# The digest of "The Egalitarian Solution Versus The Nucleolus: A Strategic Comparison"

The cost sharing problem has long been an essential issue. A typical application is irrigation ditch problem. Several farmers jointly construct a linear ditch. Every farmer's willingness to pay for the ditch is different because of their land locations. The length of ditch should accommodate the needs of farmer with the farest land. Farmers must find reasonable mechanisms to share the cost while different rules would induce distinct amount of payment. One way to solve this problem is that they can elect a representation to decide for them. It could be recommended by accompanying with socially desirable properties such as "fairness" and "justice". This is the axiomatic approach featured as the perspective of "centralized system". By using this approach, we can compare the results generated by applying different dogmas. Besides, we can implement the strategic approach that designing a noncooperative game which players act based on their self-interest. It is a decentralized system that connects cooperative and noncooperative game. These two methods correspond to each other.

These paper focus on two main solution concepts of transferable utility (TU) game which is one kind of cooeration games, called nucleolus and egalitarian solution. A nucleolus allocation maximize the welfare of the worst-off people (maxmin principle) and egalitarianism principle reflects the spirits of equality (either equality in loss or gains). And the aim of this paper is to find the relationship and strategic differences between these two solutions that raise the distinctions. To accomplish this goal, first the authors adopt a two-stage extensive form game and then justify the egalitarian solution. After that, they impose a special role to players with the largest cost to justify the nucleolus solution. In one word, the last person in this game of stage 2 of every round helps reducing the payment of all members. The authors prove the existence and the uniqueness of subgame perfect equilibrium in two settings and examine the crucial role of last person that leads to exquisite solutions.