

SHORT TERM SCIENTIFIC MISSION (STSM) SCIENTIFIC REPORT

This report is submitted for approval by the STSM applicant to the STSM coordinator

Action number: CA16228 - European Network for Game Theory

STSM title: Application of the voting model in repeated games

STSM start and end date: 20/01/2019 to 27/01/2019

Grantee name: Ron Peretz

PURPOSE OF THE STSM:

A backward looking approach has proven to be useful in analyzing linear voter model environments. Two recent examples are Mandel and Venel (SSRN 2956462), and Arieli, Babichenko, Peretz and Young (SSRN 3218822). The two papers are conceptually different, the former studies the equilibrium outcome in a strategic situation, whereas the latter the speed of convergence in a non-strategic dynamical system. Nevertheless, both papers rely among other things on similar mathematical points of view, which instead of looking at the dynamic process itself looks at an appropriate backwards process. It turns out that the backwards process is much simpler to analyze while it provides many insights on the original forward process. The purpose of the STSM was to explore the similarities and differences between the two papers, and hopefully combine understanding independently obtained by the two groups of researchers in order to achieve further progress in studying these and similar models of dynamic and repeated games.

DESCRIPTION OF WORK CARRIED OUT DURING THE STSMs

We taught each other the different techniques used in our respective paper. Inspired by a working paper of Grabisch et al, we looked at a model of anonymous social influence with conformist and non-conformist agents. We started thinking of problems related to the model of Grabisch et al. Technically, the model is a large finite Markov chain. Grabisch et al analyzed the possible steady sets of states (aka recurrence classes). Given the solution of Grabisch et al, we tried to compute the probabilities of reaching each one of the steady sets. Another interesting question is the speed of reaching one of the steady states. It would also be interesting to understand the mid-term behavior, the typical state (or distribution over states) before reaching the steady state.

DESCRIPTION OF THE MAIN RESULTS OBTAINED

So far, we have more questions than results. We plan to look carefully on the model of Grabisch et al and hope to be able to solve one of the above mentioned questions.

FUTURE COLLABORATIONS (if applicable)

I plan to continue working together from afar. My collaborator, Xavier Venel, plans to come sometime to Israel, and then we hope to have further collaboration.

