Course Syllabus

現代投資組合理論與策略

(MODERN PORTFOLIO THEORY AND INVESTMENT STRATEGY)

授課教師　鄭義

In a fast changing financial world, a thorough understanding of investment analysis and portfolio theory is essential for investment managers as well as corporate executives to develop robust business strategies. The emphasis of this course is on the introduction and implementation of modern portfolio theory and investment analysis.

Objectives

We will spend some time working on various computer projects to make participants become familiar with the theory and applications. Students will be working in groups on topics covered in the text as we move on. Ideally, at the end of the semester, the students will understand the standard procedures commonly used in modern portfolio management. The average students should expect to spend at least 3 hours per week for this course on reading the textbook, doing designated assignments, and preparing for examinations. Regular attendance is highly recommended.

Teaching methods Lectures Discussion

Case Study

Group Project Presentation

Discussions on Market Development & Regulatory Issues

Evaluation (Criteria and ratio)

Homework, Projects and Presentation: 50%

Midterm Exam：25%

Final Report：25%

PS:期末會利用 Google 表單進行同儕互評(搭便車的同學通常很容易被發現)

Reference book/ textbook/ documents Text

1. Elton, E. J., M. J. Gruber, S.J. Brown, W.N. Goetzmann, 2014, Modern Portfolio Theory and Investment Analysis, 9th edition, John Wiley & Sons, Inc.
2. Grinold R . C., R. N. Kahn, 2004. Active Portfolio Management, Probus.
3. Reilly, F. K., K.C. Brown, 2008. Investment Analysis and Portfolio Management, 8th edition, Thomson South-Western.

Weekly scheduled Progress

週次	授課內容	作業/報告/備註
1 **9/7**	Introduction to Portfolio Theory	發下課程講義
2 **9/14**	Portfolio Basics / Naïve Diversification	發下哈佛個案、HW1 論文、新知報告選擇
3 **9/21**	Efficient Frontier	課堂討論哈佛個案 1、A
4 **9/28**	Efficient Frontier / CAPM / APT	HW1、新知、 課堂討論哈佛個案 B
5 **10/5**	**日盛投信講座** **時間：10:10～12:00**	哈佛個案報告(MAM)
6 **10/12**	Risk Models / Optimization Method	HW2、新知
7 **10/19**	Alpha Factor	哈佛個案報告(Reflow)、新知、選 Final Report 2
8 **10/26**	**期中考(考兩小時)**	新知
9 **11/2**	指數型產品的緣起、指數編製原理及應用、投資組合建構方法、資產配置效果、指數基金及 ETF 運作原理、台灣市場基金管理策略實務、基金管理實務、績效分析、多因子風險模型概述	新知
10 **11/9**		新知
11 **11/16**		HW3、新知
12 **11/23**		
13 **11/30**		HW4(追蹤台灣加權指數)
14 **12/7**	碩二企業參訪	
15 **12/14**		HW5(台灣 50 增值)
16 **12/21**	期末論文閱讀報告(Top 期刊)	Final Report 1
17 **12/28**		Final Report 2(台灣加權追蹤增值合併報告)

18 **1/4**	彈性教學	

NOTE:作業繳交期限是在當週星期二中午 12:00 以前上傳 Google classroom

助教 **E-mail:** wewewe112515@gmail.com

業師介紹**: (**本學期業師資訊之後會公佈在 **classroom)**

Homework

Group Project/分組-4 人

HW0 新知報告**(4** 人 **1** 組**/10** 分鐘報告**/10-12 ppt)** 聚焦在被動投資相關議題

內容： 希望大家可以在新知報告內做出更有「探討」的分享，而不是停留在「資料收集」的部分 (如果你的報告內容已經是大家耳熟能詳的東西)

HW1： (Deadline: W4) Part

1 Reading

(分組閱讀並準備好 PPT，於 2023/9/28 隨機抽點個人上台報告，請自行準備好 PPT)

Ibbotson and Kaplan (2000)

Does asset allocation policy explain 40 90 or 100 percent of performance

Part 2 說明資產數如何分散風險**(**分組**)**

藉由過去一年(2022/09/15-2023/09/15)台灣 100 檔股票報酬和美國 100 檔股票報酬畫出 上課 PPT 第 12 頁的圖片

(a) 比較說明兩者(台、美各 100 檔)分別和全部 200 檔三者

(b) 請說明 100 檔股票如何篩選?篩選方式不同分散風險的結果是否有不同 (c) 請說明隨著股票廠商家數增加風險風散的情況，需要多少不同的股票才能獲得風險分散良好的組合。

HW2： (Deadline: W6)

畫出效率前緣

1. 選出 10 檔股票，利用過去 2 年的資料計算前一年與後一年共兩年期間個股的年化 溢酬、年化變異數，需說明無風險利率為何

2. 利用所選的 10 檔股票超額報酬(f)畫出效率前緣，並證明切線法跟火腿法之結果相 同

3. 標示 hc、hq 的位置並且計算 C、Q 兩投組的報酬與風險，證明效率前緣上的任一 點為 C、Q 兩投組的線性組合

HW3：追蹤台灣 **50** 指數 **(Deadline: W11)**

1 Collect price and financial data for stocks in the Taiwan 50 Index for two consecutive fiscal years.

2 Use 30, 40, and 50 stocks to track the performance of the Taiwan 50 Index for the second year.

2.1 Write down mathematical expression of the problem. Specifically, the objective function and the constraints.

2.2 Explain what you do to get better tracking performance.

2.3 Provide annual tracking differences and annual tracking errors of your portfolios, respectively.

(Try to achieve the target that your annual tracking error is limited in 4% in 30 stocks portfolio, 2% in 40 stocks portfolio and 1% in 50 stocks portfolio.)

3 Comment on your findings. Specifically, what are the relevant factors for controlling out-of-sample tracking errors?

HW4：追蹤台灣加權指數 **(Deadline: W13)**

1 Collect price and financial data for stocks in the Taiwan Stock Exchange Composite Index (TAIEX) for two consecutive fiscal years.

2 Use 250, 350, and 400 stocks to track the performance of the Taiwan Stock Exchange Composite Index (TAIEX) for the second year.

2.1 Write down mathematical expression of the problem. Specifically, the objective function and the constraints.

2.2 Explain what you do to get better tracking performance.

2.3 Provide annual tracking differences and annual tracking errors of your portfolios, respectively.

3 Comment on your findings. Specifically, what are the relevant factors for controlling out-of-sample tracking errors?

HW5：增值台灣 **50** 指數 **(Deadline: W15)**

1 Collect price and financial data for stocks in the Taiwan 50 Index for two consecutive fiscal years.

2 Use any technical or fundamental factors to get stable Alpha over the Taiwan 50 Index for the second year. (50 檔)

2.1 Write down mathematical expression of the problem. Specifically, the objective function and the constraints.

2.2 Explain what you do to get better active return while maintaining tracking error within the limit of 4% and maintaining alpha >= 1%.

2.3 Provide the Information Ratio (IR) of your portfolio. 3 Comment on your findings.

3.1 Specifically, what are the relevant factors for delivering Alpha?

3.2 What are the factors for controlling out-of-sample tracking errors?

Final Report 1：頂尖財務學術文章閱讀報告**(Deadline: W16)**

以下文獻僅提供參考，第 **3~4** 週時助教會公告這學期需閱讀的文獻並幫助大家進行分組。

Final Report 2：增值台灣加權指數 **(Deadline: W17)**

1. Collect price and financial data for stocks in the Taiwan Stock Exchange Composite Index (TAIEX) for two consecutive fiscal years.

2. Use any technical or fundamental factors to get stable Alpha over the Taiwan Stock Exchange Composite Index (TAIEX) for the second year by using 250, 300 and 350 stocks.

    2.1 Write down mathematical expression of the problem. Specifically, the objective function and the constraints.

    2.2 Explain what you do to get better active return while maintaining tracking error within the limit of 4% and maintaining alpha >= 1%.

    2.3 Provide the Information Ratio (IR) of your portfolio. 3 Comment on your findings.

        3.1 Specifically, what are the relevant factors for delivering Alpha?

        3.2 What are the factors for controlling out-of-sample tracking errors?

Reference_2018

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2. Ang, A., Hodrick, R. J., Xing, Y., Zhang, X., 2009. High idiosyncratic volatility and low returns: international and further U.S. evidence. Journal of Financial Economics, 91(1), 1- 23.

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Finance,72(4), 1611-1644.

Reference_2019

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Reference_2020

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Reference_2021

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2. Hirshleifer, D., Jiang, D., & Meng, Y. (2020). Mood Beta and Seasonalities in Stock Returns. Journal of Financial Economics

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