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How Gender and Risk Preferences Influence Charitable Giving: Experimental Evidence

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Abstract

This paper experimentally investigates the determinants of charitable giving. It focuses on the joint analysis of two prominent gender differences, i.e., disparities in dictator giving and risk taking. In a within-subjects experiment, we test the impact of risk preferences on donations. The data find that women donate more and behave more risk-averse than men. Crucially, women show an economically significant positive correlation between risk tolerance and donations. By contrast, no such correlation is found for men. Men and relative risk-averse women give the same. Our findings suggest that risk preferences may help explaining common gender differences in charitable giving.

JEL Classification numbers: C91, D64, D81, J16.

Keywords: Dictator Game, Experiment, Gender Differences, Risk Preferences.

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1 Introduction

Charitable giving is of particular importance since it may finance the successful implementation of public goods. It enjoys great popularity in the US, i.e., annual data of 2014 show that total donations amounted to $258.51 billions (Giving USA, 2015). However, less is known about individual differences in the motives of giving. Understanding who gives and why or when persons give is promising, as it can help to target fund-raising campaigns to increase charitable giving.

Focusing on the donors' side, a prominent finding is that women commonly give more than men. This is documented by evidence in the field (e.g., Piper and Schnepf, 2008; Mesch et al., 2011) and many economic experiments (e.g., Eckel and Grossman, 1998; 2003). Importantly, the determinants of these findings are mostly unclear. Croson and Gneezy (2009) argue that women are more sensitive to social cues and therefore may behave more other-regarding than men in laboratory studies. Although this reasoning may certainly apply to some experimental settings,[1] it does not explain the aforementioned empirical evidence. Hence, gathering new evidence in individual-preference differences may therefore be promising. In this respect experimental economics has established a set of prominent gender differences (Croson and Gneezy, 2009). A conspicuous finding are gender differences in risk taking. It is commonly reported that women are more risk-averse than men (e.g., Eckel and Grossman, 2002; 2008; Ball et al., 2010; Charness and Gneezy, 2012).[2] Moreover, an experiment with school kids even confirms these findings in the field (Eckel et al., 2012).

Motivated by these findings, we conducted an experiment which focuses on these two preferences at the same time. Our paper presents data which analyze whether gender differences in charitable giving are connected to gender differences in risk taking. In our simple within-subjects experiment, we first elicit subjects' risk preferences and afterwards we measure their donations to a charity (the German "Red Cross") in a dictator game. The data confirm the experimental findings on gender differences in giving (e.g., Eckel and Grossman, 1998; 2003), i.e., women give significantly more than men. In our experiments we show that risk preferences are indeed connected to charitable giving. Interestingly, we find that this only accounts

[1] For instance, Ben-Ner et al. (2004) show that female dictator giving is sensitive to the gender of the recipient, i.e., female dictators give more to male recipients.

[2] See Croson and Gneezy (2009) for an overview of gender differences in preferences.

to women. The data reveal a strong positive correlation between the risk tolerance of women and their donations to the charity. Crucially, risk tolerant women give significantly more than risk-averse ones. Focusing on women, our regressions highlight that an one-Euro increase of the investment in the risky gamble is associated with about one Euro higher donations.[3] By contrast, no correlation can be found for men. Indeed, average donation levels of men and risk-averse women do not differ. Thus, the gender difference in charitable giving we report, is exclusively driven by risk-tolerant women. Therefore our findings may have interesting implications for the interpretation of gender differences in existing dictator-game experiments. They highlight that risk preferences may play an important role in the emergence of gender differences in dictator giving.

The organization of the paper is as follows. In the next section we present the experimental design. Afterwards we report the findings of the experiment. Subsequently, we discuss potential channels for the emergence of the results and conclude.

2 Experimental Design

In our within-subjects experiment participants received the instructions before each stage started. They were told that they will not be informed on the outcome of the stages until the experiment was not finished. Subjects also knew that at the end of the experiment one out of all stages would be randomly selected to be paid out. Subjects earned Taler and the exchange rate was 10 Taler = 1 Euro.

In the first stage we measured risk preferences with the investment task introduced by Gneezy and Potters (1997). In the investment task subjects had an endowment of 100 Taler and decided on the investment in a risky lottery. There was an equal chance that the lottery would win/lose. If the lottery wins, the invested amount is multiplied by 2.5. The investment is lost if the lottery does not win. The second stage was a dictator game (e.g., Eckel and Grossman, 1998). Here, Participants had an endowment of 100 Taler and decided on the donation level to the German "Red Cross." They knew that the donations will be transferred by online transactions after the end of the experiment. Subjects did not know the exact usage of the fund-raising and had no information on the recipients. To ensure credibility we offered subjects that they could stay after the experiment was finished and

[3]This refers to the invested amount in Taler which was converted by an exchange rate (10 Taler = 1 Euro). In all stages subjects had an endowment of 100 Taler.

watch us doing the online transaction. The third stage was a one-shot public good game which will be part of another study.[4] Afterwards, we elicited the Social Value Orientation (SVO) of our subjects in a non-incenticized setting. We followed the method of Van Lange et al. (1997) where subjects have to complete nine decision sets with three choices each. In this respect subjects were presented with fictional monetary splits between them and another hypothetical person. Subjects had to select one out of the three choices for each of the nine decision sets.

Our experiments were programmed in z-Tree (Fischbacher, 2007) and subjects from various fields were recruited with ORSEE (Greiner, 2004). We ran three sessions with 24 subjects each. In total 72 subjects (40 women and 32 men) participated. One session lasted approximately 45 minutes. Subjects earned on average 12.12 Euros including a show-up fee of 2 Euros.

3 Results

In this section we present our data. First, we separately analyze the results of subjects' dictator giving and their risk-taking behavior. Afterwards we report the main findings on the relation between risk preferences and donations to the charity. When applying non-parametric tests we always report two-sided p-values.

3.1 Dictator giving and risk preferences

We start with the analysis of subjects' dictator giving to the charity. Figure 1 shows average donations to the German Red Cross. The presentation is conditioned on male donors (left panel) and female donors (right panel).

When focusing on the diagram, it turns out that distinct gender differences exist in subjects' donations to the charity. More precisely, women donate significantly more (32.4) than men (19.8) (Mann-Whitney $p = 0.033$). The diagram reveals a clear pattern, i.e., the distribution of male donors is left censored. Indeed, in most of the cases (38%) men give nothing. This case occurs significantly less frequently (13%) ($\chi^2(1) = 6.160,\ p = 0.013$) for women. Therefore it can be summarized that our data confirm the findings on gender differences in dictator games (e.g., Eckel and Grossman, 1998; 2003; Alevy et al., 2014).

[4] In this study we will focus on the relation of risk preferences and cooperation.

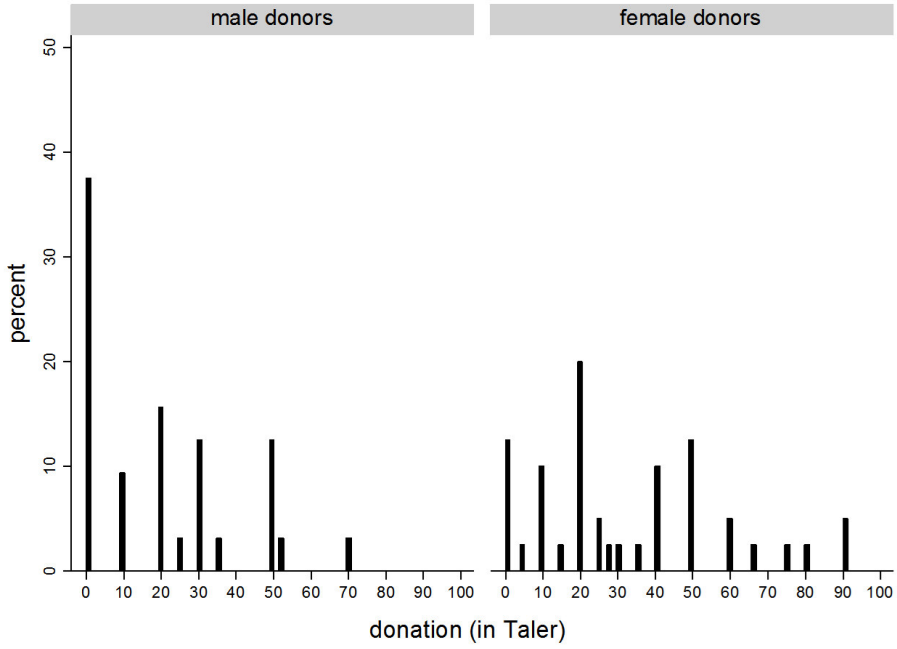

Figure 1: Donations of men and women in the dictator game.

We turn to risk preferences and report the average choices in the investment task. The data show that women invest significantly less (31.48) in the risky lottery than men (56.19) (Mann-Whitney test, $p = 0.003$). We find that the investment level of men is higher by 44%. Thus, the data confirm the findings on gender differences in risk preferences (e.g., Croson and Gneezy, 2009; Charness and Gneezy, 2012). This establishes our first result.

Result 1:
(a) Women donate significantly more than men.
(b) Women are significantly more risk averse than men.

We turn to our main question and study whether the risk preferences of women and men may predict donation levels.

3.2 Main results

Figure 2 is a scatter plot illustrating the correlation of risk preferences and donations to the charity. The diagram is conditioned on the behavior of men (left panel) and women (right panel).

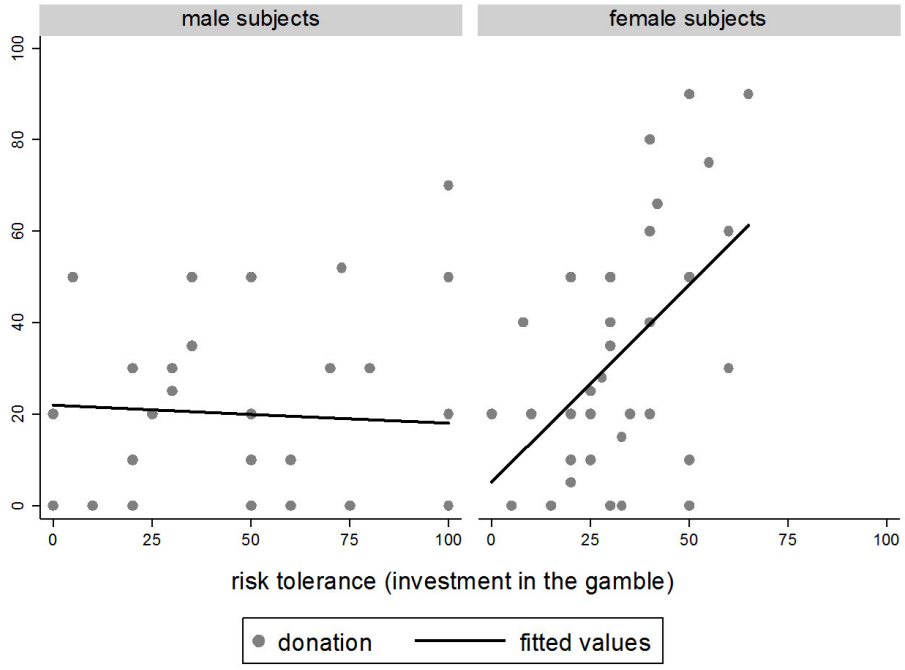

Figure 2: The relation of risk preferences and donations to the German Red Cross.

A conspicuous finding is the strong positive correlation between the risk preferences of women and donations. A Spearman's rank correlation coefficient is positive and highly significant ($\rho = 0.485$, $p = 0.002$), supporting the notion that more risk-tolerant women give more.[5] In contrast, no such correlation can be found for men (Spearman's rank correlation coefficient: $\rho = -0.137,\ p = 0.454$).[6]

Next, we compare average donations of risk-averse and risk-tolerant women to men's donations. Therefore, we split up the female distribution and categorize women in risk-averse and risk-tolerant subjects. Focusing on the distribution it turns out that 42.5% of the women invest less or equal 28, whereas 57.5% invest less or equal 30. Hence, we selected the mean of these investments (29) as threshold. We classify women who invest less or equal 29 as risk averse, whereas women who invest more than 29 are categorized as risk tolerant. The average donations of risk-averse women (19.00) are not significantly different from men's average donations (19.75) (Mann-Whitney test, $p = 0.773$). By contrast, risk-tolerant women give significantly more (42.22) than all men (Mann-Whitney test, $p = 0.003$). This suggests for our data that the gender difference in donations is driven by risk-tolerant women.

[5]This is confirmed by a Pearson's correlation coefficient ($\rho = 0.536$, $p < 0.001$).
[6]This is confirmed by a Pearson's correlation coefficient ($\rho = -0.066,\ p = 0.720$).

Our results are in line with recent findings of Angerer et al. (2015). Motivated by theories of reciprocity the authors focus on more than 1,000 primary school kids to analyze how risk and intertemporal choices influence altruism. The paper reports a non-linear relation between risk preferences and donations. In the current paper we find similar results in an adult subject pool. By contrast, we aim to find explanations for the occurrence of common gender differences in donation behavior. Our findings suggest that this non-linear relation occurs as a result of the gender differences in our sample. Figure 2 would also show an inverse u-shaped pattern,[7] if we lay the low donations of very risk-tolerant subjects (see risk-tolerant men in the left panel) over the high donations of moderate risk-tolerant subjects (see risk-tolerant women in the right panel). To get a in-depth understanding, we run Tobit-regression analyses.

Regression analyses

Table 1 presents Tobit regressions on the relation of subjects' donations.

	donation level					
	(1)		(2)		(3)	
female	21.387***	(7.981)	-20.106	(13.637)	-11.569	(13.502)
risk	0.123	(0.144)	-0.120	(0.149)	-0.029	(0.154)
female × *risk*			1.116***	(0.318)	0.956***	(0.311)
prosocial					27.601***	(7.062)
age					0.338	(1.043)
econ					-1.105	(6.724)
constant	5.777	(9.654)	19.921**	(9.477)	-11.336	(26.437)
obs.	72		72		64	
Pseudo R^2	0.013		0.034		0.072	

Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table 1: Tobit regression on subjects' donation level. Standard errors in parentheses.

[7] A Tobit regression on risk and risk squared highlights that both regressors are highly signifikant.

In model (1) we add *female*, a dummy which is positive for female donors. *Risk* is the invested amount in the risky lottery. In model (1) only *female* is highly significant with a positive sign. Hence, women donate more to the charity which confirms our previous findings. In model (2) we add the interaction term *female* $\times$ *risk*. Strikingly, we find that its coefficient is highly significant and positive. It follows for women, that an one-Euro increase of the investment in the risky lottery is associated with about one Euro more donated to the charity. This confirms the pattern we observe in Figure 2. Noteworthy, *Female* becomes insignificant which indicates that the gender difference in donations can be entirely explained by less risk-averse women who give more. In model (3) we add control variables. *Prosocial* is a dummy which is positive when subjects in the SVO task were classified as prosocial.[8] We also incorporate subjects' *age* and control whether participants are *econ* students. In model (3) we find that *female* $\times$ *risk* is highly significant with a moderately smaller coefficient. We thus conclude that the main result is robust when adding controls. *Prosocial* is the only control which is significant with a positive coefficient. Hence, prosocial subjects give more. Since the proportion of prosocial women (67%) and men (68%) is almost identical, the gender difference in donations cannot be explained by differences in prosociality.

Result 2:
(a) Women show an economically significant and positive correlation between risk tolerance and donations.
(b) The gender difference in donations is entirely driven by risk-tolerant women.

4 Discussion

In this section we discuss potential drivers for the findings we report in the previous section. Our data revealed that gender differences in charitable giving may be explained by women's level of risk tolerance. More precisely, we found for women that a positive correlation between risk tolerance and charitable giving exists. The question remains why an increased level of risk tolerance may enhance charitable giving for female donors.

[8] In model (3) eight observations were dropped because these subjects could not be classified in the SVO task.

A reason might be the uncertain nature of efficacy aspects of charities. According to Bekkers and Wiepking's (2011) framework on charitable giving perceived efficacy is influenced by multiple things. One aspect are efficiency concerns of charities such as fund-raising expenditures and overhead costs (Gneezy et al., 2014). Hence, donors who are more confident on charities' efficient organization may give more. Another aspect is the utilization of the donated money. In this regard it is often uncertain for what purpose the donations will be used, or to which extent donations reach the recipients. In this regard, Small and Loewenstein (2003) report that donors in a field experiment give more when recipients are determined before the fund-raising takes place. In this regard, donors receive information about the recipients, i.e., how needy the anonymous persons are before they donate. Similar findings about information effects on recipients are found by Charness and Gneezy (2008). The authors find that dictators give more when they know the last name of the recipient.

The lack of information on possible recipients and the unknown utilization of the money may also apply to our setting. The reason is that in our experiments we only mentioned that the dictated money will be donated to the German "Red Cross." However, there was ambiguity on the target of the collected donations as we did not inform subjects on the usage of the collected amount. It follows that more risk tolerant subjects may be more confident to donate to charities when targets of the donations are unknown. This may explain the positive correlation between risk preferences and charitable giving. *But why do we only find these effects for women?* This might be due to general differences in social preferences such as altruism or warm glow. For instance, it is likely that a high fraction of men is generally not interested in donating to the charity. This would be in line with Figure 1 where we observed that 38% of men give nothing. At the same time this fraction of men on average invests a high level of 67.92 in the risky gamble. By contrast, for the case of female donors it may be that risk-averse women would like to donate but at the same time they care about the "context", i.e., the uncertain situation in terms of the charitiy's efficacy. As a consequence, risk-averse women may give less, whereas risk tolerant women could be prepared to donate. The finding that women behave context dependent is in line with the evidence reported by Croson and Gneezy (2009). We are aware that the aforementioned interpretations are speculative in nature as further channels may apply to explain the observed correlation.

5 Conclusion

In the current paper we analyzed the determinants of gender differences in charitable giving. Motivated by repeated findings of gender differences in risk taking (e.g., Eckel and Grossman, 2002; 2008), we focused on risk preferences as potential explanation. First, we confirm existing gender differences in charitable giving (e.g., Eckel and Grossman, 1998) and risk taking (e.g., Charness and Gneezy, 2012). That is, women give substantially more than male subjects. Second, we show that risk preferences may predict when women give more. Our results find clear evidence for an economically significant positive correlation between women's risk tolerance and charitable giving. The data show that the gender difference in donations we find, can be entirely explained by risk-tolerant women. Interestingly, risk-tolerant women give significantly more than men, whereas risk-averse ones do not differ from men. A conspicuous finding is that 38% of the men donate nothing. The results may shed new light on established gender differences in charitable giving (e.g., Piper and Schnepf, 2008; Croson and Gneezy, 2009) as they suggest that attitudes toward uncertainty may play an important role for charitable giving. Our result implies interesting policy implications. For instance, it raises the question: how to design fund-raising environments which are characterized with fewer risks? Moreover, the finding may be a promising starting point for future research. In this regard, it is interesting to find out whether the risk-averse fraction of women would indeed increase their donations if the environment would be less uncertain.

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Instructions to the experiment

You now participate in an experiment. Please stop talking with the other participants and switch off your cell phone. The experiment will consist of three different parts. In all of the three parts you will have to make several decisions. You will make your decisions without knowing the decisions of the other participants. Moreover, the other participants do not know your decisions while they are making their decisions. At the end of the experiment only one part will be paid out. After the end of the experiment a random draw will select the part to be payoff relevant. All three parts may be chosen with an equal probability. Please take your time to make the decisions. Note that all of your decisions will be anonymous.

In the experiment you will earn „Taler." At the end of the experiment your final payment will be determined by the amount of earned Taler.

The earned Taler will be converted at an exchange rate of:

10 Taler = 1 Euro

You will be paid out your earnings in cash after the end of the experiment.

Part 1

In part 1 you will find the following situation:

You have an endowment of 100 Taler which can be invested in a lottery.

The lottery wins or loses with a **probability of 50%**.

- If the lottery wins, your investment will be multiplied by 2,5.
- If the lotter loses, your investment will be lost.

Please note:

- You can only invest integers between 0 und 100 Taler.

If part 1 becomes payoff relevant, the computer will do a random draw which determines whether the lottery wins. The lottery will win with a probability of 50%.

In this case your payoff will be:

Not invested amount of the endowment + amount paid out by the lottery

You will receive the instructions for part two after you have made your decision in part one.

Part 2

In part two you have to decide on an allocation decision.

You have an endowment of 100 Taler. You are given the opportunity to donate Taler to the "German Red Cross." Therefore, you decide on the allocation of the endowment of **100 Taler** between **you and the recipient** ("German Red Cross").

Therefore, the following question will be displayed on the computer screen:

„Decide on the allocation of the 100 Taler between you and the German Red Cross."

I allocate to me: _____

I allocate to the German Red Cross: _____

Please note:

- You have to decide on the allocation of the entire *endowment* (100 Taler).
- You can only split integers (0-100 Taler).
- Your decision will remain anonymous after the end of the experiment.
- After the end of the experiment we will do an online transaction of the total sum of the donations to the German Red Cross. You are invited to stay and watch us doing the transaction.

If this part will be payoff relevant, then your payoff will equal the alloaction you dictated to you. At the same time the German Red Cross will exactly receive the amount you allocated to them.

You will receive the instructions for part three after you have made your decision in part two.

On-screen instructions of the SVO test (conducted after part three)

Imagine that another person was randomly matched with you. You do not know this person and you also know that you will not meet this person in the future. You and the other person will make decisions by selecting one of the numbers 1, 2 or 3.

Your own decision will lead to points for you and the other person. At the same time the decisions of the other person will also lead to points for you and for herself/himself. Each of these points is of value. The more points you receive, the better it is for you. The more points the other person receives the better it is for her/him.

In what follows you will find an example of how these exercises will work:

	1	**2**	**3**
You will get	500	500	550
The other person will get	100	500	300

In this example the following holds: If you choose “1”, you would get 500 points and the other person would get 100 points. If you choose “2”, you would get 500 points and the other person would also get 500. If you would choose “3”, you would get 550 points and the other person would get 300.

Thus, your decision and your own number of points also affects the other person’s number of points.

Before you make your decisions, bare in mind that there are no right and wrong answers. Just choose your most preferred option.

Keep in mind that the points are of value: The more you get the better. This also holds from the perspective of the other person: The more she/he gets the better,