Report on Bachelor Thesis

Institute of Economic Studies, Faculty of Social Sciences, Charles University

Student:	**Klára Grohmannová**
Advisor:	**RNDr. Michal Červinka, Ph.D.**
Title of the thesis:	**Learning in public goods game: alternative model performace**

OVERALL ASSESSMENT *(provided in English, Czech, or Slovak):*

Short summary

This thesis explores three prominent learning models within the public goods game framework and evaluates their performance against experimental data. The K-strong equilibrium model emerges as the most effective in predicting the experimental dataset, with specific parameters identified for optimal performance. Comparisons with previous research highlight both consistencies and minor inconsistencies, offering nuanced insights into model performance and empirical data alignment.

Contribution and Methods

This thesis contributes significantly to the understanding of learning models within the public goods game context by presenting and thoroughly analyzing three prominent models: the Reinforced Average model with loss-aversion strategy, the Noisy Directional Learning model, and the K-strong equilibrium model. Through a meticulous examination of their characteristics and predictive abilities, the research identifies the K-strong equilibrium model, with specific parameter settings (10% chance of perturbation occurrence and learning parameter $\delta = 0.125$), as the most effective in accurately predicting experimental data. This finding not only adds to the body of knowledge regarding public goods game dynamics but also offers practical implications for predicting and understanding cooperation behaviors in various fields.

Furthermore, this thesis sheds light on the role of learning models in explaining the observed decay in contributions within experimental settings, aligning empirical data with theoretical predictions. By emphasizing the importance of understanding and predicting public goods game outcomes, particularly in contexts where the prediction of average contribution levels is vital, the research underscores the broader relevance of its findings. Additionally, the identification of the K-strong equilibrium model as the best-performing predictor suggests future research directions, such as investigating underlying decision-making mechanisms and exploring model variations for improved predictive accuracy. Overall, the results of this thesis provide valuable insights for researchers interested in public goods games and policymakers tasked with designing policies for funding public goods using similar frameworks.

This thesis represents a commendable effort, particularly considering the student's largely independent work, which goes beyond the typical scope of bachelor studies at the institute.

Literature

The thesis shows a good understanding of previous research on learning models in the public goods game. It covers various models, like the Reinforced Average model with loss-aversion strategy, the Noisy Directional Learning model, and the K-strong equilibrium model. References are cited properly, supporting the study's methods and findings with relevant sources.

Manuscript form

The thesis is logically organized and consistently uses appropriate academic language. The student's use of English is flawless, contributing to the clarity and professionalism of the work. Tables and figures are well-designed and effectively integrated into the text, enhancing the overall readability and coherence.

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Overall evaluation and suggested questions for the discussion during the defense

In my view, the thesis fulfills the requirements for a bachelor thesis at IES, Faculty of Social Sciences, Charles University, I recommend it for the defense and suggest a **grade A**. The results of the Turnitin analysis do not indicate significant text similarity with other available sources.

SUMMARY OF POINTS AWARDED (for details, see below):

CATEGORY		POINTS
Contribution	*(max. 30 points)*	29
Methods	*(max. 30 points)*	29
Literature	*(max. 20 points)*	20
Manuscript Form	*(max. 20 points)*	20
TOTAL POINTS	*(max. 100 points)*	**98**
GRADE	**(A – B – C – D – E – F)**	**A**

NAME OF THE REFEREE: RNDr. Michal Červinka, Ph.D.

DATE OF EVALUATION: *29. 5. 2024*

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Referee Signature

EXPLANATION OF CATEGORIES AND SCALE:

CONTRIBUTION: *The author presents original ideas on the topic demonstrating critical thinking and ability to draw conclusions based on the knowledge of relevant theory and empirics. There is a distinct value added of the thesis.*

METHODS: *The tools used are relevant to the research question being investigated, and adequate to the author's level of studies. The thesis topic is comprehensively analyzed.*

LITERATURE REVIEW: *The thesis demonstrates author's full understanding and command of recent literature. The author quotes relevant literature in a proper way.*

MANUSCRIPT FORM: *The thesis is well structured. The student uses appropriate language and style, including academic format for graphs and tables. The text effectively refers to graphs and tables and disposes with a complete bibliography.*

Overall grading:

TOTAL	GRADE
91 – 100	A
81 - 90	B
71 - 80	C
61 – 70	D
51 – 60	E
0 – 50	F