

This assignment concerns the analysis of return data to identify the characteristics and performance of three real-world mystery securities! You will analyze these three securities with a CAPM regression as well as a 3-Factor Model regression. After your analysis, try to take an educated guess as to the identity of each of the three mystery securities. You can at least narrow down the list of likely suspects given the attributes of the security.

For each of the three mystery securities, I provide you with their monthly returns over the period from 1995-2014 (note that these are raw returns and thus are NOT in excess of the risk-free rate). I also provide you with the following other return series: Mkt_RF = return of value-weighted U.S. stock market minus 1-month U.S. Treasury Bill rate; SMB = return of small stocks minus the return of big stocks (based on market capitalization); HML = return of high book-to-market stocks (value) minus low book-to-market stocks (growth); RF = 1-month U.S. Treasury Bill rate. All of this data is contained in the spreadsheet ThreeMysterySecurities.xlsx, which you will use for this assignment.

Assignment 3 is also described in Video Lecture 2-7.1 contained in Lesson 2-7. I strongly recommend you watch this video before doing the assignment. Please note that for the assignment to fit into the Coursera standard format, I had to make some very minor adjustments relative to the format contained in the lecture video, such as converting the cells in the tables from Questions 1-3 into individual questions and making sub-questions out of the original questions (e.g., Question 4 has now been split into 4A, 4B, and 4C components). Nothing important has changed!

Questions

Question 1

1A: Calculate the average raw return and the average excess return of Mystery Security #1. (4 points)

1B: Estimate a CAPM regression for Mystery Security #1 and report the CAPM alpha, CAPM beta, and R-squared of the CAPM regression. (6 points)

1C: Estimate a 3-Factor Model regression for Mystery Security #1 and report the 3-Factor alpha, 3-Factor market beta, 3-Factor size beta, 3-Factor value beta, and R-squared for the 3-Factor Model. (10 points)

1D: What is the identity of Mystery Security #1? You can at least describe some of the key characteristics of the Mystery Security #1. (3 points)

Question 2

2A: Calculate the average raw return and the average excess return of Mystery Security #2. (4 points)

2B: Estimate a CAPM regression for Mystery Security #2 and report the CAPM alpha, CAPM beta, and R-squared of the CAPM regression. (6 points)

2C: Estimate a 3-Factor Model regression for Mystery Security #2 and report the 3-Factor alpha, 3-Factor market beta, 3-Factor size beta, 3-Factor value beta, and R-squared for the 3-Factor Model. (10 points)

2D: What is the identity of Mystery Security #2? You can at least describe some of the key characteristics of the Mystery Security #2. (3 points)

Question 3

3A: Calculate the average raw return and the average excess return of Mystery Security #3. (4 points)

3B: Estimate a CAPM regression for Mystery Security #3 and report the CAPM alpha, CAPM beta, and R-squared of the CAPM regression. (6 points)

3C: Estimate a 3-Factor Model regression for Mystery Security #3 and report the 3-Factor alpha, 3-Factor market beta, 3-Factor size beta, 3-Factor value beta, and R-squared for the 3-Factor Model. (10 points)

3D: What is the identity of Mystery Security #3? You can at least describe some of the key characteristics of the Mystery Security #3. (3 points)

Question 4

4A: Does Mystery Security #1 have a lot or a little idiosyncratic risk? Why? (2 points)

4B: Does Mystery Security #2 have a lot or a little idiosyncratic risk? Why? (2 points)

4C: Does Mystery Security #3 have a lot or a little idiosyncratic risk? Why? (2 points)

Question 5

5A: For Mystery Security #1, what portfolio combination of the U.S. Stock Market and Treasury Bills will yield the same CAPM beta? (5 points)

5B: For Mystery Security #2, what portfolio combination of the U.S. Stock Market and Treasury Bills will yield the same CAPM beta? (5 points)

5C: For Mystery Security #3, what portfolio combination of the U.S. Stock Market and Treasury Bills will yield the same CAPM beta? (5 points)