Thesis Booklet: Essays in Behavioral Economics

Doctoral School of Economics, Business and Informatics

Corvinus University of Budapest

Antal Ertl

Supervisor: Hubert János Kiss

1 Research Background

In recent decades, behavioral and experimental economics have significantly influenced the broader discipline of economics. These subfields have revitalized interest in incorporating psychological dimensions into models of economic behavior. Beyond this conceptual shift, behavioral and experimental economics uses alternate methods —namely: incentivized laboratory and field experiments—that allow for rigorous testing of theories and policy interventions before rolling them out on large scale. Such experiments empower researchers to generate controlled data, moving beyond passive observation of real-world phenomena and allowing for more rigorous causal analysis.

This thesis aims to use these tools in four topics. While the topics are loosely connected, it demonstrates that the instruments available for behavioral and experimental economics can be relevant in various research areas. Chapter 1 demonstrates the use of field experiments in a classroom environment. Specifically, together with Barna Bakó and Éva Holb, we explore the effect loss aversion has on student's academic performance in a university setting. The key idea being that individuals perceive losses stronger than gains of equal size Kahneman and Tversky, 1979, reframing students' evaluation system so that it emphasizes losses from not performing well or not completing tasks might lead to improved academic performance. While loss aversion was analysed in several academic settings (Apostolova-Mihaylova et al., 2015; Faulk et al., 2019; Levitt et al., 2016; McEvoy, 2016; Smith et al., 2019) , the results are heterogeneous: some find no effect in general but heterogeneous gender

effects (Apostolova-Mihaylova et al., 2015), some find no heterogeneous effects but relatively large treatment effects (Faulk et al., 2019; McEvoy, 2016; Smith et al., 2019), and some find negative effects (Bies-Hernandez, 2012). While our first aim is to clarify some of these findings, the novelty of our research design is that it allows us to test the novelty-effect of loss-aversion framing. That is: it might be that students perform differently due to the unorthodox nature of grading; later during the semester, the might find out that this is indeed only a reframing of the evaluation system, and they do not truly lose points in the process. If this is true, we expect the treatment effect to decrease over time. To our knowledge, we are the first to answer this question.

Chapter 2 seeks to find the connection between fairness concerns and harmful behavior in a hypothetical situation. Comparing ourselves to others (Festinger, 1954), as well as the connection between these comparisons and fairness concerns (Harsanyi, 1955; Rawls, 1971) are widely discussed in the literature. Background information has also been shown to play a crucial role in how decision-makers assess the fairness of unequal distributions (see, for example,Kahneman, Knetsch, and Thaler, 1986; Kahneman, Knetsch, and Thaler, 1986). This research aims to combine these strains in the literature, where I ask people to enclose the maximum pay difference they deem fair in different situations. The situations vary in the reason of the inequality – the other person might receive more payment due to more education, more work experience, or more effort. I show that a non-negligible proportion of people would reduce perceived inequalities and that respondents are more likely to appreciate physically visible effort rather than previously acquired

knowledge or experience — suggesting a more heterogeneous view of merit-based fairness perception.

In Chapter 3, I analyse the stability of groups of economic preferences. A large body of literature analyzes the stability of individual preferences (see for example Chuang and Schechter, 2015; Dasgupta et al., 2017; Hardardottir, 2017). This stability of economic preferences in crucial in economic theory, as consistency is a fundamental assumption in microeconomic theory (Arrow, 2012; McFadden, 2001; Sugden, 1985). Similarly, recent papers aimed to define clusters of economic preferences on the individual level (Chowdhury et al., 2022; Epper et al., 2024; Fehr & Charness, 2023). While individual preference stability has been widely studied, less attention has been given to the stability of economic clusters. I raise three questions: (1) Can individuals be meaningfully clustered based solely on economic preferences? (2) Are these clusters stable over time—i.e., do they reappear when preferences are measured with other subjects in another time? (3) Do predictions about other characteristics (e.g., age, income, gender) based on these clusters remain consistent across measurements? This research helps us explore the non-linear relationships between preferences and outcomes, and may offer insights into "economic personality types," akin to those studied in psychology.

In Chapter 4, together with Hubert János Kiss, we analyse the effects of socio-economic status has on economic expectations as well as consumption-decisions. A growing body of literature indicates a substantial heterogeneity in these expectations, which are closely associated with socio-demographic characteristics (Das et al., 2020; Dominitz & Manski, 2004). More specifically, in the study closest

to ours, Das et al., 2020 find a sizable and persistent difference in macroeconomic expectations between individuals in the lowest and highest quintiles of the income distribution, as well as between those with and without a university degree. Our study aims to provide a more nuanced analysis on the heterogeneous effect socio-economic status has on both economic expectations, as well as planned consumption decisions.

2 Methods used in the Dissertation

As mentioned in the previous section, the dissertation makes use of various methods used in behavioral and experimental economics, as well as quantitative methods that are widely used in empirical economics. The data used in these chapters vary greatly, ranging from field experiments to survey experiments to general population surveys. As such, different methods are used to utilize the varying nature of the data.

Table 1 summarizes these methods for each chapter. Chapter 1 being a field experiment, uses rather simple linear regressions to test the treatment-effect of losing points compared to gaining them. Additionally, for testing heterogeneous treatment effects, we employ Residualized Quantile Regression (RQR) as well. In Chapter 2, I used a survey experiment to analyze how people react to different information about the nature of inequality in wages; due to the scales used, I used both linear regressions as well as Tobit-models. Chapter 3 and 4 uses general population surveys — and Chapter 4 shows a more traditional economic analysis using pooled linear regressions to analyze heterogeneous effects of socio-economic variables. Chapter

3, however, I test whether similar clusters emerge in two waves of the survey. To do this, I use clustering algorithms and run several robustness checks with different specifications.

Table 1: Summary of the methods used in the Dissertation

Chapter Title	**Research Question**	**Methodology**
Learning to Win by Fearing to Lose	Does loss-framing have a positive effect on the score of students? Does loss-framing have a diminishing effect over time? Does loss-framed grading have heterogeneous treatment effects?	Field Experiment, Regression Analysis, Residualized Quantile Regression
Fair and Unfair Differences in Individual Decision-making	Who do we compare ourselves to? Can we rationalize greater inequalities with additional information on the nature of inequality?	Survey Experiment, Linear and Non-linear Regressions, Tobit Regressions
Stability of (Groups of) Economic Preferences	Do Economic Preferences add up to personality types? Are constructed groups of economic preferences similar when measured in two waves?	Survey Analysis, Clustering Algorithms, Linear Regressions, Statistical Testing
Heterogeneity of Economic Expectations	Is there a linear relationship between SES and expectations? Does household-level optimism affect macroeconomic optimism? What is the effect of expectations on purchasing durables?	Pooled Linear Regressions

3 Scientific results of the Dissertation

3.1 Learning to Win by Fearing to Lose: Exploring the Positive Effects of Loss Aversion on Academic Achievement and Motivation in Education

In this study, we want to test whether losing points instead of gaining them have an effect on student's academic performance. After running the field experiment at the macroeconomics course for business students at Corvinus University of Budapest, we analyzed the results using regression analysis. The findings suggest that studying with a loss-frame improves performance more than just earning points. For tests of heterogeneity, we find no evidence of differential gender effect. We test for differences in student-quality, again, finding no evidence for heterogeneous treatment effects. Finally, we test whether improvement in scoring is a novelty-effect, by comparing students who were losing points throughout the semester to those who only lost points at the final test. The results do not support the idea of novelty effect, suggesting that loss-framing is not diminishing over time - at least for the duration of one semester.

Table 2: Regression results for tests written throughout the semester and the Final Exam - In percentages

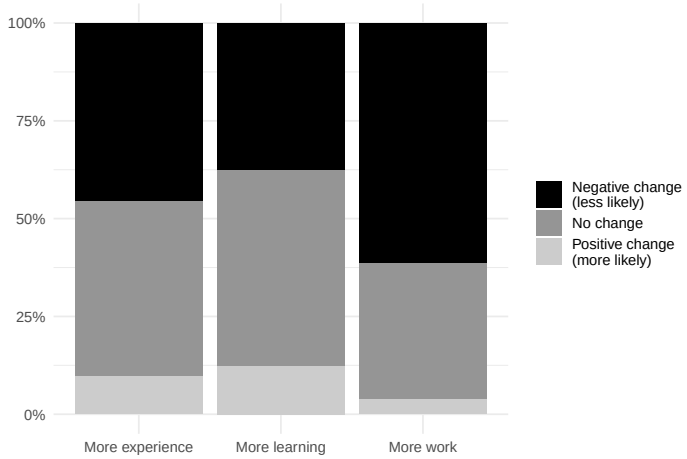
	Test 1	Test 2	Test 3	Test 4	Best 3 Tests	Final Test	
Losing Points	-1.689	6.661***	4.375	7.578***	4.912**	7.909**	7.820***
	(3.472)	(0.775)	(2.618)	(1.229)	(1.932)	(2.856)	(1.583)
Female	5.485**	5.778**	7.388*	4.481	5.953**	2.418	-0.974
	(1.826)	(1.882)	(3.879)	(3.608)	(2.543)	(2.973)	(1.765)
Best 3 Tests							0.558***
							(0.113)
Constant	63.63***	66.73***	64.58***	59.73***	69.65***	58.28***	16.75*
	(3.508)	(2.999)	(6.366)	(5.485)	(3.595)	(6.382)	(8.450)
Observations	321	321	321	321	321	321	321
R-squared	0.154	0.172	0.124	0.094	0.162	0.160	0.351
Residual Std. Error	23.084	24.092	26.374	31.412	20.023	23.488	20.673

Standard errors in parentheses, clustered by seminar group;* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Control variables include: mother's university education, knowing how to take derivatives, working or not, and teacher, practice-session and campus fixed effects. Note that *Losing points (!)* correspond to students losing points during the semester tests and during the final test, respectively.

3.2 Fair and Unfair Differences in Individual Decision-making

The hypotheses of this study suggest that fairness perception plays a significant role in comparison-based decision-making, especially when harmful behavior may also be present in the decision-making situation. The study shows that in social decision-making, unfair differences can lead to so-called malicious envy; however, if the decision-maker is able to rationalize the reason for the discrepancy, the harmful behavior may cease. Different types of new information yield different results: in Hungary, people are more likely to accept someone having a higher salary if they put in more effort, as opposed to higher qualifications or more experience being the reason behind wage differences.

Figure 1: Likelihood on Redistribution for various reasons of Inequality



3.3 Stability of (Groups of) Economic Preferences: Evidence from a Representative Survey

In this study, I examine the dynamics of economic preferences and their groupings over time using data from a Hungarian survey conducted in two waves during 2020. Members of one cluster, characterised by higher cooperation, competitiveness, more patience and lower time-inconsistency and an internal locus of control, were consistently younger, more educated, and had a more balanced gender distribution. Members of this cluster also reported higher net incomes. An alternative clustering approach using only the first wave data and projecting onto the second wave confirmed these findings, highlighting a correlation between higher socio-economic status and certain economic preferences Limitations include the survey-based measurement of preferences and the data used for the clustering analysis being a pooled cross-sectional. Despite these limitations, the findings provide insights into the stability and socio-economic correlates of clusters of economic preferences.

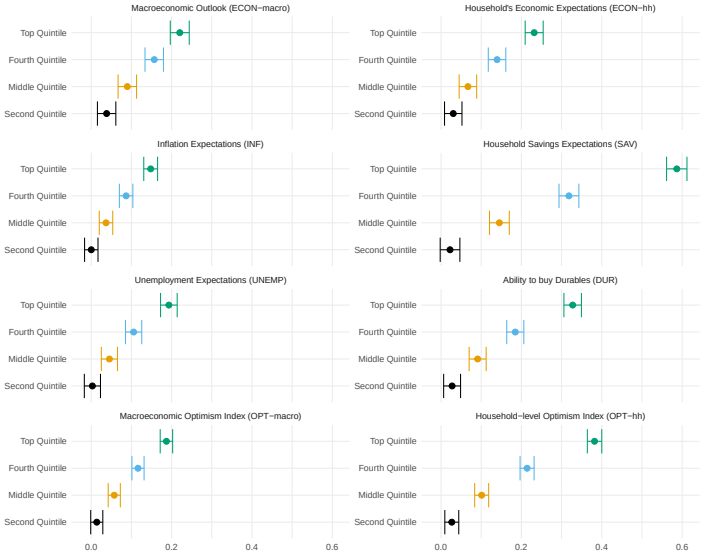
Table 3: Comparison of clusters for Wave 1 and Wave 2, using K-medoid clustering. Similarities between the found clusters in the two waves are highlighted.

	Wave 1			Wave 2		
Variable	Cluster 1, N = 342	Cluster 2, N=400	p-value	Cluster 1, N=284	Cluster 2, N = 488	p-value
Risk	4,643	2,629	<0.001	2,073	4,060	<0.001
	(3,555)	(3,010)		(2,798)	(3,612)	
Trust	2.36	2.05	0.003	1.29	2.78	<0.001
	(1.53)	(1.46)		(1.28)	(1.35)	
Cooperation	3.14	3.96	<0.001	2.54	4.02	<0.001
	(1.47)	(1.21)		(1.35)	(1.10)	
Altruism	29,659	22,156	<0.001	26,056	35,904	<0.001
	(26,009)	(23,063)		(23,722)	(28,990)	
Competition	2.96	3.64	<0.001	2.50	3.58	<0.001
	(1.32)	(1.16)		(1.27)	(1.18)	
Time-inconsistency	0.95	1.13	<0.001	0.97	1.08	<0.001
	(0.19)	(0.24)		(0.22)	(0.26)	
Discount Factor	16,581	12,069	<0.001	15,430	13,534	<0.001
	(3,830)	(1,772)		(3,989)	(3,339)	
Locus of Control	0.22	-0.19	<0.001	0.08	-0.05	0.3
	(1.05)	(0.91)		(1.10)	(0.94)	

3.4 Heterogeneity of Economic Expectations: Dissecting the Role of Socioeconomic Status

Using Hungarian monthly survey data between 2000 and 2009, we show that the relationship between expectations (both at the macroeconomic and household levels) and socioeconomic status (SES), as represented by income rank and education level, is non-linear. In many instances, there is no significant difference in expectations between the two lower quintiles. However, individuals in the upper (fourth and top) quintiles exhibit significantly more positive expectations than those in the lower quintiles. There is also a clear difference in expectations between the fourth and the top quintiles. In terms of education level, individuals with a high-school degree have significantly more positive expectations compared to their peers without one. Significant differences in economic expectations are also observed between high-school graduates and individuals with a university diploma, particularly regarding inflation, savings expectations, and the assessment of the household's future financial situation. Disparities in household-level expectations based on SES are more pronounced than those in macroeconomic expectations. Past experiences and household-level optimism seem to be key factors influencing macroeconomic expectations. Furthermore, we document that both macroeconomic and household-level expectations predict the intention for significant expenditures, even after controlling for SES variables.

Figure 2: Estimates and Confidence Intervals of Income Quintiles on various economic expectations



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