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Coevolutionary and Diversity in Evolutionary Game Theory: Stochastic Environment

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This talk is about the impacts of environmental variation on the game. Here environmental variation corresponds to the fitness variation.

In evolutionary economics, we know the relation between Coevolution and Diversity, "Variety drives change" in the fixed environment ([4]). And we know that the player choices Bet-Hedging strategy in the stochastic environment, if the fitness is "Geometric mean" and the player doesn't, if it is "Arithmetic average" ([3]). In addition, Selten [4] showed that no mixed equilibria i.e., Bet-Hedging strategy, are evolutionarily stable strategy when players can condition their strategies on their roles in a game. On the other hand, we know that Nash equilibrium in the game with randomly disturbed payoffs is always mixed strategy ([2]).

Thus, these results are discrepancy in spite of the similar model. Binmore and Samuelson [1] examines this discrepancy and reconciles these results. This study examines this discrepancy and reformulates these researches with the Replicator equation. In addition to, this method is applied to Global game, we obtain the same result.

REFERENCE:

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[5] Selten, R. (1980): *JTB*, Vol. **84**, pp. 93-101.