optimal complete portfolio (C).

Finally, discuss the features and characteristics of the overall optimal complete portfolio (C) with the table and figure results obtained from the above steps.

Table: Portfolio C’s weights, returns, and standard deviations.

Figure: A single graph includes indifference curve, capital allocation line, risk-free asset (F), optimal risky portfolio (P), and optimal complete portfolio (C).

(15 marks)

(Word limit: 600 words)

Section 3. On the basis of the single-factor market model CAPM, estimate the alpha and beta coefficients for each one of the four portfolios that created in Section 1 (EWP, VWP, GMVP and P).

- Feel free to use whatever method you prefer in estimating the market model parameters (e.g., scatterplot trendline, intercept and slope functions, or regression analysis).

Then compute the fair return of each portfolio predicted by the CAPM, draw the security market line (SML) (type: scatter with smooth lines) and show the fair returns and expected returns (from Section 1) of the four portfolios on the graph.

Finally, explain which of the four portfolios is the most attractive investment based on the SML graph.

Table: Alpha and beta estimates, fair returns and expected returns for the four portfolios.

Figure: A single graph includes the security market line (SML), the fair returns and the expected returns of the four portfolios.

(15 marks)

(Word limit: 600 words)

² You can find the questionnaire from <http://www.schwab.com/public/file/P-778947/InvestorProfileQuestionnaire.pdf>

Section 4. Evaluate in absolute and relative terms the investment performance of each one of the four portfolios that created in Section 1 (EWP, VWP, GMVP and P) with the FTSE 100 benchmark over the five-year sample period:

- Calculate and compare the performance of the four portfolios based on the following statistics. Note that all these performance statistics should be annualised as appropriate.

1) Time-weighted return	2) Standard deviation	3) Beta	4) Jensen's alpha
5) Treynor measure	6) Sharpe ratio	7) M2 measure	8) Information ratio

According to the role of the portfolio in your client's overall investment context, which portfolio would be the best for her to invest in? Which portfolio do you consider the worst choice to your client? Justify and explain your recommendations.

Finally, compare the best and worst portfolios to your client graphically by using wealth indices.

Table: Performance statistics for the four portfolios with the FTSE 100 benchmark.

Figure: Wealth indices (i.e. cumulative wealth starting with an investment of £1) for the best and worst portfolios to your client.

(25 marks)

(Word limit: 1,000 words)

Section 5. Acknowledge three limitations of your investment report and explain why your client should be aware of these limitations when considering the investment decision.

You should justify the importance of each limitation by using supporting references such as theories and empirical evidence from academic research literature and news articles.

(15 marks)

(Word limit: 600 words)

Important Coursework Requirements:

Part 1: Coursework Investment Report

- You should submit the investment report electronically by naming your report file with your **student number**.
- Report must be word processed in Microsoft Word (or equivalent software). Font must be **Times New Roman** with a size of 12 points; character scale must be 100% and spacing and position should be normal (the default options); use normal margins (2.5cm on top, bottom, left and right); line spacing must be 1.5 lines with an extra line between paragraphs and headings; alignment must be justified; edit your graphs to distinguish the relevant items.
- **All sections, tables and figures must be clearly titled and sequentially numbered.** All tables and figures should self-explanatory and should include necessary axis definitions and legends. Apply appropriate formatting for the tables and figures. Numbers in the text, tables and figures should have a reasonable number of decimal points in order to allow an accurate representation and comparisons (usually between 2 and 4 decimal points). For more details on successful presentation see: <https://portal.uea.ac.uk/student-support-service/learning-enhancement/study-resources/academic-writing-study-skills/writing>
- Provide a **contents list** and an **abstract** in the beginning of the report (we do not require you to write an executive summary). Add **page numbers** on all pages. Include a **reference list**.
- In each section of the report, you should also include **important details** about the relevant data and calculations. Try to be brief and clear in your explanations. **Do not include Excel functions in your report.**
- In line with normal practice in investment banking and consulting industries, you can assume that the report you will prepare may be used for both background reading and presentation purposes. You may include an appendix if you like but this is optional.
- Include **at least 6 references** to articles in credible academic journals or professional magazines/newspapers. Do not include articles that you do not cite within your report or that you have not at least partly read. Do not use material that exists exclusively on the internet (e.g., websites, blogs, etc) or module lecture notes/slides as sources in your references.

Part 2: Coursework Excel File

- You should submit the relevant Excel file electronically by naming the Excel file with your **student number**.
- The calculations and data analysis should be performed using Microsoft Excel in a **single workbook** with multiple worksheets.
- The Excel file should contain the data used along with the relevant analysis, results, and section titles.
- **Failure to submit this file will cost your marks and may mean that you fail the coursework.**

Word Length: 4,000 words

Submission Details

The deadline for submission for all reassessment coursework is **15:00 on 4th January 2021**.

The assignment will be submitted **electronically via Blackboard**; **there will not be an option to submit a hard copy**. Even late assignments, or those that have extensions, should be submitted electronically rather than in paper format. Work uploaded after 15:00 on the specified deadline day will incur a late penalty unless there is an approved extension. Students are advised not to leave it to the last few minutes before 15:00 to upload work, just in case they encounter any upload problems.

1. Students should add in the Word Count for their piece of work, including the footnotes and endnotes, references (in the main text), tables and illustrations and if applicable the abstract, title page and contents page. Any appendicised material and the bibliography or reference list should not be included in the word count.
2. Students should also apply their Specific Learning Difficulty (SpLD) e-sticker, if appropriate

Where your module is being marked via Blackboard, please go to the module Blackboard site and submit your work via **Reassessment 19-20**, in the left hand column. General instructions regarding Blackboard submissions can be found [here](#)

University Policy on Plagiarism and Collusion

It is important that all students familiarise themselves with the rules and regulations regarding plagiarism and collusion. Understanding these rules will help you to avoid plagiarism and to maintain the quality of your academic work.

The current rules and regulations can be found [here](#)

Information and support on how to avoid plagiarism can be found [here](#)

You may be requested to provide a digital copy of your coursework (after an initial examination of the hard copy by the coursework assessors) for use with plagiarism detection software. Instances where plagiarism is suspected will be investigated. **Students who are found to have plagiarised will be penalised.**

In proven cases offenders will be punished and the punishment may extend to degree failure, temporary suspension or expulsion from further study if the case comes before a Discipline Committee of the University.

Coursework Deadlines

All reassessment coursework must be submitted by 15:00 on 4th January 2021. Failure to submit on time without an approved extension will result in a penalty for late submission.

Please note that the deadline represents the last time that a piece of work can be submitted, and not a target. You are advised to plan ahead, and submit work well in advance of the deadline. This will help to ensure that any last minute delays do not result in late submission.

Extensions to Coursework Deadlines

In exceptional circumstances, you may be entitled to request an extension to a deadline for the submission of work required for assessment. Requests for coursework extensions should be applied for online via eVision together with appropriate supporting evidence.

Extension requests **can** be submitted on the following grounds:

- Medical (subject to a doctor’s note)
- Serious personal issues (subject to supporting evidence)

Extension requests **cannot** be considered for the following:

- Poor time management
- Transport or parking delays
- IT problems (unless evidence can be provided from an IT technician)
- Medical or personal circumstances that are not accompanied by supporting evidence

You should plan your work so that minor delays do not prevent submission on time. In all cases, you should ensure that you make regular backup copies of all coursework in progress.

Where extenuating circumstances prevented you from applying for an extension in advance of the deadline, work submitted after the deadline should be accompanied by an online extension application. Allowance will be given for acceptable extenuating circumstances and in such cases penalties for late submission will not be applied.

Extension requests will be considered by the Coordinator in those instances where acceptable extenuating circumstances exist and the request is submitted before the deadline. The designated member of academic staff in the School will consider all other requests.

Penalties for Late Submission

If you submit coursework after the published deadline, without an approved extension, the following penalties will apply:

Work submitted	Marks deducted
After 15:00 on the due date and before 15:00 on the day following the due date. (Up to 24 hours)	10 marks
After 15:00 on the second day after the due date and before 15:00 on the third day after the due date. (Up to 72 hrs)	20 marks
After 15:00 on the third day after the due date and before 15:00 on the 20 th day after the due date. (Over 72 hrs)	All the marks the work merits if submitted on time (i.e. no marks awarded.)
After 20 working days	Work will not be marked and a mark of zero will be entered.

Late submission of **pass/fail** marked work for assessment in the absence of acceptable extenuating circumstances will be awarded a **fail** mark.

Saturdays & Sundays will **not** be taken into account for the purposes of calculating marks deducted.