

Econ 136

Financial Prices SD Calculation Homework Assignment 1

[Short version of the assignment]

Calculating growth rates and standard deviation for financial data series

Do this.

1. Download and open the Excel workbook labeled *HVSI* and peruse the sheets.
2. Go to finance.yahoo.com and find the historical data for **SPY**, the S&P500 tracking ETF. Retrieve daily data from February 4, 2011 to February 3, 2012.
3. On the bottom of the page you will see a link that says *Download to Spreadsheet*. Use that link to download this data to a blank Excel spreadsheet.
4. You are going to copy only the *Date*, *Volume* and *Adjusted Close* columns to *HVSI*. Delete the middle four columns (*Open to Close*).
5. Your array is upside down. Invert it by sorting the *date* column as *Oldest to Newest*.
6. Copy the *Date*, *Volume* and *Adj Close* column to its appropriate labeled columns in the *HVSI* spreadsheet. You should have 252 observations.
7. In the appropriate labeled columns calculate the natural log of each observation and the continuous daily growth rate, which will yield a sample of 251 (the first row is empty)..
8. Under the *Duration* column calculate the Mean DCGR and Standard Deviation for one year, 60 days, and 30 days. **Please remember that because we are using continuous logs the approach taken here is not biased.** It would be if we were using discrete growth rates. [Note: The formulas are already loaded to calculate the Min and Max DCGR and the normalized calculations of the same].
9. Look at the cell labeled **Most Recent Value**. It should have a value in it equal to the last *adjusted close* for SPY. Using that number as the base, calculate the values plus and minus two standard deviations above and below the base value. You will need to use the Excel **EXP** function to do this.
10. Now pause and take a look at your work. The material in the upper right of the spread is used to calculate the histogram and normality test (not in this spread). Go to the next page and look at the Histogram. It should look pretty good although it will have fat tails and thin flanks. The third chart, left in as a courtesy, shows the same.

This homework is complete. ***Keep the spreadsheet because we will return to it later in the class to make some more sophisticated risk and volatility estimates.***

If you want to make sure that you have done this right, check your results against the video that shows the correct result:

[The desired result from this homework](#)

Here are a couple of possible exam questions:

1. General: Why did we use this method (ln CGR) to get to this?
2. Specific: Go to *finance.yahoo* and look at the [^]VIX index for the last year. What has the VIX been doing for the last 6 months? What do we see on our spreadsheet that confirms that this is happening?