Chapter 3 Notes for Excel

**Excel Assignment: A) Using charts to measure beta, and B) charting attainable portfolios – Please print out your final Excel spreadsheet and bring to the next class.**

Open your Chapter 2 Excel spreadsheet and select cells A1:D27. Copy and paste the contents of these cells to the same cells in the Ch 3 Template.

1. **Using charts to measure beta**
2. Highlight the columns of S&P 500 returns and your first stock returns, including the column headings.
3. From the Insert group choose to insert a Scatter chart With Only Markers. A chart graphing the returns of your stock against the market returns should appear. Place it next to your columns of returns.
4. Right click on any one of the markers in the chart and choose Add Trendline. Then choose Display Equation on chart in the Format Trendline window.
5. An estimate of the stock’s beta is the slope coefficient of the trendline. In the example, betaBA equals 1.4171.
6. Repeat the process to graph your second stock returns against the S&P 500 returns, and find the second beta. There are at least two ways to do this:
   1. You can highlight the S&P 500 returns, press and hold the Control button while you highlight your second stock returns, and repeat the above steps, or
   2. Copy your first chart and paste it below it. When the chart is chosen, the S&P 500 and your first stock returns will be outlined on the spread sheet. Simply drag the outline from the first stock returns over to the second stock returns. (Make sure the first stock returns are not in the outline.)
      1. You may need to delete the new equation and trendline and recreate it if it does not change to fit the new data.
7. Make the two charts visually comparable by adjusting the vertical axis parameters; equate their maximum and minimum values. I did this by right clicking the numbers on the vertical axis and choosing “Format Axis.” For both charts, I set the Maximum to Fixed and changed it to 0.4 (which is 40%), and I set the Minimum to Fixed and changed it to ‒0.4.

**I. a. How do the betas from the charts compare to the betas you calculated using regression from the Chapter 2 assignment? Are they the same?**

**I. b. Does the steepness of each line reflect the respective beta? Do they reflect the general relationship between the two stocks’ returns with the market returns? Describe.**

1. **Charting attainable portfolios**

Find the attainable portfolios containing your two stocks.

Start by bringing information together.

1. In cell N32 type “=G30\*12.” (the cell address of the average monthly return of your first stock). Multiplying by 12 annualizes the monthly average return.
2. Set cell N33 equal to the first stock’s annualized standard deviation by typing “=G29\*12^0.5” (the cell address of your first stock’s standard deviation.) The carat raises the number 12 to the ½ power; i.e., it takes the square root of 12.
3. Highlight and drag and copy cells N29 and N30 over to column O. You should see the average annual returns and standard deviations for both stocks.
4. In cell N34 type “=G47”, the cell containg the correlation of your two stocks.

Create a table of attainable portfolios.

1. Starting with 100 percent in the first cell below W1, the weight of a portfolio invested in stock 1, reduce each subsequent cell by 10 percentage points. (After you enter 100% and 90%, you can drag and copy the rest to the other cells.)
2. In the first cell below W2 type 1 minus the cell adjacent left to it, or, “1-N38”. Format the cell as a percent with no decimal places. You should see 0%. Copy the formula to the other cells in the column. They should increase by 10 consecutive percentage points as you go down column O.
3. Calculate the standard deviation of Portfolio 1.
   1. In P38 use the formula for the standard deviation of the returns of a portfolio with two assets:

There are three terms: two standard deviations times their weights, and a product including the correlation between the two stocks.

* 1. Type the following:

Notice the dollar signs, which are anchors. They will allow you to copy your formula to lower rows without change the row address in your formula.

Be sure the format in P38 is a percentage with two decimal places.

1. Calculate the return of Portfolio 1.
   1. Use this formula:
   2. Type the following in Q38:

This is the weighted average of the two stocks’ average returns. Your answer should equal your first stock’s average return since portfolio 1 is 100 percent invested in your first stock.

The dollar sign in front of row 32 is an anchor, which will allow you later to drag and copy the formula to the other rows.

1. Calculate the returns and standard deviations of the Portfolios 2 through 11.
   1. Select Portfolio 1’s standard deviation and return, cells P38 and Q38. Place the cursor in the lower right corner of highlighted cells, and copy the standard deviation and average return formulas down to row 48. The new formulas will all use cells N29, N30, O29, O30, and G47 because of the anchor; they will, however, use their respective weights.
2. Create a chart below the table showing these eleven attainable portfolios.
   1. Highlight cells P36:Q49. This includes the column headings. In the Insert group on the ribbon above the spreadsheet choose Scatter Chart with Smooth Lines and Markers. Your chart should appear. Rename the title.

**II. a. Can you label where your two stocks are situated on your chart? Label them on the chart.**

**II. b. Does the dotted line connecting the eleven attainable portfolios curve leftward? (Hint: yes it does.) Explain why it does (or doesn’t).**

**II. c. Looking at your table and chart, are there any portfolios that eliminate risk? (Compare to what would be a weighted average of the two stocks’ standard deviations, represented by a straight line connecting your two stocks.)**

**II. d. Locate and label the portfolio that has the least amount of risk.**

**II. e. Assuming you are a risk averse investor, label which of the eleven portfolios would you choose to invest in? (Your answer will likely differ from the choices of other risk-averse investors.)**

**II. f. Are there any of the eleven portfolios that no risk averse investor would choose?**



