

# Review of: "A trial-dependent game with N-player"

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**Potential competing interests:** No potential competing interests to declare.

This paper makes an important contribution to the literature on games which redistribute wealth, allowing strategies other than “all or nothing” in which players continue until one goes bankrupt. However, there are a number of omissions compared to what we’d expect in a paper of this type, and a few changes would increase its importance further.

In the opening discussion, the author should state why this problem is important. How does it relate to the world we live in, other than gambling halls? What business or personal problems does it represent? And particularly, how do games of this type affect society? Do they increase or decrease inequality? Do they encourage or discourage economic transactions?

Also in the opening discussion, the author should state how this type of game relates to other types of games, particularly those which have been well studied. Under what conditions does this game produce similar results to other games, and how does it produce different outcomes? For example, in Prisoner’s Dilemma, if mutual cooperation and mutual defection are ignored, and turns in which one party “wins” by defecting against a cooperator, does that produce a similar result? How does this game relate to the literature on cooperation? There seems to be no possibility of cooperation in this game. Why study this game?

The author investigates the game numerically and posts a table of results. There are no plots or graphs. There is no discussion of what the results “mean”, possibly because the author has not stated “why” study this game. We need to know the significance of the results.

It appears from the tables that the expected result is quite often the starting capital. But the variance is high. This could be better appreciated with a graph. Why would one take a variance risk on capital if there is not a probability of gain? In economics, using rational investor theory, a higher risk required a higher expected return. This game has essentially no return, and by rational investor theory no one would play it. It has no function in society. This needs to be addressed and clarified.

If the game is simply something we know people do play, even if not rational, the author needs to do two things. Clarify why, in the face of rational investor theory, anyone plays the game. And describe the results on society. For example, does it increase or decrease inequality?

The reviewer declares an a priori interest in how games affect social inequality and suggests the paper author read and if appropriate reference Wealth-relative effects in cooperation games (J. Heliyon, 5, 12, Dec. 2019).

Lastly, the author should indicate directions for future research. What useful problems remain unsolved, and what does that paper suggest should be attempted next?