AUTOCOVARIANCE IN THE ALLISON MIXTURE: A MONTE CARLO ANALYSIS OF STRATEGIC DECISION-MAKING IN REPEATED GAMES

Gabriel Marius POP[a]*, Flavia-Andreea TĂTAR[b], Maria-Monica VLĂDĂREAN[c], Cosmin Gabriel MARIAN[d]

[a), b), c)] *Babeş-Bolyai University, Faculty of Economics and Business Administration, Cluj-Napoca, Romania*

[d)] *Babeş-Bolyai University, Faculty of Political, Administrative and Communication Sciences, Cluj-Napoca, Romania*

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Abstract: *This article investigates the Allison Mixture concept, an extension of Parrondo's Paradox, which generates sequences with significant autocovariance by combining two uncorrelated input processes. The purpose of this study is to validate the Allison Mixture formula, the applicability of which has not yet been fully confirmed. This work builds upon past dissertation theses written by Tătar (2023), Vlădărean (2023), Şandor (2014), and Susanu (2020). The study compares the autocovariance values with standard statistical approaches using Monte Carlo simulations to the Entrance-Deterrence game. Although total validation was not reached, the experiment found ideal conditions in which the formula operates satisfactorily. The results show the potential of the Allison Mixture in developing adaptive strategies for dynamic situations, in which conventional approaches could not be able to detect the fundamental trends and connections.*

Key words: *Allison Mixture; Parrondo's Paradox; Game Theory; Monte Carlo simulations; repeated games*

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* Corresponding author. *E-mail address:* gabriel.pop@ubbcluj.ro.

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