AGEC 643
Applied Simulation
Homework 3

Due Nov 19, 2010 by 5:00 pm

1.   Write an Excel program that ranks two risky alternatives for first order stochastic dominance (FSD). The two risky prospects to compare are A and B. Write the program so you can enter any values in A and B in any order and it will work.

   Hand in the spreadsheet so I can check the calculations and see the ranking. Also draw a CDF of A & B on the <u>same</u> page. Use the data for stochastic outcomes of A and B below:

A	B
6	4
2	5
1	8
10	16
12	11

2.   Write an Excel program that ranks two risky prospects for second order stochastic dominance (SSD). The two risky prospects to compare are A and B below. Write the program so you can enter any values in A and B in any order and it will work.

   Hand in the spreadsheet so I can check the calculations and see the ranking. Also draw a CDF of A & B on the <u>same</u> page.

A	B
1	4
13	5
6	8
18	16
5	11

3.   Write an Excel program that ranks two risky prospects using generalized stochastic dominance (SDRF). Assume a negative exponential utility function and ARAC's of 0.001 and 0.002. Print your program so I can check the results along with a CDF on the same sheet. Use the prospects

A	B
1	4
13	5
7	8
18	16
5	11

4.   Run Simetar's stochastic dominance to check your results for problems 1, 2, and 3 and print the FSD, SSD and SDRF outputs on one sheet.

5.   Write your own program in Excel programs to rank two risky alternatives (A and B in Problem 3)

using SERF. Assume the negative exponential utility function and test 10 ARAC's over the range of 0.0 and 0.003. You may use the =CERTEQ( ) function to calculate CE. Print the output table and SERF chart so I can check your program.

6. Run Simetar's SERF to check your results in problem 7 and print the results table with a chart.

7. Use the data in 2010 HWK 3-7.xlsx and estimate the Confidence Intervals for the elasticities in the econometric model for

$$Y = a + b_2 X_1 + b_2 X_2$$

8. Build a simulation model to estimate the quantiles of the distribution of a Dickey-Fuller t-test statistic for a random walk with drift data generating process (DGP). That is, under the null hypothesis of a random walk, assume that y_t evolves according to

$$y_t = \alpha + y_{t-1} + \varepsilon_t$$

where the ε_t are independently identically distributed N(0,1). Use the following testing model:

$$\Delta y_t = a_0 + a_1 y_{t-1} + u_t$$

Do this for two cases: once for $\alpha = 1$ and once for $\alpha = 35$. For both cases, estimate the quantiles for sample sizes 25, 50, and 100. Use 10,000 trials for each simulation. Report the following quantiles: 0.01, 0.025, 0.05, 0.10, 0.90, 0.975, 0.99. What implications for inference do the results suggest?