European Economic Review 85 (2016) 1–7

Contents lists available at ScienceDirect

European Economic Review

journal homepage: www.elsevier.com/locate/eer

The relation of risk attitudes and other-regarding preferences: A within-subjects analysis

Stephan Müller, Holger A. Rau*

University of Göttingen, Platz der Göttinger Sieben 3, 37073 Göttingen, Germany

ARTICLE INFO

Article history:
Received 13 September 2015
Accepted 4 February 2016
Available online 17 February 2016

JEL:
C91
D64
D81

Keywords:
Experiment
Other-regarding preferences
Risk preferences

ABSTRACT

In this paper we provide experimental evidence on the relation of individual risk attitudes and subjects' aversion to favorable inequality. In a within-subjects design we expand Blanco et al.'s (2011) modified dictator game by the risk-elicitation task of Eckel and Grossman (2002). Our data show strong support for a significant negative correlation between risk tolerance and an aversion to favorable inequality. The results are independent of gender, i.e., women and men show a similar correlation in these traits.

1. Introduction

Individual risk preferences are a central element in economic theory on choice under uncertainty. Taking the example of markets, it has been shown that higher systematic risk yields higher expected returns (e.g., Sharpe, 1964; Eberhart et al., 2004). Thus, it follows that subjects who take higher risks are more likely to end up with above-average returns.[1] This links individual risk-taking to a second important preference pattern, namely inequality aversion. According to this concept subjects' utility may decrease when achieving higher incomes than their peers (e.g., Fehr and Schmidt, 1999). Hence, striving for higher returns by taking higher risks on the one hand and intending to avoid favorable inequality on the other hand are incompatible motives for human behavior.

Consequently, the seemingly independent preference characteristics of *risk attitudes* and *inequality aversion* may indeed be fundamentally related. More precisely, the incompatibility of high risk tolerance and pronounced aversion to favorable inequality suggests a negative correlation between the aforementioned traits. In this paper, we experimentally test this hypothesis and find strong empirical support for it.

The importance of risk aversion (Pratt, 1964; Arrow, 1965) and inequality aversion (Fehr and Schmidt, 1999; Bolton and Ockenfels, 2000) is empirically well-confirmed for many economic outcomes (e.g., Dohmen et al., 2010). Moreover, in a laboratory study Erkal et al. (2011) investigate the relationship between earnings and giving. In this setting subjects first

* Corresponding author.
E-mail addresses: stephan.mueller@wiwi.uni-goettingen.de (S. Müller), holger.rau@uni-goettingen.de (H.A. Rau).

[1] Note that, immanent to risky assets, the investor may also realize below-average returns. However, given the near symmetry of the distribution of stock returns (Fama, 1965), risky investments will more often generate above-average returns. Moreover, the probability of losses becomes smaller, the longer the considered time horizon. We want to thank an anonymous referee for raising the issue of potential losses.

http://dx.doi.org/10.1016/j.euroecorev.2016.02.004
0014-2921/

Table 1
Subjects' gamble choices and the corresponding expected payoffs.

Choice	Event	Probability (%)	Payoff (€)	Exp. payoff	CRRA ranges
1	A	50	0.80	0.80	$(r > 2)$
	B	50	0.80		
2	A	50	1.20	0.90	$0.67 < r < 2$
	B	50	0.60		
3	A	50	1.60	1.00	$0.38 < r < 0.67$
	B	50	0.40		
4	A	50	2.00	1.10	$0.20 < r < 0.38$
	B	50	0.20		
5	A	50	2.40	1.20	$r < 0.20$
	B	50	0.00		

earn their income by competing in a real-effort tournament. Afterwards, they can redistribute wealth by sending money to other subjects. The authors report that subjects with moderate income behave more generous than rich subjects and send higher amounts to poor subjects. The results indicate that generating higher returns may be at odds with generosity. However, there is little direct evidence on the relation of the two characteristics *risk aversion* and *inequality aversion* for the same economic agents. In this paper, we simultaneously study both concepts for the same subjects. More precisely, we conduct a within-subjects experiment to elicit subjects' guilt parameters within the Fehr and Schmidt (1999) model and their risk attitudes. In a first step, we derive point estimates of subjects' guilt parameters by using the method of Blanco et al. (2011). Afterwards, we expand their setup and elicit subjects' level of risk tolerance in a gamble-choice task similar to Eckel and Grossman (2002). Our results reveal a strong and highly significant negative correlation between the degree of risk tolerance and the aversion to favorable inequality. A closer look reveals that the relation holds for both genders, i.e., men and women show exactly the same correlation.

2. Experimental design

In stage one of our experiment, we measure subjects' guilt parameters (β) within the Fehr and Schmidt (1999) model. We apply the modified dictator game (MDG) by Blanco et al. (2011) to derive point estimates of individuals' β parameters. In this elicitation task, subjects are given a list with 22 pairs of payoff vectors (for details, see Table 5 in the Appendix). The participants have to choose one of the two payoff vectors for all 22 cases. Both vectors represent a money split between the dictator and the recipient. The left vector is constant and is always (20, 0). If the participants choose this vector they receive 20 and the recipients earn nothing. All vectors on the right-hand side resemble increasing equal-money splits: from (0, 0) to (21, 21).[2] After the experiment has concluded, the computer randomly pairs two players and determines a subject's role (dictator or recipient) and the payoff-relevant decision. In the modified dictator game we used "Taler" as the experimental currency. The exchange rate was 1 Taler = 0.15€.

We add a risk-elicitation task after the MDG, to study the relation of subjects' guilt and risk preferences. Hence, in stage two we apply a gamble-choice option as used in Eckel and Grossman (2002). In this task, subjects are offered five gambles with two possible outcomes (A/B) which occur with equal probability. The gambles maintain a linear relationship between the expected payoff and the risk. In the choice task, subjects have to choose exactly one of the five gambles. Subjects know that the computer will determine the outcome of the gambles at the end of the experiment. Table 1 displays the gambles and their expected payoffs. It also indicates for each choice the corresponding range of Constant Relative Risk Aversion (CRRA). The CRRA ranges are calculated as ranges of r in the function $U = x^{(1-r)}/(1-r)$ assuming constant relative risk aversion.

After subjects completed this stage they receive new instructions for two additional stages of another experiment.[3] After all stages were finished, we applied a short version of the "Big Five" personality test and subjects answered a brief questionnaire.

The experiment was programmed in z-Tree (Fischbacher, 2007). In total, 168 subjects from various fields of study participated (24 subjects per session) and were recruited with ORSEE (Greiner, 2004). The experiment was conducted at the University of Göttingen. The sessions lasted approximately 45 min and participants earned 15.73€ on average.[4]

[2] Extending the right vectors to (21, 21) allows us to account for negative betas.
[3] In this paper Müller and Rau (2015) focus on crowd-out effects in charitable giving.
[4] The separate earnings were 2.74€ (stage one and two) and 12.99€ (in further stages).