**Portfolio Theory Exam – What to Expect**

EMBA 2024

1. I will ask you to find the monthly closing prices of several stocks and the ETF which tracks the S&P 500 Index (IVV) through the StockHistory function in Excel. You will calculate the continuously compounded returns, the standard deviation of those returns (and annualize them), the correlations of each stock with the S&P 500, and the beta of each stock (using the absolute return of the stock and the absolute return of the S&P 500). You will use the CAPM to determine the expected return for each stock. You will need to use Excel to put together a correlation matrix and from that, a variance/covariance matrix. You will be asked to find the minimum standard deviation for several portfolio expected returns and the weights on each stock that make up these portfolios. You might also be asked to find the MVP and/or the MVE. You will not need to do any graphing. There will be no macros involved.
2. I will give you the expected returns, standard deviations, and correlation of two risky assets. I will also give you the risk-free rate. You will need to find the MVE portfolio. I will then give you any necessary information regarding an individual’s utility function and you will be asked to maximize that person’s utility by investing some money in the risky assets and some money in the risk-free asset. I may ask you some additional questions about these assets and the portfolio(s) they can make.
3. I will ask you to estimate the beta for a stock by regressing the stock’s excess returns on the market’s excess returns (absolute returns minus Rf). I will ask you some questions about the beta estimate that you derived. Again, you will find the closing monthly prices for both the stock and our proxy for the market (IVV) using StockHistory. I will give you the necessary historical risk-free rates of return.
4. I will ask you to calculate the expected return for a stock using the Fama-French Three-Factor Model. Again, you will find the closing monthly prices for the stock with StockHistory. This time, I will ask you to use monthly compounding to find monthly returns. I will provide you with all the Fama/French data you will need. I will ask you some questions about your results.
5. I will give you closing prices for all the stocks in a market. You will need to calculate the value(s) of a market index using various weighting systems. I may ask you some questions about the indexes.
6. There will be approximately 25 multiple choice questions dealing with the required readings, topics that were presented in the videos, and material in your class notes. Some of these questions will be quantitative.

You will be expected to come to the exam with a laptop that has Microsoft 365’s Excel and its add-ins (Solver and Data Analysis) installed on it. You will need to be able to access the internet (Canvas). You may refer to the following during the exam: your textbook, any written notes you took during class, and anything on our class website. Canvas and our class website are the only websites you may visit during your exam. You will answer the multiple choice questions directly on Canvas. For each problem, you will need to upload a document (PDF or Word preferred) with your final answers clearly indicated – preferably in the same format as the problem. You will also submit a single spreadsheet which will have all your Excel work on it. You should use a different worksheet (clearly labled) for each problem. You will have five hours to complete the exam.