Inequality, Fairness and Risk

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Abstract

Existing literature suggests that an individual's socioeconomic status may have a considerable effect on their tendency to engage in financially risky behaviors. More specifically, studies have demonstrated that victims of inequality, that is, people of low socioeconomic status or whose financial disadvantage is salient, have an increased propensity to make risky monetary decisions. This notion, however, does not apply to all cases of economic inequality, but rather depends on the process through which income is acquired. Thus, this research attempts to challenge the current notion by varying the fairness of the process through which income is earned or given, attempting to more accurately simulate the earning of income in the real world. I hypothesize that using a "fairer" process to determine monetary distribution will curtail the risky behaviors supposedly caused by economic inequality, as opposed to a random or arbitrary (unfair) process. I also seek to determine if perceived procedural fairness can influence one's willingness to take financial risks. In situations of inequality, I find no considerable effect of distribution fairness on subsequent levels of risk involved in making financial decisions.

Introduction

It seems intuitive that people of lower socioeconomic status would generally be more prudent when it comes to spending or investing their income. However, numerous studies have suggested that gaps in income distribution can actually cause individuals to engage in riskier financial behavior relative to their wealthier counterparts. For example, a study by Mishra et al. (2015) demonstrated that "victims" of inequality, when aware of the financial disparity between themselves and others, have a greater tendency to choose risky bets over definite earnings when given the option. Moreover, Mishra et al. (2015) found that ameliorating this financial

disparity by eliminating income gaps between subjects correlated with a reduction in observed risky behavior. That is, when victims of inequality were put in equal financial standing with their wealthier counterparts, they were less likely to make risky financial decisions. Research by Payne et al. (2016) bolsters these findings, also concluding that people tend to choose risky gambles in conditions of inequality where they are not the beneficiary. Kuziemko et al. (2011) take this notion a step further, formulating a theory of "last place aversion" in which people suffering the largest losses from inequality in a given group will gravitate toward riskier options over definite earnings.

In an attempt to provide an explanation for this phenomenon, Payne et al. (2016) posit that victims of inequality tend to make upward social comparisons. Desiring to close the income gap, they are thus more willing to choose risky financial decisions that may result in larger payouts over definite, but smaller, profits. In the case of Kuziemko et al., people will choose riskier options in order to maintain their current social status (avoid falling into last place) or to move up in ranking (attempting to move out of last place). However, on-going research by Einav Hart and Paul Piff suggest that the "fairness" of the monetary allocation procedure can influence how people make financial decisions. Here, a "fair" process is one which operates on an objective measure of judgement. That is, "fairness" consists in determining monetary allocations via a procedure which evaluates people with regard to some objective test. Conversely, an "unfair" process involves a subjective or random metric. In other words, "unfairness" utilizes no objective basis for evaluation. In the studies mentioned above, the process by which inequality was implemented was completely arbitrary, determined at random by the researcher at the time of the study. In our terms, we would judge this distribution process as unfair. For example, of 2 participants arriving for a study, one would randomly be chosen to be the beneficiary of inequality, receiving $10 while the other received nothing.

Our study seeks to determine if varying the fairness of the allocation procedure can influence individuals' tendency to choose risky over safe bets. More specifically, findings by Hart and Piff suggest that a fair allocation process encourages mindful decision making, and that "inequalities perceived as fair can promote cooperation and trust." Furthermore, a study by Hoffman et al. (1994) suggests that people tend to be less willing to let go of money that they have had to work for, as opposed to money that is simply allocated to them. Thus, based on this finding and the notion

that fairness can yield positive effects on individual decision making, we hypothesize that a fairer allocation procedure will moderate the observed risky behavior otherwise caused by financial inequality.

Method

Participants consisted of 197 individuals recruited using Amazon Mechanical Turk, and they completed our survey and experimental tasks online. The survey was advertised with a standardized monetary payment ($0.40) and offered the potential to earn additional money. Participants were purportedly placed in a group with two other "subjects," against whom they would be compared for the duration of the study. They were then randomly assigned to one of four possible conditions in which equality and fairness were manipulated.

In each condition, participants would respond to a questionnaire and then make a series of financial decisions intended to help us measure levels of risk.

Condition	**Description**
Fair + Equal	Fair allocation procedure, financial equality
Fair + Unequal	Fair allocation procedure, financial inequality
Unfair + Equal	Unfair allocation procedure, financial equality
Unfair + Unequal	Unfair allocation procedure, financial inequality

Table 1. Levels of fairness and inequality in each condition

Procedure

Participants completing the task were told that they would be paired with two other people who would constitute their group for the duration of the study. This was not true, however, as participants were merely shown a predetermined set of fictitious subjects against whom they would be compared. They were then shown one of two possible questionnaires: either a preference questionnaire or a trivia questionnaire. Participants were told that they would receive a payment based on their answers to the questions presented, and they would also see the payments received by the other two members of their group. The preference questionnaire con-

stituted the "unfair" process, as it consisted of questions such as "what is your favorite genre of movie" and contained no objective metric for evaluation. In other words, these questions had no right or wrong answers, but were answered strictly according to the participants' preferences. The trivia questionnaire constituted the "fair" process and consisted of knowledge-based questions. We defined this to be the "fair" process, as there were objectively correct answers to the questions being asked, and therefore an objective metric for evaluation and ranking. In order to check the fairness manipulation, participants were also asked to rate the fairness of the procedure used to determine the payment before the equality manipulation. They rated the procedure on a 9-point scale, with 1 being the least fair and 9 being the most.

Regardless of participants' performance on the questionnaire task, participants were randomly allocated to either an equal or unequal condition. In the equal condition, participants were allocated the same payment as the other two group members, each receiving $0.28. In the unequal condition, participants received the least amount ($0.28) of money relative to their group members ($0.63 and $0.89). We then assessed participants' risk preferences. Participants were presented with six choice pairs and were told that one of their choices would be randomly selected at the end of the study and that they would receive any payoff associated with their decision. The choice pairs are shown in Table 2.

Guaranteed		Risky
100% probability of receiving $0.24	OR	80% probability of receiving $0.30
100% probability of receiving $0.24	OR	60% probability of receiving $0.40
100% probability of receiving $0.24	OR	40% probability of receiving $0.60
100% probability of receiving $0.24	OR	30% probability of receiving $0.80
100% probability of receiving $0.24	OR	20% probability of receiving $1.20

100% probability of receiving $0.24	OR	10% probability of receiving $2.40

Table 2. The six choice pairs presented to each participant. Participants were asked to choose which they would most prefer.

Each pair consisted of one "Guaranteed" option which offered a 100% chance of receiving $0.24, and one "Risky" option which offered an X% chance of receiving some amount greater than the Guaranteed alternative. Risky gambles were chosen such that the expected value of each was the same as the guaranteed amount. Choice pairs were presented one at a time and in the order shown in Table 2.

There are several ways that one could potentially characterize "risky behavior." For our purposes, we assessed "risky financial behavior" in three ways: 1. Participants choosing the risky option in at least one of the choice pairs. 2. Participants choosing the risky option in at least three (half) of the choice pairs. 3. Participants choosing any risky gamble with probability less than 50% (in other words, choosing any one of the four riskiest gambles). We evaluated levels of risk based on these individual definitions of "risky behavior," as well as recorded how many risky options were chosen by participants in each condition.

Results

In a two-sample t-test, we found that participants in the fair (trivia) condition rated the allocation procedure as fairer on average (5.72) than participants in the unfair (preference) condition (5.09), with $t(197)= -2.06$, $p = 0.041$. Thus, this difference is significant, confirming that the trivia questionnaire with an objective metric of judgement was also perceived as fairer by participants (Figure 1).

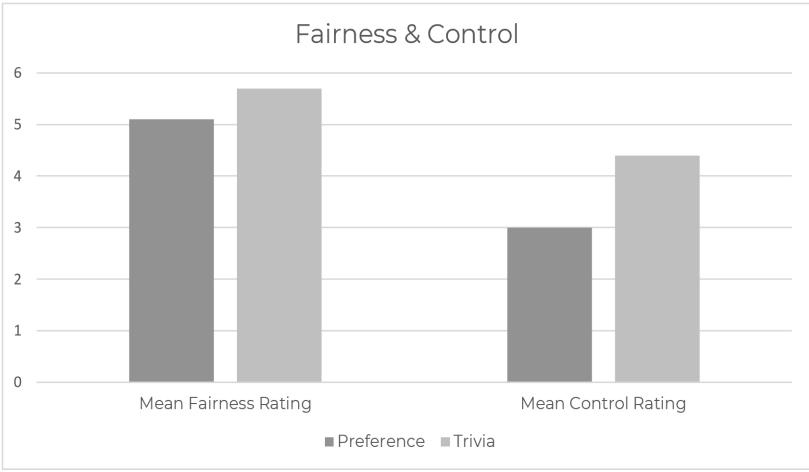

Figure 1. Average participant ratings of procedural fairness and control over outcomes in preference vs. trivia conditions

Moreover, participants in the trivia condition also reported feeling like they had much more control over the outcome and their subsequent payoff on average (4.4) than participants in the preference condition (3.0) with $t(197) = -4$, $P = .0001$ (participants rated control on the same 9-point scale whichthey used to rate fairness).

On average, the number of risky gambles chosen by participants in any condition ranged between 1.7-2 out of the total six gambles presented. We used a binary indicator to express how often participants chose at least one of the risky gambles, with values equal to 0 if no risky options were chosen, and equal to 1 if at least one risky gamble was chosen (Figure 2).

Figure 2. Values represent the percentage of people who choose at least one risky gamble in each condition

We also tested whether the inequality and fairness manipulations influenced participants' subsequent financial decisions using an ANOVA test on two of the dependent variables; how many risky options were chosen and whether a risky option was chosen at all (same as the binary indicator described above, noting whether at least one of the risky options was chosen). We included participants' subjective fairness rating in the analyses to assess whether perceived fairness could have the same or similar effect of objective fairness. Though a process may be objectively fair, we wanted to determine if perceived fairness could also be influential. There was no significant effect of either the inequality ($F(1,197)=.11$, $P = .74$) or fairness ($F(1,197)=.01$, $P = .94$) manipulations on the total number of risky options chosen by each participant, nor was there a significant interaction effect, $F(1,197)=1.16$ and $P = .28$ (Table 2). Results were similar regarding the effects inequality, fairness, and their interaction on whether a risky gamble was chosen at all. However, participants' perceived fairness of the allocation procedure seemed to have an effect on whether a

risky gamble would be chosen, with F(8,197)=2.11 and P = .04 (Table 3). Yet, no other significant effects were observed.

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                Number of obs =     197     R-squared     =  0.0702
                Root MSE      = 1.80971     Adj R-squared = -0.0296

      Source |  Partial SS    df       MS           F     Prob > F
-------------+----------------------------------------------------
       Model |  43.7879785    19  2.30463045       0.70     0.8121
             |
  inequality |  .372931484     1  .372931484       0.11     0.7362
      trivia |  .020334834     1  .020334834       0.01     0.9373
   ineq_triv |  3.80618091     1  3.80618091       1.16     0.2825
fairproce~2 |  23.5088711     8  2.93860888       0.90     0.5200
    fairpay2 |  9.42222938     8  1.17777867       0.36     0.9404
             |
    Residual |  579.684103   177  3.27505143
-------------+----------------------------------------------------
       Total |  623.472081   196  3.18098001
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Table 3. Main and interaction effects of dependent variables on whether a risky gamble is chosen

Finally, a contrast test was used to compare the effects of each independent variable (namely the fairness manipulation and the inequality manipulation) on the levels of the other. The inequality manipulation had no significant effect on either the total number of risky gambles chosen (F=.66, P=.5) or on whether a risky gamble was chosen at all (F=1.01, P=.37) for both levels of the fairness manipulation. Similarly, the fairness manipulation had no significant effect on whether a risky gamble was chosen (F=.83, P=.43) or the total number of risky gambles chosen (F=.58, P=.6).

Discussion

The results of this study suggest that the fairness of the procedure used to distribute income does not influence the level of risk involved in subsequent financial decisions made with that income. However, it is important to note that this research bolsters the notion offered by Hart and Piff that individuals do indeed perceive more objective measures of judgement as

fairer than subjective, arbitrary measures. Perhaps, the amounts of money allocated to participants in this case was too low to elicit any potential effects of procedural fairness on financial risk-taking. It could be that larger amounts of income entailing greater or more enduring financial consequences, in conjunction with inequality and procedural fairness, is what is needed to more accurately simulate real-world earning and distribution of wealth and yield the outcomes hypothesized in this paper. This was one key distinction between our study and the research cited here; the initial allocation and potential gains or losses entailed by the risky gambles in our study were much lower. Future studies may attempt to replicate the process we have used, but increase the initial allocation, as well as the potential monetary loss or gain, in an effort to determine if the magnitude of potential gains and losses, in conjunction with inequality, produces different results.

Finally, though this study failed to uncover any connection between procedural fairness and risky financial behavior, there nevertheless seems to be a methodological problem with studies whose monetary allocation is determined completely at random. As previously stated, Hoffman et al. (1994) found that people tend to be much more conservative with money that they had to work for, as opposed to money that was simply given to them. Intuitively, we might reasonably assume that this would also entail safer financial behavior, rather than increased risk-taking. Thus, future studies may also seek to determine if financial risk-taking in conditions of inequality can be curtailed by effort on the part of the recipient who has to work to earn the money being allocated to them.

References

Hoffman, E., Mccabe, K., Shachat, K., & Smith, V. (1994). "Preferences, Property Rights, and Anonymity in Bargaining Games." *Games and Economic Behavior*, 7(3), 346-380. doi:10.1006/game.1994.1056

Kuziemko, I., Buell, R., Reich, T., & Norton, M. (2011). "Last-place Aversion." *Evidence and Redistributive Implications*. doi:10.3386/w17234

Mishra, S., Hing, L. S., & Lalumière, M. L. (2015). "Inequality and Risk-Taking." *Evolutionary Psychology*, 13(3). doi:10.1177/1474704915596295

Payne, K., Brown-Iannuzzi, J., & Hannay, J. (2017). "Economic inequality increases risk taking." *Proceedings of the National Academy of Sciences of the United States*, 114(18). Retrieved November 23, 2017.