

## RUTGERS BUSINESS SCHOOL

Portfolio Theory 22.390.608 (section 40), Spring 2007

Syllabus

Instructor: Prof. Shashi Murthy

Class meetings: M 6:00-9:00, Englehard 215

Office Hours: M, T 5-5:40; 300-G, Ackerson Hall

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### Course description:

This course is intended to provide an understanding of the theory and practice of portfolio construction with an emphasis on risk control. Approaches to quantitative active and passive investing are presented. Models of risk measurement (factor models), consensus expected returns (e.g. the CAPM), and performance evaluation are discussed. The classroom treatment will draw upon the practice of money management. The course is very quantitative and will use a lot of algebra, statistics, and some calculus.

Required Text: The required textbook for this course is "Investments", by Bodie, Kane & Marcus, 7th Edition, ISBN: 007331465X, Copyright 2008, McGraw-Hill. I will assume that all students have access to MarketInsight (a database from Standard & Poors) that comes bundled with this text/ISBN.

On prerequisites: You must have had Financial Management 22.390.587 or Analysis of Investments & Corporate Finance 22:390:522, and Investment Analysis & Management 22:390:603. I will presume familiarity with the fundamentals of portfolio risk and return, the Markowitz model (diversification), the CAPM, market efficiency, the valuation/pricing of stocks and bonds, and futures and options. Familiarity with basic statistics (regression analysis) and calculus is presumed. Any students who are registered for this course and who have not had the above prerequisites are required to contact me.

Use of Blackboard <http://www.blackboard.rutgers.edu/>. Please check the site before class each week, and as and when you receive email from me to do so. Also, please ensure that your personal data (email ID, etc.) on Blackboard is correct.

Grading policy: Your grade on the course will be determined by (1) homework assignments counting for 30%, (2) a midterm counting for 30%, and (3) a final exam counting for 40% of the grade.

Homework assignments can be worked on in groups of up to 4 students each. Completed assignments must be submitted in class on the due date stated on the assignment, at the beginning of the class meeting. Note that you cannot submit assignments using Blackboard. If, and only if, you cannot make it to class on time may you send me your assignment via email *prior* to the start of class as a record of on-time submission. Submit the corresponding hard copy at the earliest possible time thereafter; I will grade only the hard copy. *No late assignments will be accepted under any circumstances.* If you miss any assignments, the weights attached to the exams will increase proportionately.

**The midterm will, tentatively, be held on March 5<sup>th</sup>; the date will be confirmed on February 19<sup>th</sup>. The final exam will be on April 30<sup>th</sup>. No makeup will be offered to anyone missing the midterm; instead, the weight attached to the final exam will increase proportionately.** As per school policy, a makeup for missing the final exam will be permitted only with doctor's certification of incapacitating illness or document of comparable weight.

List of topics and reading:

1. The money management industry (Chapters 4, 26)

Introduction to course

Investment Policy, & Mutual Funds: Chapters 26 and 4

2. Review of the Markowitz model, the CAPM, & Efficient Markets (Chapters 5, 6, 7, 9, 11)

Review of return & risk measures, capital allocation, portfolio statistics: read 5.4-5.5, 5.8, all of 6, appendix B of 7.

Review the Markowitz model: read all of 7, including Appendix A; except omit 7.5

Review the CAPM, Efficient Markets & Passive Investing: read 9.1 and 11.2

3. Measuring risk (Chapters 8, 9 + notes)

Single-index model, single-variable regression: read 8.1 – 8.3, 8.5

The CAPM & the S.I.M: read 9.2

4. Active Investing (Chapters 8, 11, 24, 27)

The Treynor-Black model: read section 8.4

Portfolio performance evaluation: read all of 24, and 11.5

The theory of active portfolio management: read all of 27

5. Multifactor models (chapter 10 + notes)

Generalized Mean-variance Efficiency: notes to be handed out

Factor models: read 10.1, 10.5

Multiple regression: notes to be handed out

The APT: read 10.2-10.4, 10.6

6. Using factor models in active management (notes)

Using factor models in risk estimation estimating expected returns: notes to be handed out

7. Time permitting - Other risk measures & portfolio selection criteria (Chapter 5 + notes)

Other risk measures, other portfolio selection criteria, + related issues

Semi-variance, skewness, value at risk, risk in the long-run

Maximizing geometric mean, stochastic dominance, safety-first

8. Asset pricing theory & evidence (chapters 11, 13)

Other pricing models and empirical evidence

9. Using futures and swaps (chapter 22, 23 + notes)

Review pricing/spot-futures parity: read all of 22

Synthetic strategies & hedging: read 23.2 & 23.4

10. Time permitting - Fixed income portfolios (chapters 14, 15, 16, 23 + notes)

Review bond pricing: read all of 14

Duration & convexity in passive portfolios: read all of 16

Forward rates, interest rate futures & swaps: read all of 15, 23.3, 23.5