



B.E. International Program

Faculty of Economics, Thammasat University



Midterm Examination: 1/2018

Subject: FN 312 Investments

Date: Wednesday 3 October 2018 Time: 12.00 – 14.00 hrs.

Seat No.....

ID.No.....

Instructions

1. This exam consists of 3 questions, 9 pages, including the cover page.
2. There is a total 95 points, which accounts for 25% of the course grade.
3. All questions are to be answered within the space provided. However, if you need additional space, you may continue your answer on the three blank sheets that are provided at the end of the exam.
4. For each question, students must explain their working for full credit. All graphs are also to be full labeled.
5. Simple and scientific calculators are allowed.
6. Write your seat number on every page

Students:

Please make sure that you do not bring any unpermitted items into the examination room. If you are caught doing so, you will automatically receive an “F” for that course and will be suspended for one academic year.

Question 1 (20 points)

(a) (5 points) What is the difference between passive and active investment? If markets are efficient, which approach is preferred? Explain.

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(b) (5 points) What are two main drawbacks in using the Dow Jones index as a gauge of the state of the US economy? Explain.

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c) (5 points) Draw the empirical distribution of stock returns in comparison to a normal distribution and describe its properties. If you only care about downside risk, should you use the standard deviation as a measure of risk? If not, describe an alternative measure of risk.

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(d) (5 points) Historically, there has been a positive relationship between the volatility and average returns for large portfolios, but not for individual stocks. Explain why such is the case.

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Question 2 (40 points)

Your employer offers two funds for your pension plan, a money market fund and an S&P 500 index fund. The money market fund holds 3-month Treasury bills, which currently offer a 3% safe return per year. The S&P 500 index fund offers an expected return of 10% per year with a standard deviation of 20%.

(a) (5 points) Consider portfolio A, which according to your level of risk aversion, requires an expected return of 8% per year. What should be the composition of Treasury bills and the S&P 500 index fund in this portfolio? What is the standard deviation of its returns?

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(b) (5 points) Solve for your level of risk aversion. What does it mean to be risk averse compared to being risk loving?

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(c) (5 points) Solve for the Sharpe ratio of Portfolio A. What does it represent? How is it related to the capital allocation line?

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(d) (7 points) Illustrate Portfolio A on a graph where you also plot the risk-free asset, the S&P 500 index fund, the capital allocation line, and your indifference curve. Are you a relatively risk averse investor? Explain.

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(g) (6 points) Is portfolio B the global minimum variance portfolio? If not, solve for the global minimum variance portfolio.

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Question 3 (35 points)

In 1997, the rate of return on short-term government securities (perceived to be risk-free) was about 5%. Suppose the expected rate of return required by the market for a portfolio with a beta measure of 1 is 12%. According to the capital asset pricing model (CAPM):

(a) (6 points) What is the expected rate of return on the tangency portfolio? What about the expected rate of return on a stock with $\beta = 0$? If a stock has $\beta = 0$ does this mean that it has no risk?

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(b) (6 points) Suppose you consider buying a share of stock at \$40. The stock is expected to pay \$3 dividends next year and you expect it to sell then for \$41. The stock risk has been evaluated by $\beta = -.5$. Is the stock overpriced or underpriced and would you consider buying or selling the stock?

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(c) (6 points) Write out the equilibrium relation underlying CAPM. Describe in terms of the reward to risk ratio the intuition behind this equilibrium relationship. Why is it considered to be an equilibrium relationship?

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(d) (5 points) According to CAPM, what type of risk is compensated and which type of risk is not? Explain.

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(e) (12 points) Write out the single index model, its underlying assumptions, and expressions for its slope, its variance, and covariance between stocks. How does the use of the single index model simplify portfolio optimization in practice? Explain.

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