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Risk taking in diverse groups: Gender matters

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Risk taking in diverse groups: Gender matters

Jeroen Nieboer*

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Using an experiment with incentivized decisions of groups in the economics laboratory, I investigate the effect of group diversity on group risk taking. I measure econometrically the effects of various aspects of subjects' diversity: nationality, language, university degree and gender. I find that group decisions, when taken during face-to-face discussions between group members, replicate the pattern of previous studies with the same experimental task in that they lead to significantly higher risk taking by groups as compared to individuals. Furthermore, the only dimension of diversity with an effect on risk taking is gender: risk taking is increasing in the number of male group members.

Keywords: experiments, choice under risk, groups, teams, diversity
JEL Classification numbers: C91, C92, D71, D80

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1. Introduction

Decision-making groups at many levels of society are becoming more and more diverse. Within country borders, this development is driven by the increasing participation of women and ethnic minorities; across country borders, diversity is driven by greater international cooperation and economic integration. Diversity is not only viewed as a worthy goal in itself, but many also claim it leads to better decisions:

"The problem of risk comes down to diversity… (…) …if you cut everybody in your own mould in the same business, then you don't have enough pressure on the questions of "Why?", "What are the benefits?" and "What are the risks?""

-- Karren Brady, CEO and former UK businesswoman of the year

To be able to say anything about whether diverse groups make better (ex ante) decisions under risk, we must first understand how diversity might lead to decisions that are different. To investigate this question, I measure risk taking by small groups in a laboratory experiment with monetary incentives, and estimate the effect of various dimensions of group diversity. Exploiting the natural variation that occurs in the subject population, university students, I estimate the effects of cultural (nationality), educational (university degree) and demographic (gender) diversity. This paper thus adds to the literature by providing evidence of risk taking from a controlled laboratory setting in which self-selection into groups with certain characteristics is ruled out by design. Such research is much needed because, despite the growing interest in diversity research, there is very little laboratory evidence on diversity in small groups.

Diversity is thought to affect group risk taking through two mechanisms. First, there is a literature that focuses on the role of diversity in the *group process* (Williams and O'Reilly, 1998; Jehn et al., 1999; Van Knippenberg and Schippers, 2007; Nielsen, 2010). The dominant theories in this field suggest that group diversity in terms of members' functional experience allows the group to draw on a wider set of knowledge, therefore leading to better-informed choices. On the other hand, if group members are from diverse social, political or ethnic backgrounds, the group process might suffer from poor communication because group members cannot relate to each

other. For example, the 'faultline' theory of Lau and Murnigan (1998) suggests that certain combinations of diversity dimensions lead to the formation of sub-groups that disrupt group functioning. Second, another mechanism by which diversity can affect risk taking is through the *preferences of group members*. For example, it is likely that a group comprised of risk-loving individuals will take more risk than a group of risk-averse individuals. It is worth noting that the preferences-based explanation of group decisions makes predictions based on group *composition* variables rather than group diversity variables: groups of identical, risk-loving individuals and groups of identical, risk-averse individuals are equally diverse (in that there is no diversity), but they are predicted to take different levels of risk due to the groups' composition with respect to their risk preferences. The empirical link between individual risk preferences and group composition derives from the fact that some individual characteristics, like nationality (Hsee and Weber, 1999; Fong and Wyer, 2003; Lau and Ranyard, 2005), age (Otani et al., 1992; Grasmick et al., 1996; Gardner and Steinberg, 2005) and gender (Eckel and Grossman, 2008; Croson and Gneezy, 2009; Charness and Gneezy, 2012), have been shown to be correlated with risk preferences. I measure how these characteristics affect subjects' risk preferences in a control treatment with individual decisions, and I estimate how these preferences come through in consensus decision-making in the group decision treatment.

The results of the experiment are striking: gender is the only characteristic that significantly affects risk taking, in both individuals and groups. The result for individual decision-making – men take more risk than women – is in line with most of the literature on this topic. The risk taking pattern for groups with different gender compositions is in line with a study of financial decisions by Bogan et al. (forthcoming), although the relationship I find is more straightforward: risk taking is strictly increasing in the number of male group members.

2. Related literature

Researchers studying the effects of group diversity have traditionally focused on performance measures, rather than choice outcomes per se, as the main products of group decision-making. The empirical literature on management teams is particularly rich in this regard, with various

studies that define performance in terms of process-related measures, such as breadth of information use, incidence of group member conflicts, group member ratings of satisfaction and commitment, or more outcome-oriented measures such as customer satisfaction, return on investment and market share (for reviews, see Williams and O'Reilly, 1998; Nielsen, 2010). However, this literature also includes a number of studies that investigate outputs with a strong risk component. Bantel and Jackson (1989) look at the effect of diversity in banks' top management teams on entrepreneurial risk taking, measured in terms of product innovation. They find that banks headed by managers from diverse functional backgrounds are more innovative, but that diversity in age, team tenure length and education are not related to product innovation. Another kind of corporate risk taking is initiating changes to corporate strategy. Wiersema and Bantel (1992) report that strategic change is more likely to originate with management teams with a lower average age, shorter organization tenure length, more educational diversity and higher levels of education. Boeker (1997) finds that higher team tenure length and greater diversity in team tenure length are associated with a greater likelihood of strategic change. Finally, top management teams' preferences for risk can be inferred from the kind of investments they make – foreign investment is widely seen as more risky than domestic investment. Barkema and Shyrkov (2007) find that Dutch top management teams with greater diversity in team tenure length (which is related to managers' recent functional background) make more foreign direct investments. Nielsen and Nielsen (2011) report that Swiss multi-national companies managed by more internationally diverse teams are more likely to pursue expansion through joint ventures than through more risky full-control entities.

One issue with empirical studies of management teams is that they cannot control for selection of people into teams: it may be that the effect of diversity is affected by the type of people who succeed in getting into top management teams. Measuring the effect of diversity without selection effects requires controlled experiments that randomise the allocation of people to teams. At present, there is very little experimental evidence on the relationship between diversity and risk taking in small groups. In a non-incentivized experiment with participants from a management training course in the US, Watson and Kumar (1992) find that culturally diverse groups take less risk than culturally similar groups when deciding about hypothetical scenarios. The only incentivized laboratory study of risk taking in diverse groups is Bogan et al.

(forthcoming), in which choices are explicitly framed as financial decisions. The investments are choices between stock portfolios with different levels of risk, and subject earnings depend on the subsequent performance of the portfolios. The authors systematically vary the gender composition of the groups, and find that groups' propensity to take risk is increased by having a male in the group, although risk taking is not strictly increasing in the number of male group members. The most risk-seeking groups in their experiment are male-dominated, but not all male. In my experiment, risk taking is strictly increasing in the number of male group members.

Various experimental studies have shown that certain subject characteristics correlate with risk preferences. Nationality, a proxy variable for cultural differences, was first investigated by Hsee and Weber (1999). They find that Chinese students are more risk seeking than British subjects in a hypothetical stock market investment task. Lau and Ranyard (2005) also report that (Hong Kong) Chinese subjects are more risk seeking than British subjects in a hypothetical gambling task. Finally, Fong and Wyer (2003) find that (Hong Kong) Chinese and American students are equally risk seeking in hypothetical stock market investment choices, but Americans are more risk seeking in hypothetical scenarios in the domain of academic achievement. The results in these experiments suggest that the relationship between culture and risk taking is not straightforward, and any observed difference might only apply to a particular task or domain. Gender seems to display a more straightforward relationship with risk taking: men take more risk than women. Although some experiments find no such 'gender effect', the vast majority of studies on (incentivized) risk taking report that men are more risk seeking than women (see Eckel and Grossman, 2008; Croson and Gneezy, 2009). In fact, in a review of 15 experiments based on the investment game used in the present paper (explained in the next section), Charness and Gneezy conclude that there is "… a very consistent result that women invest less, and thus appear to be more financially risk averse than men." (Charness and Gneezy, 2012, p. 50).

3. The experiment

The experiment consists of an investment task with two treatments: one treatment with individual investment decisions (IND) and one treatment with group decisions during face-to-

face discussion (GRP).[1] The investment task was introduced by Gneezy and Potters (1997); I use the implementation of Sutter (2009), a computerized game programmed in z-Tree (Fischbacher, 2007). Since Sutter also carried out treatments with individual and group decision-making, I attempt to replicate his results in these treatments by using the same instructions, software, experimental parameters and incentive structure.[2] The main result of Sutter's experiment that I attempt to replicate, and that was previously replicated for groups that communicated by electronic chat (Bougheas et al., 2013), is that groups take significantly more risk than individuals in the investment game.

In the investment task, the decision-maker receives an endowment of 100 pence and chooses how much to invest in a risky asset. With probability 2/3 the asset yields zero, and the decision-maker earns that part of her endowment that was not invested. With probability 1/3 the asset returns 3.5 times the investment, and so the decision-maker earns her endowment plus 2.5 times her investment. That is, if the decision-maker invests x her earnings in a round are given by

$$\text{earnings} = \begin{cases} 100 - x \text{ with probability } 2/3 \\ 100 + 2.5x \text{ with probability } 1/3 \end{cases}.$$

This task is repeated over nine rounds, with the asset returns determined by independent draws at the end of each round (using a computerized random number generator). An expected earnings-maximizing (risk-neutral) decision-maker would invest the full endowment (x = 100), yielding expected earnings of £1.17 in every round. More generally, expected earnings are strictly increasing in x. I use the amount invested in the risky asset as a measure of risk taking.

In treatment IND, subjects sit at computer terminals separated by dividers and make individual investment decisions. They are not allowed to communicate with each other and they do not receive feedback about others' choices during or after the experiment. At the end of each round,

[1] The data from treatment IND were previously reported in Bougheas et al. (2013).

[2] Instructions were taken from the English translations provided in Sutter (2009). The software was a set of a z-Tree (Fischbacher, 2007) treatment files, downloaded from the journal website at http://www.e-aer.org/data/dec09/20080341_data.zip and translated to English. Regarding incentives, I replace the €-sign with a £-sign for the two payment variables: the show-up fee (€ 2→£2) and round endowment (€ 1→ £1). This means that incentives in my experiment are higher than in Sutter (2009) in real terms. Using the Economist's 'Big Mac index' (http://www.bigmacindex.org) as a proxy for PPP, I estimate that the purchasing power of £1 in 2012 is 25% higher than € 1 in 2008.

subjects see a summary screen reminding them of their choice and informing them of their earnings for the round. In treatment GRP, groups of three subjects are randomly formed at the start of the experiment – this group composition is fixed for the whole experiment. The three subjects sit together behind a single computer terminal and are separated from other groups by dividers. In each round, group members can discuss their decision in a low voice (as not to influence other groups). Once consensus has been reached, one of the group members enters the consensus choice x on the computer.[3] Groups cannot communicate with other groups and do not receive any feedback on other groups' choices during or after the experiment.

3.1 Procedures

The experiment was carried out in the CeDEx laboratory at the University of Nottingham between November 2011 and May 2012. I used ORSEE (Greiner, 2004) to recruit subjects. Subjects were (mostly undergraduate) students from various disciplines, who had previously registered for participation in economics experiments. Altogether, 324 subjects took part in the experiment: 69 participated in treatment IND and 255 (85 groups of 3) participated in treatment GRP. In both treatments, subjects were given instructions (see Appendix) that were read aloud. Subjects then made decisions over nine rounds, with their round earnings shown on screen at the end of each round. After the final round, subjects completed a questionnaire and were paid. Average subject earnings (including a show-up fee of £2) were £11.82, with an average session time of 35 minutes.

3.2 Subject pool demographics

Table 1 shows the demographic characteristics of the experiment's subject pool, aggregated

[3] The experimental instructions, as in the original experiment by Sutter (2009), do not mention a 'default' rule in case a group cannot agree on a consensus investment level. This could be a potential concern from an experimental design perspective, but I find that groups readily reach consensus in all nine rounds. In Bougheas et al. (2013), we find that reducing round earnings to zero for groups that cannot agree leads to choices similar to those reported here. What is to my knowledge unknown, and potentially interesting to investigate, is what happens when the default rule is different, such as default investment levels of $x=0$ or $x=100$.

per treatment. First, note that average age in both treatments is similar. Because of the little variation in age (standard deviation is 2.4 in IND and 1.5 in GRP) in the sample of university students, I do not investigate age as a possible factor affecting risk preferences.[4] Second, treatment IND has more males and treatment GRP has more females, which may affect average investment measures for these treatments. Third, treatment GRP has relatively many subjects studying economics or business, which may affect decisions if these subjects are more familiar with expected value calculations (recall that a risk-neutral subject will invest the full endowment in every round of the game). To control for this possibility, I also include degree diversity in the regression analysis described in the next section. Finally, I note that the distribution of subjects along cultural lines is similar across treatments.

Table 1: Subject pool demographics

	IND (n=69)	GRP (n=225)
Average age	19.9	20.0
Percentage males (females)	55% (45%)	43% (57%)
Percentage economics/business students (other)	12% (88%)	24% (76%)
Percentage British (other)	77% (23%)	69% (31%)
Percentage East-Asians (other)	10% (90%)	16% (84%)

4. Results

Table 2 lists average investment in both treatments, averaged over all nine rounds and in blocks of three rounds. For comparability, I also include the averages of the individual and group treatments reported by Sutter (2009). I note that the gap between investments by individuals (IND) and groups (GRP) is smaller in my experiment than in Sutter's. Nevertheless, a pair-wise comparison indicates that average investment over all rounds in

[4] There is survey and experimental evidence that suggests that people become more risk-averse as they get older (Otani et al., 1992; Grasmick et al., 1996; Gardner and Steinberg, 2005).

treatment GRP is significantly higher than in IND (two-tailed Mann-Whitney U test, $p < 0.05$). Despite a relatively lower average investment by groups, I replicate the results of Sutter (2009) qualitatively.

Table 2: Percentage of endowment invested

	Sutter (2009)		Nieboer (2013)	
	IND (n=64)	GRP (n=28)	IND (n=69)	GRP (n=85)
Rounds 1-3	39.6	53.4	39.3	43.5
Rounds 4-6	38.5	56.1	42.4	45.7
Rounds 7-9	40.1	57.6	37.3	51.9
All rounds	39.4	55.7	39.7	47.0

The first two data columns contain the averages from treatments in Sutter (2009); the last two columns are the investment averages from my experiment.

Table 3: Tobit regressions of average investment by individuals on subject characteristics

	(1)	(2)	(3)
Male	18.411***	18.601***	18.504***
	(6.727)	(6.766)	(6.714)
Economics/business student	-10.805	-14.264	-11.982
	(11.183)	(11.206)	(11.310)
British	7.785		11.492
	(8.375)		(10.145)
East-Asian		0.079	9.058
		(11.650)	(14.018)
Number of observations	69	69	69
Prob > χ^2	0.0143	0.0129	0.0150

Standard errors in parentheses, asterisks denote significance at the 10% (*), 5% (**), 1% (***) level. Constant estimated but not reported.

To measure the effect of subject characteristics and group diversity on risk taking, I run Tobit

regressions of average investment (over all nine rounds) on demographic variables (for treatment IND) and dummy variables for different type of group composition (for treatment GRP). For the individual treatment, the results of which are reported in Table 3, the only characteristic that is significantly correlated with risk taking is gender: men take more risk than women. The result of higher risk taking by men is in line with the findings of Charness and Gneezy (2012), mentioned above, who review 15 experiments with the same investment game and also find a strong gender effect. I find no evidence that economics and business students act more in line with risk neutrality (recall that risk-neutral decision-makers always invest the full endowment). I also find no evidence that culture (as measured by nationality) affects risk taking by individuals.

Table 4 shows the results of a Tobit regression of investment on measures of group diversity. The gender effect also shows up in group risk taking: the more male group members, the more risk the group takes. Although a group with 1 male and 2 female group members does not take significantly more risk than the baseline group (3 females), groups with 2 males take significantly more risk, and all-male groups take even more risk.[5] The effect of gender composition is clear and thus mimics the gender effect found in individual decisions. Also note that the gender effect could explain the relatively low group investment averages compared to the averages reported in Sutter (2009): the majority of subjects in my GRP treatment (57%) is female. The group diversity effects of education are less straightforward to explain: groups with 2 economics/business students take significantly less risk than the baseline group (3 non-economics/business students), but if we increase the number of economics/business students to 3 the difference with the baseline group disappears (although the subject sample only contains 3 groups with only economics/business students). Finally, a group with one East-Asian subject takes significantly less risk than the baseline groups (no East-Asians), but groups with three East-Asian subjects take significantly more risk than groups in the baseline. This pattern could be explained by the level of cultural similarity between group members: subjects feel more

[5] I carried out three Wald coefficient tests of the null hypothesis that $\beta_{3M} - \beta_{2M1F} = 0$ (one for each model specification). For two out of three specifications I cannot reject the null ($p = 0.1585$ for model 2 and $p = 0.1279$ for model 3), and for one specification I reject the null hypothesis in favour of greater risk taking by all-male groups than groups with 2 males and 1 female at the 10% level ($p = 0.0665$ for model 1). The marginal significance of this result, and the inability to reject the null in favour of greater investment by all-male groups in the two other models, is probably due to the low number of all-male groups ($n_{3M} = 6$) in the GRP treatment.

Table 4: Tobit regressions of average investment by groups on diversity variables

	(1)	(2)	(3)
2 Females, 1 Male	0.449	0.087	1.776
	(7.314)	(6.851)	(6.883)
2 Males, 1 Female	16.802**	18.221**	19.446***
	(7.450)	(7.077)	(7.029)
3 Males	36.303***	32.165***	34.469***
	(11.251)	(10.650)	(10.558)
1 Economics/business student, 2 other	-6.653	-5.912	-6.320
	(5.551)	(5.267)	(5.191)
2 Economics/business students, 1 other	-14.210	-13.656*	-17.562**
	(8.586)	(7.251)	(8.086)
3 Economics/business students	-5.563	-7.670	-6.856
	(13.465)	(12.646)	(12.449)
1 British, 2 other	-3.191		8.776
	(12.470)		(12.862)
2 British, 1 other	-10.099		-5.386
	(12.250)		(12.199)
3 British	-3.407		-7.850
	(12.950)		(12.947)
1 East-Asians, 2 other		-13.435**	-17.181***
		(5.103)	(6.108)
2 East-Asians, 1 other		-5.906	-20.779
		(10.130)	(13.001)
3 East-Asians		43.610*	42.258*
		(22.429)	(23.817)
Number of observations	85	85	85
Prob > χ^2	0.0252	0.0380	0.0421

Standard errors in parentheses, asterisks denote significance at the 10% (*), 5% (**), 1% (***) level. Constant estimated but not reported.

comfortable taking risk in homogeneous groups (the baseline groups without any East-Asian subjects and the groups with 3 East-Asian subjects). Such behaviour would be in line with theories of social and cultural 'faultlines' in groups (Lau and Murnigan, 1998). But if this were strictly true, we would expect a similar pattern to emerge with respect to all-British groups versus more diverse groups, which is not the case. Furthermore, the estimate of risk taking in groups with 3 East-Asian members is based on only one group, with subjects from different countries and/or backgrounds (Hong Kong China, China, and Vietnam). Without an experimental setting that explicitly controls for the background of subjects who are from supposedly similar cultures, it would imprudent to draw conclusions about the effect of cultural diversity on risk taking.

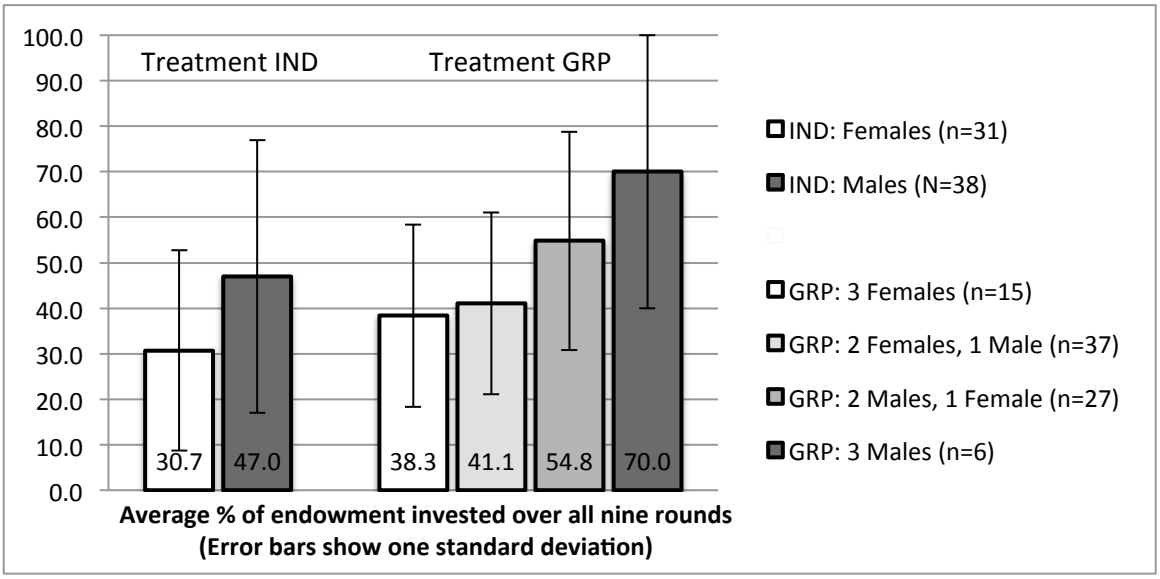
5. Discussion: gender and groups

The most striking result of the experiment is the uniform effect of gender across the two treatments: risk taking by both individuals and groups is, at least in part, 'testosterone driven'. To compare behaviour across treatments, consider the chart of average investment for different gender compositions in figure 1. The chart shows that the pattern of higher risk taking by groups applies regardless of gender: all-female groups invest more than individual women (although not significantly so) and all-male groups invest significantly more than individual men (two-tailed Mann-Whitney U test, $p<0.1$). The stronger group effect for males compared to females could be due to men feeling pressure to conform to a gender stereotype of the 'risk-seeking male' when interacting with others in an all-male group.

What kind of decision-making process could be driving risk taking in groups? The data seem to exclude the possibility of 'averaging' in groups – the data on all-male and all-female groups show that group investment does not correspond to the average of the individuals' risk preferences. One possibility is that the arguments of more risk-seeking group members carry more weight in the discussion – either because risk seekers are inherently better at persuading others, or because it is easier to argue in favour of higher investment in the context of this investment task (recall that expected earnings are strictly increasing in investment). In an

experiment with the same investment task and group communication through electronic chat, Bougheas et al. (2013) find that group discussion about expected earnings is positively and significantly correlated with higher investment. Another intriguing explanation is suggested by the results of a group leadership experiment by Ertac and Gurdal (2012). They report that men are more likely to put themselves forward as group leaders than women, and that male (but not female) leaders are generally more risk seeking than non-leaders. If, in my experiment, risk-seeking males are more likely to act as a discussion leader in groups, that explains why groups with two or three males invest more than individual males. However, all-female groups also invest more than individual females in my experiment, a result that is at odds with the findings of Ertac and Gurdal. In a follow-up experiment, Ertac and Gurdal (2012b) investigate the relationship between leadership, risk taking and personality traits. They find that the tendency to take leadership roles and take risks is related to different personality traits in men and women. For example, women who score high on conscientiousness take relatively less risk as a group leader, whereas conscientious men take more risk as a group leader. These results suggest that the variance in group decisions under risk cannot be fully explained by demographic diversity variables – psychological factors are likely to be informative, too.

Figure 1: Average investment, by gender (composition)



Little is known about whether the diversity effect I detect in the laboratory also occurs in the

field: there are very few field studies on group gender diversity and risk taking. Bogan et al. (forthcoming) attempt to replicate field decision-making by asking four-person groups with different gender compositions to make portfolio management decisions. The authors find that a male presence in a group increases risk taking, but risk taking in their experiment is not strictly increasing in the number of male group members. These results suggest that the effect of gender diversity on group risk taking depends on the task and its context. The empirical studies that do directly investigate group risk taking in a field setting are limited to using proxy measures for risk taking. Adams and Ferreira (2003) use the volatility of a company's stock returns as a measure of risk, and find that there is a positive correlation between stock return volatility and the number of female directors on the board of publicly listed US companies. Wilson and Altanlar (2011) find a similar pattern, albeit with a different risk measure: they find that having more female directors on the board reduces the insolvency risk of UK companies. By contrast, Berger et al. (2012) find that the variability of German banks' return on assets is negatively related to the ratio of female board members. Although these empirical studies tell us more about the variability of companies' fortunes, it is not necessarily the case that this variability derives from the riskiness of decisions taken by the management team. To truly observe the relationship between gender diversity and team risk taking, we need more direct measures of a team's tendency to take risky decisions.

Finally, researchers wanting to investigate the effect of gender in real-world group decision making have to be mindful of a particular type of selection effect: the kind of men and women who end up in teams that take important decisions under risk are likely to have a-typical personality profiles. For example, Adams and Funk (2012) survey company directors and find that women in positions of power are less security oriented and more risk seeking than their male counterparts.

6. Conclusion

Using an incentivised investment task, I compare the effects of different types of diversity on risk taking by individuals and groups. I investigate diversity in terms of nationality, university

degree and gender, and find that only gender diversity has a significant effect on risk taking. The effect of gender on individual choice is in line with most of the literature: men take more risk than women. In groups, the relationship between gender and risk taking is similar, and monotonic: risk taking is strictly increasing in the number of male group members. Interestingly, group risk taking does not seem to be driven strictly by the individual risk preferences of group members: groups take more risk than individuals, both on average and when controlling for gender. These findings provide valuable information for the development of theories on the group decision process, especially in combination with related findings on personality traits and leadership in groups.

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Appendix: Experimental instructions

Treatment IND

This experiment consists of 9 rounds. In each round you will receive an endowment of 100 pence (1 pound). You must decide which part of this endowment (between 0 pence and 100 pence) you wish to invest in a lottery. The investment will be denoted as amount X.

The outcome of the lottery is as follows:

- With probability 2/3 (66.67%) you lose the amount X you have invested and your pay-off in the respective round is Pay-off = 100 - X pence
- With probability 1/3 (33.33%) you win two and a half times the amount X you have invested in addition to your initial endowment and your pay-off in the respective round is Pay-off = 100 + 2.5X pence

The actual outcome of the lottery depends on a randomly drawn number out of the uniformly distributed interval [0, 3] and on your type. There are three possible types: type 1, 2, and 3. In the first round, you will be informed about your type, which remains fixed for all 9 rounds.

- Type 1 wins if the random number in a given round is from the interval [0, 1]
- Type 2 wins if the random number in a given round is from the interval (1, 2]
- Type 3 wins if the random number in a given round is from the interval (2, 3]

The random number in a given round is identical for all participants in the experiment and it will be independently drawn anew in each consecutive round. After all individuals have entered their decision, you will be informed about the outcome of the random number draw, about whether you have won or lost in the respective round, about your round pay-off and your accumulated pay-off in the whole experiment. For your final earnings, we will add up your pay-offs in all 9 rounds.

In each round, you have 3 minutes to submit your decision. Please do not communicate with other subjects at any point during the experiment. Anybody found in breach of this rule will be dismissed without payment.

Treatment GRP

This experiment consists of 9 rounds. In each round your team will receive an endowment of 100 pence (1 pound). Your team must decide which part of this endowment (between 0 pence and 100 pence) you wish to invest in a lottery. The investment will be denoted as amount X. Within your team, you have to agree on a single choice of the amount X.

The outcome of the lottery is as follows:

- With probability 2/3 (66.67%) you lose the amount X you have invested and your pay-off in the respective round is Pay-off = 100 - X pence
- With probability 1/3 (33.33%) you win two and a half times the amount X you have invested in addition to your initial endowment and your pay-off in the respective round is Pay-off = 100 + 2.5X pence

The actual outcome of the lottery depends on a randomly drawn number out of the uniformly distributed interval [0, 3] and on your type. There are three possible types: type 1, 2, and 3. In the first round, you will be informed about your type, which remains fixed for all 9 rounds.

- Type 1 wins if the random number in a given round is from the interval [0, 1]
- Type 2 wins if the random number in a given round is from the interval (1, 2]
- Type 3 wins if the random number in a given round is from the interval (2, 3]

The random number in a given round is identical for all participants in the experiment and it will be independently drawn anew in each consecutive round. After all teams have entered their decision, you will be informed about the outcome of the random number draw, about whether you have won or lost in the respective round, about your round payoff and your accumulated payoffs up to and including that round. For your final earnings, we will add up your payoffs in all 9 rounds. Please note that each single member of a team will be paid the full earnings, which, of course, are identical for all team members.

Prior to making your decision, you can talk to your fellow team members in a low voice. You are allowed to discuss any aspect of the experiment, as long as you do not make any threats, insults or use otherwise offensive language. Please do not speak loudly or communicate with other teams.