B.E. International Program

Faculty of Economics, Thammasat University

Midterm Examination: 2/2020

Subject: **FN 312 Investments**

Date: **Friday 12 March 2021** **Time: 12.00 – 14.00 hrs.**

Instructions

1. This exam consists of 3 questions.
2. There is a total 60 points, which accounts for 15% of the course grade.
3. All questions are to be answered on separate paper, ordered according to this exam.
4. For each question, students must explain their working for full credit. All graphs are also to be full labeled.
5. Calculators are allowed. This is a open book but closed friends examination.

Students:
Academic integrity is taken seriously. Any cheating will result in an automatic "F" for that course and will be suspended for one academic year.

Question 1 (20 points)

Suppose you are constructing a portfolio of two companies. The first has $10000 shares outstanding at a current price of $100 per share, while the second has $60,000 shares outstanding at a current price of $50 per share. You have $10,000 to invest.

a) How many shares of each company would you buy if you want to construct an equally weighted portfolio? How many shares of each company would you buy if you construct a value-weighted portfolio?
b) A year later, company 1's share price has risen to $150 while company 2's share price is unchanged at $50. Neither company has paid a dividend. What are the returns on the equal-weighted portfolio and the value-weighted portfolio you constructed in part a)? Explain the difference.
c) How must you trade a year later to keep the equal-weighted portfolio equal-weighted? How must you trade to keep the value-weighted portfolio value-weighted? Explain. (Note: It is sufficient to explain whether you need to buy or sell the shares of either company. You do not need to calculate the exact amounts.)

Question 2 (30 points)

You manage a risky portfolio with an expected rate of return of 17% and a standard deviation of 27%. The treasury-bill rate is 7%.

a) One of your clients wants an overall expected rate of return of 15% for the complete portfolio, how much should your client invest in the risky portfolio? If your risky portfolio includes the following investments in the given proportions: Stock A (27%), Stock B (33%) and Stock C (40%), what are your client's investment proportions in the three stocks and the T-bill fund?
b) Now suppose that your client prefers to invest a proportion y in your risky portfolio that maximizes expected return on the complete portfolio subject to the constraint that the overall portfolio's standard deviation will not exceed 20%. What is the investment proportion y, and what is the expected return on the overall portfolio?

c) Suppose that your client's degree of risk aversion is A=3.5 and there are no constraints on what expected return or standard deviation the complete portfolio should offer. What proportion y of the total investment should you suggest he invest in your risky portfolio fund? Are you a relatively risk averse investor? Explain.
d) You identify another passive portfolio (that is, one entirely invested in a risky portfolio that mimics the S&P 500 stock index), which yields an expected rate of return of 13% with a standard deviation of 25%. What is the advantage of your fund over the passive fund? Illustrate the passive fund compared to your fund on a graph. What is the slope of the CML?
e) Your client is considering whether to switch from your fund to the passive portfolio. To convince your client that he is better off staying with you, show your client the maximum fee you would charge that would leave him at least as well off investing in your fund as in the passive one.

Question 3 (10 points)

a) In a CAPM equilibrium, can you have a risky asset that has a lower expected return than a risk free-rate? Explain and prove your answer.
b) If a portfolio has beta=1 does this mean that it is perfectly correlated with the market? Explain and prove your answer.