

# Evolution of payoff-dependent preferences \*

Tatsuhiko Shichijo

Osaka Prefecture University

January 19, 2009

## Abstract

We consider a situation where each player's preferences are "payoff-dependent" in the sense that the utility of the payoff-dependent preferences is determined by the payoff of each person and those of others. In this paper, we consider the evolution of such payoff-dependent preferences using an "indirect evolutionary approach" (Güth and Yaari (1992)). Our model is essentially the same model as the one studied in Dekel, Ely and Yilankaya (2007) except that they consider a larger set of possible preferences set. It turns out that if an outcome is stable in our setting, then it is also stable in the setting in Dekel et al. (2007). That is, our model can check the robustness of the result about stable outcome in Dekel et al. (2007). We obtain a sufficient condition for a stable outcome in our setting which is less restrictive than the condition in Dekel et al. (2007). When we consider a game with roles, we find that an important criterion for stability is whether each role obtains equal payoff. For example, in an ultimatum game, an equal division is stable because each role obtains equal payoff. We find that the necessary conditions for instability include unequal payoff for each role. For example, in the ultimatum game, unequal division with pure strategy is unstable.

## References

- Dekel, Eddie, Jeffrey C. Ely, and Okan Yilankaya, "Evolution of Preferences," *Review of Economic Studies*, 07 2007, 74 (3), 685–704.
- Güth, W. and M. Yaari, "Explaining Reciprocal Behavior in a Simple Strategic Game," in U. Witt, ed., *Explaining Process and Change-Approaches to Evolutionary Economics*, University of Michigan Press, 1992, part 3, pp. 23–34.

---

\*I am grateful to Munetomo Ando, Michihiro Kandori and seminar participants at Osaka University for helpful comments on an earlier version of this paper. All remaining errors are mine. This research is partially supported by a Japan Society for the Promotion of Science Grant-in-Aid for Young Scientists (B).