Project report

Asmita Roy, Indian Statistical Institute, did a summer project (June 2017-July 2017)at the University of Groningen, Netherlands, under Professors Rineke Verbrugge, Harmen De Weerd and Sujata Ghosh.

An experiment was conducted in 3 countries, Netherlands(Groningen), Israel (Tel Aviv) and India(Chennai) to determine whether participants primarily use backward induction or forward induction in extensive form perfect information games. There were 6 games, similar in structure to the centipede games, and designed in such a way that the cardinal effects of the payoff structures were minimised.

50 students from each country played the game; the earnings that the subjects had for participating in the experiment were comparable in the 3 countries. Each participant played 8 repetitions of each of the 6 games with the knowledge that the computer is optimising against some belief about their future strategy, and there is no learning for the computer.

The data collected involved the decisions made by the subjects at the nodes of the games where they played, the time taken by them to make those decisions and a brief explanation of why they thought it was prudent to make the choices they made at those nodes.

I have done the following analysis during my visit to the University of Groningen during June-July 2017.

- ➢ Determining whether the subjects showed backward induction or forward induction behaviour. This was done by observing their choices at certain crucial nodes and observing whether they chose a certain path more often in a certain game. Data from each of the 3 countries were considered separately.

- ➢ Determining whether there is any difference in the time taken to make the specific choices in certain nodes. This, done using Kolmogorov Smirnov test (non parametric) also helped ascertain whether the candidates were really showing Backward or Forward Induction behaviour.

- ➢ Plotting the choices made by the players in the different games graphically to ascertain whether any choice was given preference over the other in certain games.

- ➢ Some additional traits in the participants behaviour, e.g. competitiveness, which involved investigations on the final choices (designed to determine whether the player is competitive or co-operative) of certain games.

Latent Class Analysis: The aim was to segregate the participants based on their choices in the different games and explore the behaviour of the subjects within each class. This was done individually for each of the countries as well as for all the countries combined. Then it was determined whether any latent class predominantly comprised of subjects from one country or vice versa.