Homework 3
AGEC 643
Due Nov 4, 2016 by Noon

1. Simulate the variable X for 10 periods.

   $X = 100 - 0.5T$

   Where T is 11, 12, 13, 14, …, 20 and std dev of residuals is 15.

   A. Do not correct the model to make CV stationary.

   B. If the historical mean for X is 80, simulate the variable with constant CV.

   C. Make the CV increase by 20% each year in your simulation.

      Only Print the cells you program and one table of summary statistics for the three separate simulations. Make the table look like it is ready to go in a thesis.

      Two sheets is **maximum** for all output.

2. Use the data in 2016HWK3-2.XLSX. Estimate the multiple regression and simulate the dependent variable for 4 periods using the assumed exogenous values for the 4 periods. Simulate the regression model as:

   A. Assume residuals are distributed N(0, standard deviation of residuals).

   B. Assume residuals are distributed as N(0, standard error of prediction).

   C. Assume residuals are distributed N(0, standard deviation of residuals) and the betas are multivariate stochastic.

      Print the regression, all calculation cells, a table of summary statistics of the 12 stochastic forecasts. Print a PDF with the first year's forecast for Parts A, B, and C on the same chart. Two pages is the **maximum** for all output. Do not print so small I cannot read it.

3. Use the data in 2016HWK3-3.XLSX. Estimate the fair premium for the following revenue insurance policies.

   A. Policy A insures revenue at 60% of the historical mean.

   B. Policy B insures revenue at 70% of the historical mean.

   C. Policy C insures revenue at 80% of the historical mean.

      DO NOT simulate only revenue, you MUST simulate yield and price as a multivariate distribution and then calculate stochastic revenue.

      - Print all of your calculation cells and the summary statistics for the revenue, price, yield, and three indemnity variables.
      - Report the probability of each policy paying an indemnity.
      - Print a CDF chart with the three indemnity distributions.
      - How much is each policy's fair premium?
      - Print all your output on two sheets.

4. Use the data in 2016HWK3-4.XLSX. Analyze the 10 portfolios using the historical returns for the 9 investment options. Assume the DM invests $10,000 and has a net worth of $10,000.

    - Print all calculations, the summary statistics table, the SERF ranking chart, a CDF, and a StopLight chart.
    - DO NOT print the input Data or all the steps to estimate parameters for the random variables.
    - Organize your output to two sheets but be sure I can read it.