

Homework 3
AGEC 643
Due Nov 6th by Noon in My Office

Use the HWK3.XLSX file to build and apply a multi year business simulation model. All of the input is provided in the model worksheet and the historical data are in the STOCH Worksheet. Mean forecasted prices are provided. You will need to forecast mean yields for the two crops.

I provided you the blanks for every equation in the farm business model. You will find the amortization table for the loan starting at line 188 and the income tax schedule below the financial statements. These two sections are programmed to link into the input data. You will have to link the results from these sections into the financial tables.

To get help with the model you can see me or you can look at the demos for farm simulation models in C:\Program Files (x86)\Simetar2011\Demos E-G\Farm Simulation Demo. XLSX and you can watch the AGEC 622 lectures on whole farm simulation and the labs.

Use the two-step method to simulate the random variables (prices and yields) assuming the distribution is MVEMP. You will need to estimate the EMP parameters using the best method you can.

1. Run the model with the crop mix for the Base scenario deterministic and print the full model.
2. Run the model stochastic for the seven scenarios and report the following:
 - a. Summary stats for the NPV on the seven scenarios.
 - b. CDF of the seven scenarios in one chart.
 - c. Stochastic dominance ranking of the seven scenarios based on NPV. Use ARACs of zero and 4/beginning net worth.
 - d. CE ranking of the seven scenarios for NPV using the mid-point of the ARACs in part c.
 - e. SERF ranking of the seven scenarios for NPV using the ARACs in part c.
 - f. StopLight Chart ranking the scenarios based on NPV. The targets should be set at the average NPV for the 125th and 375th rows of the sorted NPVs found in the StopLight worksheet.
3. Perform a model validation of the stochastic variables simulated for 2015. Use all of the validation tests in Simetar for MV distributions.
4. In Worksheet "FOUR" there is a random variable to be simulated several different ways.
 - a. Use a trend (linear or non-linear, whatever works best) to forecast the variable for 10 years.
 - b. Simulate the random variable for 10 years as a Normal distribution.
 - c. Simulate the random variable for 10 years as a Normal distribution with the J factor correction to the standard deviation.
 - d. Simulate the random variable for 10 years as a Normal distribution with the J factor correction and Expansion factors that are: 1.0, 1.1, 1.2,
 - e. Simulate the random variable as an EMP as percent deviations from trend for 10 years.
 - f. Simulate the random variable as an EMP as percent deviates from trend for 10 years using the Expansion factors used in part d.
 - g. Please present the results for all this work as follows:
 - i. Print the cells with the formulas you programmed.
 - ii. Print a table with the simulated summary statistics for the 5 simulations. Years are the columns and for the rows I want to see the Means, Std Dev, and CVs for each of the 5 simulations.