

# **Finance 539**

## **Quantitative Portfolio Management**

Owen Graduate School of Management  
Professor Craig M. Lewis  
Fall 1998 – Module I

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### **Overview**

This course is designed to cover the subject of quantitative portfolio management. As the title suggests, we examine a particular aspect of the portfolio management process that focuses on quantitative stock selection. Over the term we will develop analytic tools that can help us make informed investment decisions.

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### **Teams**

By the end of the second class, you will be expected to join a team of from three to five members. Teams will submit all exercises, and your grade will depend in large part on the quality of the work of your team.

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### **Grades**

Grades will be given to each team based on overall performance on the exercises. Each individual on the team will receive the team grade modified to account for individual performance on oral reports.

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### **Course Website**

Some of the course materials are available on the course website at

<http://mba.vanderbilt.edu/faculty/Craig.Lewis/Finance539.htm>

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### **Course Text and Readings**

The following book is the required text for the class.

- Richard C. Grinold and Ronald N. Kahn, *Active Portfolio Management*, Probus Publishing, Chicago, Ill., 1995

The following books provide alternative discussions of the topics covered in Grinold and Kahn.

- Edwin J. Elton and Martin J. Gruber, *Modern Portfolio Theory and Investment Analysis*, Fifth Edition. New York: John Wiley and Sons, Inc. 1995.
- David G. Luenberger, *Investment Science*, Oxford University Press, 1998.

- William F. Sharpe, *Macro Investment Analysis Course Materials*, [http://www-sharpe.stanford.edu/328\\_97.htm](http://www-sharpe.stanford.edu/328_97.htm), 1997
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## Course Material

### Introduction

#### Matrix Algebra

Matrices  
Matrix Operations  
Gauss  
[Lewis lecture notes](#)

#### Optimization

Portfolio Selection Problem  
[Lewis lecture notes](#), Word file for [download](#)

### Asset Pricing Models

#### Portfolio Theory

- [Lewis lecture notes](#), Word file for [download](#)

#### The Capital Asset Pricing Model

- Richard Roll, A Critique of the Asset Pricing Theory's Tests; Part I: On Past and Potential Testability of the Theory, *Journal of Financial Economics*, 4, March 1977, 129-178.
- Chapter 2, Grinold and Kahn, "Consensus Expected Returns: The Capital Asset Pricing Model"

#### The Arbitrage Pricing Theory

- Chapter 7, Grinold and Kahn, "Expected Returns and the Arbitrage Theory"

#### Factor models

- Lewis lecture notes – Risk Control Models - [download](#)
- Chapter 3, Grinold and Kahn, "Risk"
- Chapter 8, Luenberger, "Models and Data"
- W.F. Sharpe, "Factor Models, CAPMs, and the APT," *Journal of Portfolio Management*, Fall 1984, pp. 21-25.
- Eugene Fama and Ken French, "The Cross-Section of Expected Returns," *Journal of Finance*, 47, June 1992, 427-466.
- Eugene Fama and Ken French, "Common Risk Factors on the Returns on Stocks and Bonds," *Journal of Financial Economics*, 33, February 1993, 3-56.

- Wayne Ferson and Cambell Harvey, “The Risk and Predictability of International Equity Returns,” *The Review of Financial Studies*, 6, 1993, 527-566.
- Lewis lecture notes, Word file for [download](#)

[Homework #1](#) – Portfolio Theory and the DOW 30,

- Solution to HW #1 – [offset.m](#)

[Homework #2](#) – Factor Models – Fama-MacBeth Approach

- Solution to HW #2 – not yet

[Homework #3](#) – Factor Models – Fama-French Approach

- Solution to HW #3 – not yet

### **Active Portfolio Management**

Measuring Exceptional Stock Price Performance

- Chapter 4, Grinold and Kahn, “Exceptional Return, Benchmarks, and Value Added”
- Brad Barber and John Lyon, “Detecting Long-Run Abnormal Stock Returns: The Empirical Power and Specification of Test Statistics,” *Journal of Financial Economics*, 43, March 1997, 341-372.
- John Lyon, Brad Barber, and Chih-Ling Tsai, Improved Methods for Tests of Long-Run Abnormal Stock Returns, July 1997, unpublished working paper.

Residual Risk and Return: The Information Ratio

- Chapter 5, Grinold and Kahn, “Residual Risk and Return: The Information Ratio”

The Fundamental Law of Active Management

- Chapter 6, Grinold and Kahn, “The Fundamental Law of Active Management”

### **Valuation**

Readings

- Chapter 8, Grinold and Kahn, “Valuation in Theory”
- Chapter 9, Grinold and Kahn, “Valuation in Practice”
- J. Abarbanell and B. Bushee, “Fundamental Analysis, Future Earnings, and Stock Prices,” *Journal of Accounting Research*, Spring 1977, 1-24.
- S. Stickell, “Reputation and Performance Among Security Analysts,” *Journal of Finance*, December 1992, 1811-1836.

### **Portfolio Implementation**

Information Analysis

- Chapter 11, Grinold and Kahn, “Information Analysis”

- Keith Ambachster and James Farrell, Jr., “Can Active Management Add Value?” *Financial Analysts Journal*, November/December 1979, 39-47.
- Ronald Kahn, “What Practitioners Need to Know About Backtesting,” *Financial Analysts Journal*, July/August 1990, 17-20.

#### Portfolio Construction

- Chapter 12, Grinold and Kahn, “Portfolio Construction”
- Vijay Chopra and William Ziemba, “The Effects of Errors in Means, Variances, and Covariances on Optimal Portfolio Choice,” *Journal of Portfolio Management*, 18, Winter 1993, 6-11.
- Phillippe Jorion, “Portfolio Optimization in Practice,” *Financial Analysts Journal*, January/February 1992, 68-74.

#### Transaction Costs, Turnover, and Trading

- Chapter 13, Grinold and Kahn, “Transaction Costs, Turnover, and Trading”

#### Performance Analysis

- Chapter 14, Grinold and Kahn, “Performance Analysis”
- W. Goetzmann and R. Ibbotson, “Do Winners Repeat?” *Journal of Portfolio Management*, Winter 1994, 9-18.
- W.F. Sharpe, “[The Sharpe Ratio](#),” *Journal of Portfolio Management*, Fall 1994, 49-58.

#### [Homework #4](#) – Alpha Models

- Solution to HW #4 – not yet

### **Dynamic Portfolio Strategies**

#### Asset Allocation

- Chapter 15, Grinold and Kahn, “Benchmark Timing”
- W.F. Sharpe, “[Asset Allocation: Management Style and Performance Measurement](#),” *Journal of Portfolio Management*, Winter 1992, 7-19.
- Joe Brocato and P.R. Chandy, “Does Market Timing Really Work in the Real World?” *Journal of Portfolio Management*, Winter 1994, 39-44.
- Robert Cumby and David Modest, “Testing for Market Timing Ability,” *Journal of Financial Economics*, 19, 1987, 169-189.

### **Style Analysis**

#### Readings

- Stephen Brown and William Goetzmann, “Mutual Fund Styles,” *Journal of Financial Economics*, March 1997, 373-400.

- John Christopherson and C. Nola Williams, “Equity Style: What It Is and Why It Matters,” *The Handbook of Equity Style Management*, Edited by T.D. Coggin and F.J. Fabozzi, published by Frank J. Fabozzi and Associates, 1995 pp. 1-22.
- [W.F. Sharpe](#) interview on Style Analysis