

DEGREE: MSC in Finance and Investment

Module: Quantitative Finance and Financial Markets

Assignment Title:

Assignment Type: Essay

Word Limit: 3500-4000 words (+/- 300)

Weighting: 100%

Issue Date: 28/8/2025

Submission Date: 1/10/2025

Feedback Date: 22/10/2025

Plagiarism:

When submitting work for assessment, students should be aware of the InterActive/Canvas guidance and regulations in concerning plagiarism. All submissions should be your own, original work.

You must submit an electronic copy of your work. Your submission will be electronically checked.

Learner declaration

I certify that the work submitted for this assignment is my own and research sources are fully acknowledged.

Student signature:

Date:

Harvard Referencing:

The Harvard Referencing System must be used. The Wikipedia, UKEssays.com or similar websites must **not** be used or referenced in your work.

LO1	Apply complex quantitative tools in financial markets.
LO2	Critically evaluate the impact of changes to financial models using leading-edge research and advanced scholarship.
LO3	Compute valuation analysis for financial markets instruments and critically interpret the results of the analysis for end users.
LO4	Critically evaluate the input's variables and their outputs in the use of quantitative tools in financial markets.

Introduction

Quantitative tools are vital for understanding, modeling, and navigating today's complex financial markets. In this assignment, you will take on the role of a financial professional tasked with applying advanced quantitative techniques to real-world scenarios. Using a selection of listed companies of your choice, you will complete a series of tasks designed to strengthen your ability to apply quantitative methods, interpret analytical results, and critically evaluate the assumptions and variables that influence financial decision-making.

Tasks (*each task is equally weighted*):

1. You are a financial analyst at a regulatory agency tasked with evaluating the financial health of a listed commercial bank. Using the CAMELS framework, conduct a comprehensive financial statement analysis. Apply relevant financial ratios to assess the bank's performance over the past three years and compare your findings with industry benchmarks to evaluate relative performance. Your analysis should highlight trends, identify potential risks, and provide insights into the bank's overall stability and regulatory standing. LO4
2. You are a valuation analyst at an investment firm. Select two listed companies with different growth characteristics. One mature and one in a high-growth phase. Apply the one-stage Free Cash Flow (FCF) valuation model to the mature company and the two-stage FCF model to the high-growth company. The justification for selecting each model must be clearly stated and based on reasonable, observable financial and strategic characteristics of the companies. Critically evaluate how the differences in model structure and assumptions affect the valuation outcomes. Based on your analysis, classify each company as either overvalued, undervalued, or fairly valued relative to its current market price, and clearly state your conclusions and investment implications. LO2, LO3
3. You are an analyst at an investment firm and have been asked to evaluate the share price of a mutual fund based on its Net Asset Value (NAV). Create a hypothetical portfolio for the fund, determine the share price using NAV, and make assumptions about how changes in asset prices would affect the NAV and share price over time. Your analysis should show how NAV reflects the value of the fund's holdings and why this matters to investors. In addition, briefly explain the main differences between mutual funds and hedge funds in terms of investment strategy, risk level, investor access, and regulatory oversight. LO3
4. You are a portfolio analyst at an investment advisory firm, and your client is considering investing in a diversified portfolio of financial assets. Select four instruments from a mix of asset classes such as equities, bonds, ETFs, or REITs, issued by listed companies or institutions. Calculate the expected return and risk for each asset using appropriate quantitative methods, then construct a portfolio and compute its overall return and risk, accounting for asset weights and correlations. Compare individual and portfolio-level results and provide a clear recommendation on the most attractive risk-return combination, supported by a critical interpretation of your findings. LO1, LO3, LO4

Submission Note:

- Embed all relevant calculations, tables, and charts from your Excel work directly into your Word document as evidence supporting your analysis.
- Clearly reference and explain your Excel-based work within each task's answer.
- Structure your Word document by answering each task separately, clearly labeling each section (e.g., Task 1, Task 2, etc.).

READING LISTS¹

Essential

DeFusco, R.A., McLeavey, D.W., Pinto, J.E., Runkle, D.E. and Anson, M.J.P. 2015 *Quantitative Investment Analysis* 3rd Edition. Wiley & Sons Inc. ISBN-13: 978-1119104223 ISBN-10: 111910422X

DeFusco, R.A., McLeavey, D.W., Pinto, J.E., Runkle, D.E. and Anson, M.J.P. 2015 *Quantitative Investment Analysis Workbook* 3rd Edition Wiley & Sons Inc. ISBN-13: 978-1119104544 ISBN-10: 1119104548

Recommended

Waters D. 2011. *Quantitative Methods for Business* 5th Edition. Pearson Ed. ISBN-13: 978-0273739470 ISBN-10: 0273739476

¹ Reading Lists should be in accordance with the Reading Lists policy as issued by Academic Services. This policy also forms part of Annex 5 of the Quality Assurance Handbook.

GRADING DESCRIPTORS: LEVEL 7

EXPERIMENTATION & INNOVATION								
	FAIL			PASS				
Threshold Criteria	0-29%	30-39%	40-49%	50-59%	60-69%	70-79%	80-89%	90-100%
Deals with complex issues both systematically and creatively demonstrating self-direction and originality in tackling and solving problems	Little to no ability to use techniques to deal with complex issues systematically (including those of ethics and sustainability) and creatively to solve problems and/or make decisions.	Low utilisation of established techniques to deal with complex issues systematically (including those of ethics and sustainability) and creatively to solve problems and/or make decisions, but with limitations in techniques or approach.	Limited research or advanced scholarship to their area of study by using a range of information and established and advanced techniques	Competent understanding of solving problems, through own research or advanced scholarship displaying a comprehensive understanding of established and advanced techniques	Good understanding of solving problems through own research and advanced scholarship critically selecting and displaying a comprehensive understanding of established and advanced techniques.	Very Good problem-solving skills displaying a comprehensive understanding of techniques applicable to their own research or advanced scholarship	Excellent range of extremely well-developed problem-solving displaying an understanding of techniques applicable to their own research or advanced scholarship beyond which is taught.	Exceptional problem-solving skills with sophisticated evaluation and application of a wide range of advanced information and techniques to undertake projects.
Comprehensive understanding of techniques applicable to their own research or advanced scholarship	Little to no understanding of techniques applicable to their own research or advanced scholarship or their limitations and ambiguities.	Low understanding of techniques applicable to their own research or advanced scholarship including their limitations and ambiguities.	Limited understanding of key techniques applicable to their own research or advanced scholarship including their limitations and ambiguities.	Competent understanding of techniques applicable to their own research or advanced scholarship including their limitations and ambiguities	Good understanding of techniques applicable to their own research or advanced scholarship and a some understanding of more specialised techniques.	Very good understanding of techniques applicable to their own research or advanced scholarship and a some understanding of more specialised techniques.	Excellent understanding of techniques applicable to their own research or advanced scholarship and mastery of some more specialised areas.	Exceptional understanding of techniques applicable to their own research or advanced scholarship and mastery of some more specialised areas.

GRADING DESCRIPTORS: LEVEL 7

RESEARCH & ANALYSIS								
	FAIL			PASS				
Threshold Criteria	0-29%	30-39%	40-49%	50-59%	60-69%	70-79%	80-89%	90-100%
Systematic understanding of knowledge, and a critical awareness of current problems and/or new insights, much of which is at, or informed by, the forefront of their academic discipline, field of study or area of professional practice	Little to no knowledge of the subject with limited breadth or depth or deficiencies in major areas or currency.	Low knowledge of the subject lacking coherence, breadth, or detail with only some reference to ideas or arguments at the forefront of any part of the subject.	Limited knowledge to deal with terminology, facts and concepts some of which is informed by the forefront of defined areas of the subject.	Competent knowledge of ideas or arguments at the forefront of any part of the subject sufficient to deal with current issues in the discipline, generally more descriptive than critical or analytical.	Good knowledge of ideas or arguments at the forefront of any part of the subject showing a clear, critical insight into the discipline as whole and current issues/problems.	Very good knowledge of ideas or arguments at the forefront of the subject some of which are significantly beyond what has been taught and show a critical insight into the discipline and current issues/problems.	Excellent knowledge of ideas or arguments at the forefront of the subject many of which are significantly beyond what has been taught and show a critical insight into the discipline and current issues/problems.	Exceptional knowledge of ideas or arguments at the forefront of the subject most of which are significantly beyond what has been taught and show a critical insight into the discipline and current issues/problems.
Conceptual understanding that enables the student to display originality in the application of knowledge	Little to no conceptual understanding or argument and a focus on descriptive explanations which do not comment on arguments of others or alternative views.	Low conceptual understanding and arguments are weak or poorly constructed, and the work does not critically evaluate the arguments of others or consider alternative views.	Limited conceptual understanding and argument construction with critical evaluation of alternative views or comment on advanced scholarship.	Competent conceptual understanding and argument construction with critical evaluation of a range of views and consistent engagement with advanced scholarship.	Good conceptual understanding which critically evaluate and synthesise other views and information with a thoughtful interpretation of advanced scholarship.	Very good conceptual understanding which systematically synthesises a wide range of views with a critical insight into advanced scholarship.	Excellent conceptual understanding which critically apply a wide range of views through a perceptive use of advanced scholarship.	Exceptional conceptual understanding of publishable quality with systematic engagement and usage of advanced scholarship.

GRADING DESCRIPTORS: LEVEL 7

ENGAGING WITH PRACTICE								
	FAIL			PASS				
Threshold Criteria	0-29%	30-39%	40-49%	50-59%	60-69%	70-79%	80-89%	90-100%
Practical understanding of how established techniques of research and enquiry are used to create and interpret knowledge in the discipline	Little to no evidence of background investigation, analysis, research, enquiry, ethical awareness, and/or study.	Low evidence of background investigation, analysis, research, enquiry, ethical awareness, and/or study.	Limited background investigation, analysis, research, enquiry, ethical awareness, and/or study using established techniques, with the ability to extract relevant points.	Competent investigation, analysis, research, enquiry, ethical awareness, and/or study using established techniques accurately, and can critically appraise and use academic sources.	Good background investigation, analysis, research, enquiry, ethical awareness, and/or study using established techniques accurately, and possesses a well-developed ability to critically appraise a wide range of sources.	Very good, independent, extensive and appropriate investigation, analysis, research, enquiry, ethical awareness, and/or study beyond the usual range, and critically evaluates this to advance the work and/or direct arguments.	Excellent independent, extensive and appropriate investigation, analysis, research, enquiry, ethical awareness, and/or study well beyond the usual range, and critically evaluates this to advance the work and/or direct arguments.	Exceptional investigation, analysis, research, enquiry, ethical awareness, and/or study which demonstrates carefully considered depth and breadth and critically synthesises this to advance the work and/or direct arguments.
Originality in the application of knowledge	Little to no technical, creative or artistic skills related to their area of study.	Low technical, creative or artistic skills related to their area of study.	Limited technical, creative or artistic skills required for area of study.	Competent technical, creative or artistic skills required for area of study.	Good technical, creative or artistic skills required for area of study.	Very good range of technical, creative or artistic skills.	Excellent range of technical, creative or artistic skills	Exceptional range of technical, creative or artistic skills
Independently advance your own knowledge and understanding, and to develop new skills to a high level.	Little to no contribution to group activity and/or undertaking further training at a high/advanced level.	Low contribution to group activity and/or undertaking further training at a high/advanced level.	Limited contribution to group activity and/or undertaking further training at a high/advanced level.	Competent contribution to group activity and/or independently undertakes further training at a high/advanced level.	Good contribution to group activity and/or independently undertakes further training at a high/advanced level with an understanding of team roles	Very good contribution to group activity and/or independently undertakes further training at a high/advanced level with an understanding of team roles	Excellent contribution to group activity and/or independently undertakes further training at a high/advanced level with teamwork and leadership	Exceptional contribution to group activity and/or independently undertakes further training at a high/advanced level with teamwork and strong leadership.

GRADING DESCRIPTORS: LEVEL 7

REALISATION & COMMUNICATION								
	FAIL			PASS				
Threshold Criteria	0-29%	30-39%	40-49%	50-59%	60-69%	70-79%	80-89%	90-100%
Communicate information, ideas, problems and solutions to both specialist and non-specialist audiences.	Little to no clarity in the communication of ideas, problems and solutions to audiences.	Low clarity in the communication of ideas, problems and solutions to audiences.	Limited clarity in the communication of ideas, problems and solutions to audiences.	Competent communication of ideas, problems and solutions to audiences.	Good, confident and clear communication of ideas, problems and solutions to audiences in a range of means / media.	Very good, confident and clear communication of ideas, problems and solutions to audiences in a range of means / media.	Excellent communication of ideas, problems and solutions to audiences in a range of means / media.	Exceptional communication of ideas, problems and solutions to audiences in a range of means / media.

GRADING DESCRIPTORS: LEVEL 7

PERSONAL & PROFESSIONAL CONNECTIVITY								
	FAIL			PASS				
Threshold Criteria	0-29%	30-39%	40-49%	50-59%	60-69%	70-79%	80-89%	90-100%
Independently advance your own knowledge and understanding, and develop new skills to a high level.	Little to no contribution to group activity and/or undertaking further training at a high/advanced level.	Low contribution to group activity and/or undertaking further training at a high/advanced level.	Limited contribution to group activity and/or undertaking further training at a high/advanced level.	Competent contribution to group activity and/or independently undertakes further training at a high/advanced level.	Good contribution to group activity and/or independently undertakes further training at a high/advanced level with an understanding of team roles	Very good contribution to group activity and/or independently undertakes further training at a high/advanced level with an understanding of team roles	Excellent contribution to group activity and/or independently undertakes further training at a high/advanced level with teamwork and leadership	Exceptional contribution to group activity and/or independently undertakes further training at a high/advanced level with teamwork and strong leadership.
Qualities and transferable skills necessary for employment requiring: (a) the exercise of initiative, ethical and personal responsibility (b) decision-making in complex and unpredictable contexts	Little to no ability to manage learning and/or exercise initiative, ethical and personal responsibility and/or decision-making in complex and unpredictable situations	Low ability to manage learning and/or exercise initiative, ethical and personal responsibility and/or decision-making in complex and unpredictable situations	Limited ability to manage learning and exercise initiative, ethical and personal responsibility, and decision-making in complex and unpredictable situations	Competent ability to manage learning, and exercise initiative, ethical and personal responsibility, and decision-making in complex and unpredictable situations	Good ability to systematically manage learning, and exercise initiative, ethical and personal responsibility, and decision-making in complex and unpredictable situations	Very good ability to systematically manage learning, and exercise initiative, ethical and personal responsibility, and decision-making in complex and unpredictable situations.	Excellent ability to manage learning on own initiative, and exercise initiative, ethical and personal responsibility, and decision-making in complex and unpredictable situations	Exceptional ability to manage learning on own initiative, and exercise initiative, ethical and personal responsibility, and decision-making in complex and unpredictable situations
	Little to no use of appropriate terminology, limited vocabulary and many errors in spelling, grammar and syntax.	Low use of appropriate terminology, with many errors in spelling, vocabulary and syntax.	Limited expression, style and appropriate vocabulary with errors in spelling, grammar and syntax which affect understanding.	Competent expression, style, and appropriate vocabulary with some errors in spelling, grammar and syntax which do not affect understanding.	Good expression, style and appropriate vocabulary with some errors in spelling, grammar and syntax.	Very good expression, style and appropriate vocabulary with minimal errors in spelling, grammar and syntax.	Excellent expression, style and appropriate vocabulary with minimal errors in spelling, grammar and syntax.	Exceptional expression, style and appropriate vocabulary with no errors in spelling, grammar and syntax.
	Little to no evidence of basic numeracy or digital literacy, hardware and software skills	Low evidence of basic numeracy or digital literacy, hardware and software skills competency.	Limited evidence of numeracy or digital literacy, hardware and software skills competency.	Adequate evidence of numeracy or digital literacy, hardware and software skills competency.	Good evidence of numeracy or digital literacy, hardware and software skills competency.	Very good evidence of numeracy or digital literacy, hardware and software skills	Excellent evidence of numeracy or digital literacy, hardware and software skills competency.	Exceptional evidence of numeracy or digital literacy, hardware and software skills competency.

	competency.					competency.		
	Does not demonstrate achievement of professional competence when assessed against the requirements of a professional, statutory or regulatory body (PSRB).			The student has demonstrated achievement of professional competence when assessed against the requirements of a PSRB.				
	Inaccurate use of terminology with limited vocabulary and many errors in spelling, grammar and syntax. Inaccurate terminology, with many errors in spelling, vocabulary and syntax.			The student has adhered to the appropriate rules and/or conventions set by regulators or the industry.				