

SUMMARY

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Solving the Afriat Inequalities with Wavelets and Kernels Professor Donald Brown and Professor Peter Jones

Project Description and Findings:

We predict, with random utility models, the probability of choices between pairwise comparisons of risky and ambiguous options. Between options A and B, the choice probability for A in the pairwise comparison is interpreted as the proportion of individuals in the population, with the same preferences for risk and ambiguity, that choose A or is interpreted as the proportion of times that a single individual chooses A in repeated pairwise comparisons between options A and B.

The conclusion of the paper is still in the process of being written so I'm not sure precisely what conclusions Professor Brown and Professor Santos will come to. That being said, we did collect some very interesting data about the probability that one is ambiguity-averse (seeking) if they are risk-averse (seeking). In addition, we did find a correlation between gender and risk-aversion and ambiguity aversion.

Responsibilities:

I wrote the program that presented the gambles to the subjects. I then set up, ran the experiment, and collected the data.

My next job was to write the programs that would parametrically estimate each subject's utility function and ambiguity model. I wrote four programs that derived each subject's log-likelihood of the training data from their random utility model and maximized the log-likelihood over their risk aversion, ambiguity aversion and prior probability beliefs of the payoffs of ambiguous options.

My final job was to put all the data and findings into a presentable form.

Things Learned:

- how to run an experiment
- how to write a research paper
- how to program thoroughly in Matlab
- how to write optimization code

Opinion of SRO Experience:

I loved doing my SRO. I learned an incredible amount from Professor Brown. I can not thank him enough for everything that he has done for me. I learned so much about my academic likes and dislikes by working for him and being given real responsibility that I now have a better idea of what I'd like to do after graduation. The SRO was a great opportunity for me to gain work experience, use my academic skills, and work side-by-

side with a professor. I wish that I had done it last summer as well. Thank you for this experience!