Leadership, inequality, and coordination: An experimental investigation*

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Abstract

How do pay inequality and risk inequality affect the willingness of teams to follow their leaders? We explore this question in a setting where leaders lead by example to mitigate the strategic uncertainty surrounding a decision. Using a simple model, we predict that pay inequality between leaders and team members undermines the effectiveness of leaders in coordinating their teams. Risk inequality can offset the negative impact of pay inequality if the leader is exposed to sufficiently more risk than the team members. We confirm both hypotheses in a large online experiment that varies the degree of pay inequality and risk inequality. Risk-averse team members and individuals who believe that their teammates are inequality-averse are the most responsive to both pay inequality and risk inequality. We obtain similar results in a lab experiment with larger teams and greater financial incentives.

Keywords: Pay inequality, risk exposure, strategic uncertainty, leadership.

JEL Codes: C92, D23, J31, L23, M52

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1 Introduction

Leadership is a focal area in the study of organizational behavior. One crucial line of inquiry is the ability of effective leaders to significantly elevate team performance by aligning team members' expectations and coordinating their actions (e.g., Brandts and Cooper, 2006; Zehnder et al., 2017). The critical role of leaders is partly reflected in the large compensations accorded to CEOs (Tervio, 2008). However, the increase in pay inequality between organizational leaders and team members (Gabaix and Landier, 2008; Mueller et al., 2017; Ohlmer and Sasson, 2018; Gartenberg and Wulf, 2020) may influence the ability of leaders to manage their team (Bebchuk and Fried, 2004).[1]

The overall impact of pay inequality on team coordination is not obvious. On the one hand, there is considerable evidence from organizations (e.g., Clark and Oswald, 1996; Bloom, 1999; Card et al., 2012; Guo et al., 2017; Perez-Truglia, 2020; Cullen and Perez-Truglia, 2022) and controlled experiments (e.g., Fehr and Schmidt, 1999; Bolton and Ockenfels, 2000) that individuals dislike pay inequality. Inequality can also negatively impact equilibrium selection in the absence of leaders (Chmura et al., 2005; Bland and Nikiforakis, 2015; Feldhaus et al., 2020). On the other hand, if the monetary incentives of leaders and their team members are aligned, team members may be willing to follow their leaders despite the pay inequality. This is particularly true if there are factors that could "legitimize" the pay inequality (e.g., Trevor et al., 2012; Cappelen et al., 2013; Breza et al., 2018).

One factor that could legitimize pay inequality is risk inequality. Risk inequality refers to the differences in the risk exposure of leaders and their team members. To our knowledge, there is no empirical research on the impact of (within-firm) risk inequality on organizational performance or coordination. This gap in the literature is surprising for two reasons. First, risk inequality is common in organizations, especially at the higher levels of leadership where bonuses form a significant part of compensation (Lazear and Shaw, 2007). Even at the lower levels, however, leaders face increased risk as they are often held accountable for the actions and performance of their team members. Second, pay inequality and risk inequality often go hand-in-hand and are thus difficult to disentangle, with higher pay partly compensating for greater risk.

[1] There is an ongoing debate about the link between CEO compensation and the market value of the firm. Using data from 2000 companies in the years 1993–2004, Bebchuk et al. (2011) present evidence that CEO pay is *negatively* associated with firm value. However, Chang et al. (2010) provide evidence from CEO departures suggesting that the CEOs' high pay may indeed reflect their ability to create value for shareholders.

In this paper, we investigate the causal effect of pay inequality and risk inequality on the ability of leaders to coordinate the actions of their teams. Identifying the impact of pay inequality and risk inequality with observational data is challenging. Apart from the difficulty of measuring risk exposure and team coordination, there are numerous other challenges concerning identification. For instance, if organizational data show that teams with highly paid managers perform poorly, it could be because employees dislike inequality or it could be because managers are selecting into companies based on the pay structure.[2] To overcome issues of measurement and endogeneity, we use controlled experiments, building on a growing experimental literature on leadership (e.g., Weber et al., 2001; d'Adda et al., 2017; Nikiforakis et al., 2019; Garretsen et al., 2020). Controlled experiments allow us to disentangle the effect of pay inequality from that of risk inequality by separately varying them across conditions. In addition, we are able to explore the mechanisms underlying these effects by measuring individuals' attitudes toward pay inequality and toward risk.

Leadership in our experiment takes the form of leading by example — a commonly studied form of leadership (e.g., Hermalin, 1998; Huck and Rey-Biel, 2006; Sahin et al., 2015; Eisenkopf, 2020). One of the individuals is randomly assigned the role of the leader who must choose between a safe project and a risky project before the other team members, creating a potential focal point around which the rest of the team can coordinate. The incentives are those of a modified stag-hunt game: the safe project yields a fixed payoff that is independent of others' decisions; the risky project yields the highest payoff if it succeeds but results in losses if coordination fails. Such incentives are ubiquitous in modern organizations; e.g., an assembly line moves no faster than the slowest person in the line; a report cannot be finalized before the last member has contributed his part; an aircraft is ready for take-off only when each crew member has completed his task; and a meeting cannot start if a key individual is late (e.g., Lazear, 2012; Brandts et al., 2016; Zehnder et al., 2017).

The experimental treatments vary two dimensions of the leaders' incentives. The first dimension is whether leaders earn bonuses when coordination is successful, thus creating pay inequality between leaders and team members. The second dimension is the leaders' exposure to risk, specifically, the cost they will incur in case of coordination failure. Our two main research questions are: (*i*) Are team members less willing to follow their leader's example when doing so results in pay inequality? And (*ii*) Are

[2] For evidence on how social preferences can affect selection, see Erkal et al. (2011); Lazear et al. (2012).

team members more willing to accept pay inequality when their leader faces greater risk than them? The answer to the first question is not obvious because even if individuals dislike the resulting pay inequality, they earn higher payoffs if the project succeeds than if the project fails and they may be reluctant to be responsible for reducing their peers' earnings. As for the second question, even if a team member believes that the leader's higher pay is justified by the increased risk borne, she will follow the leader's example only if she is confident that others share this perception.[3]

For theoretical guidance, we propose a model combining risk dominance (e.g., Harsanyi and Selten, 1988; Dal Bó et al., 2021) and inequality aversion (e.g., Fehr and Schmidt, 1999; Bolton and Ockenfels, 2000; Chen and Chen, 2011). The model predicts that pay inequality reduces team members' willingness to follow the leader. Furthermore, the model predicts that risk inequality can justify pay inequality. Specifically, leaders who are exposed to greater risks have more influence on their teams than leaders with lesser risk exposure. This effect occurs because the equilibrium selected by risk dominance depends on the leader's off-equilibrium miscoordination cost. Finally, individual heterogeneity — e.g., inequality tolerance, risk tolerance, and beliefs about others' preferences — critically affects the magnitude of the predicted effects. In our setting, team members' financial incentives are constant. Thus, the predicted differences in team members' behaviors across conditions stem from perceptions about the leaders' incentives.

Concerns about controlled experiments sometimes arise when samples are overly homogeneous (e.g., student samples). Specifically, when homegrown preferences such as those for risk and pay equality play a central role, homogeneous samples can limit the extent to which findings can be generalized. For example, if team members in Europe care about pay inequality or risk inequality, can the same be said about team members in the U.S.? To address this concern and evaluate the robustness of our findings, we recruit a diverse sample of 2,030 participants from the U.S. and (predominantly North) Europe. Our recruitment strategy enables us to evaluate the robustness of our claims in samples drawn from countries with demonstrated differences towards fairness (e.g. Almås et al., 2020; Cappelen et al., 2023).

The experimental data largely confirm the theoretical predictions. Our main results are as follows. First, we find that the probability of coordination failure is considerably reduced when there is a leader. Second, pay inequality decreases team members' will-

[3]Cooper et al. (2020) refer to shared perceptions about the leader as the leader's social credibility.

ingness to follow the leader and exacerbates miscoordination. Third, risk inequality helps offset the impact of pay inequality. When leaders face elevated risk, team members are more likely to follow the leader, hence reducing the probability of coordination failure. In line with our theoretical predictions, we find that leaders' risk exposure can justify pay inequality. In contrast to our predictions, however, risk inequality does not promote team coordination in the absence of pay inequality. This finding suggests that risk exposure serves specifically to justify pay inequality. Fourth, we find that individual differences in the probability of following a leader are best explained by individuals' risk tolerance and beliefs about other team members' pay inequality tolerance. Finally, our treatment differences are present in both the European and U.S. samples. That is, variations in pay inequality and risk inequality have similar impacts on leadership effectiveness across samples. We do observe a level effect, however, with Europeans being more likely to follow leaders than Americans across all treatments.

The paper is organized as follows. Section 2 presents the design and theoretical framework of our main experiment. Section 3 presents the main experimental results. Section 4 discusses a complementary lab experiment. Section 5 discusses and concludes.

2 The online experiments

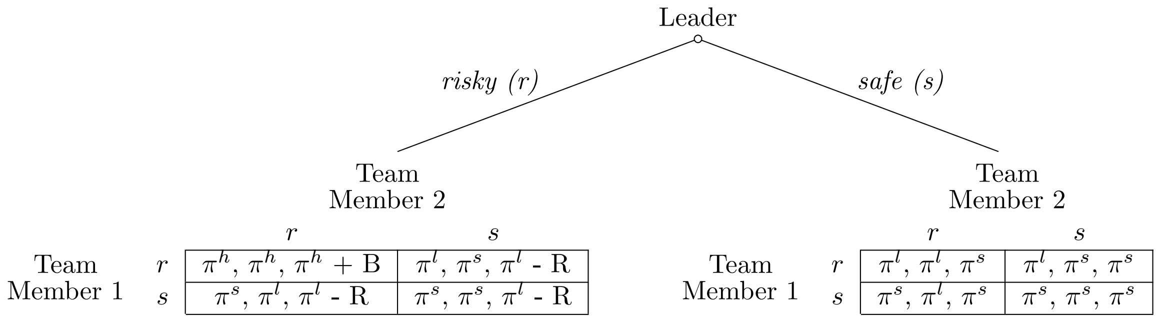
2.1 Sample

The experimental sessions were conducted between July and September 2023 on Prolific.com, an online platform for surveys and experiments. Our sample consists of 2,030 participants. Approximately half the subjects (1,063) are U.S. citizens. The other half are from the Netherlands (440), France (257), Sweden (116), Finland (74), Denmark (40), Norway (33), and Iceland (7). Overall, 53% of the participants are male. The average age is 35, with a minimum of 18 and a standard deviation of 13. Earnings averaged an hourly rate of $28.90. The median completion time was 12 minutes.

2.2 Strategic setting

The participants faced the following strategic problem. Three players in a team choose between a *risky* project and a *safe* project. The risky project generates the highest payoff for everyone but only if it is chosen by all three players. If the group fails to coordinate on choosing the risky project, a player who chooses the risky project earns a

Figure 1: Strategic Setting



Note: The leader moves first, choosing between a *risky* project and a *safe* project. The two team members choose simultaneously after observing the leader's choice. In each cell, the first entry gives team member 1's payoff, the second entry gives team member 2's payoff, and the third entry gives the leader's payoff. The payoffs are ordered as $\pi^h > \pi^s > \pi^l$. In the experiment, $\pi^h = \$4.75$, $\pi^s = \$4$, and $\pi^l = \$2.75$. If the leader chooses *safe*, the team members have a dominant strategy to also choose *safe*. If the leader chooses *risky*, the team members face a modified stag-hunt game. The leader receives a bonus, $B \geq 0$, if the team coordinates on the risky project. Variable $R \in \mathcal{R}$ measures the leader's strategic risk exposure in excess of that faced by the team members.

low payoff. A player who chooses the safe project receives an intermediate payoff—with a value between the low payoff and the high payoff—that is independent of what the others choose. The safe project is an attractive choice if there is significant strategic uncertainty about what others will do.

Figure 1 depicts the order of moves. One of the three players in each group is the *leader* (randomly chosen). The leader is the first mover and chooses between a *risky* project and a *safe* project. After observing the leader's choice, the other two players—the *team members*—simultaneously choose whether to contribute to the risky project or to select the safe project.

Figure 1 also shows the payoffs for the different combinations of actions. The first number in each cell indicates the payoff for team member 1, the second number indicates the payoff for team member 2, and the third number indicates the payoff for the leader. If a player chooses the *safe* project, he earns a fixed payoff of $\pi^s = \$4$ irrespective of the others' actions. If all three players choose the risky project, each team member earns $\pi^h = \$4.75$, and the leader earns $\pi^h + B$, where $B \geq 0$ is a bonus. Lastly, if a player chooses the risky project but at least one other player chooses not to contribute to the risky project, the contributing player receives $\pi^l = \$2.75$ if he is a team member and $\pi^l - R$ if he is a leader. The variable $R \in \mathcal{R}$ is the leader's strategic risk in excess of the risk faced by the team members. If $R = 0$, the leader

Table 1: Treatments

Treatment	Subjects	Leaders	Team Members	Leader Bonus (B)	Leader Risk Exposure (R)	BOA if $\alpha = 0$	BOA if $\alpha = 1/4$
1. *No Leader*	224	0	224	–	–	0.375	0.459
2. *NoBonus-LessRisk*	307	78	229	\$0	-\$1.25	0.375	0.531
3. *NoBonus-SameRisk*	306	90	216	\$0	\$0	0.375	0.595
4. *Bonus-LessRisk*	297	81	216	\$5.25	-\$1.25	0.375	0
5. *Bonus-SameRisk*	311	88	223	\$5.25	\$0	0.375	0.0625
6. *Bonus-MoreRisk*	585	180	405	\$5.25	\$2.75	0.375	0.444

Notes: The 2,030 participants were assigned to six treatments in a between-subject design varying the leader's bonus (B) and risk exposure (R). In No Leader, the two team members simultaneously choose a project without first observing a leader's choice. Treatment 6 (Bonus-MoreRisk) is divided into two subtreatments with the same leader incentives. In one subtreatment, players choose whether they wish to be a leader or a team member. BOA refers to the basin of attraction of the risky-project equilibrium.

faces the same risk as the team members; if $R > 0$, the leader faces more risk than the team members; and if $R < 0$, the leader faces less risk than the team members. The leader's and team members' financial incentives are aligned independently of B and R; everyone achieves the highest earnings if everyone contributes to the risky project.

2.3 Treatments

A team member's incentives are fixed across treatments. She earns $\pi^s = \$4$ if she chooses the safe project regardless of what the others choose, $\pi^h = \$4.75$ if she chooses the risky project and so does everyone else, and $\pi^l = \$2.75$ if she chooses the risky project but at least one person does not. The treatments vary the leader's bonus (B) and risk exposure (R), as shown in table 1. Each subject participates in only one treatment. The first treatment, No Leader, benchmarks the difficulty of coordinating when the two team members make their choices without a leader who moves first. All the other treatments include a leader. Columns 5 and 6 show the leader's bonus and risk exposure parameters. Column 7 shows the basin of attraction (BOA) of the risky project, a theoretical concept discussed in the next section.

In treatments 2 and 3, there is no bonus for the leader ($B = 0$), i.e., there is no pay inequality. Risk inequality is varied—the leader's risk exposure $R = \{-1.25, 0\}$. If $R = -1.25$ the leader faces less risk from choosing the risky project than the team members because she earns $\pi^l - (-\$1.25) = \$4$ even if the risky project fails (at least one person does not choose the risky project). If $R = 0$, the leader faces the same risk as the team members, earning $\pi^l = \$2.75$ if the risky project fails. These two treatments allow us to observe whether a decrease in the leader's risk exposure undermines leader effectiveness in the absence of bonuses.

Treatments 4–6 feature bonuses of $B = 5.25$, thus increasing the leader's payoff to $\pi^h + B = \$10$ for a successful risky project (everyone chooses the risky project). Here, we vary the leader's risk exposure over $R = \{-1.25, 0, 2.75\}$. If $R = 2.75$, the leader faces more risk from choosing the risky project than the team members, earning $\pi^l - R = \$0$ if the risky project fails. We test whether increased leader risk exposure can justify pay inequality, as represented by the leader's bonus. Treatment 6 ($R = 2.75$) has more observations because it is divided into two subtreatments.[4] The treatment with $R = -1.25$, on the other hand, allows us to observe the effectiveness of leaders who are better off on both dimensions, i.e., they earn a bonus and they face less risk than the team members.

What information do the participants have when making their decisions? All participants know the details of the decision environment, including the leader's and team members' payoffs and the timing of moves. The leader chooses between a *risky* project and a *safe* project, knowing that the two team members would observe her choice. A team member would then make his choice without knowledge of the other team member's choice. To ensure that participants are cognizant of the rules and structure of the game, participants take a comprehension quiz where they enter the payoffs of the leader and the team members for each combination of safe and risky project choices. Online appendix A contains the instructions and screens of the experimental interface.[5]

2.4 Theoretical hypotheses

We propose a simple model that combines risk dominance and inequality aversion, two well-established features of human behavior. We pre-registered the model and the

[4]In one subtreatment, we exogenously assign the role of the leader in each team. In the other subtreatment, participants indicate whether they wish to be the leader or a team member. We pool the data for clarity. In online appendix B.5, we show that participants' behaviors are similar in the two subtreatments and discuss leader emergence.

[5]Eight percent of the recruited subjects were excluded after the instruction stage as they failed to correctly answer the comprehension questions in three attempts. All treatments with a leader are equally complex, and exclusion rates are similar across treatments. The exception is the No Leader treatment, which had fewer comprehension questions—where only 1% of the subjects were excluded.

hypotheses that follow from it (AEARCTR-0011326).

Risk dominance is an equilibrium selection criterion positing that strategic uncertainty drives decision-making (Harsanyi and Selten, 1988). Experimental evidence indeed shows that the risks associated with strategic uncertainty often dominate efficiency considerations (e.g., Camerer, 2011; Dal Bó et al., 2021). In our context, if the leader chooses the risky project, the team members face a coordination game with two pure-strategy equilibria. Both team members following the leader in choosing the risky project is the payoff-maximizing equilibrium. However, under standard preferences, both team members choosing the safe project is the risk-dominant equilibrium. Risk dominance is determined by the largest basin of attraction (BOA). The BOA of the risky project—henceforth denoted by ϕ—is the highest probability that a player can believe the other person will choose the safe project, so it is still optimal to choose the risky project. With standard preferences, the BOA for the team members is

$$\phi = 1 - \frac{\pi^s - \pi^l}{\pi^h - \pi^l} \tag{1}$$

For our parameters, $\phi = 0.375$. The safe project's BOA is $1 - \phi = 0.625$. Thus, risk dominance predicts that the safe project is the empirically more common choice.

Following the literature on inequality aversion (e.g., Fehr and Schmidt, 1999; Charness and Rabin, 2002; Chen and Li, 2009), we characterize a player's utility as

$$u_i(\pi) = \pi_i - \alpha_i \sum_{j \neq i} |\pi_i - \pi_j| \tag{2}$$

where π is the vector of the players' payoffs and $\alpha_i \geq 0$ is an inequality aversion parameter multiplied by the sum of payoff differences with the other players.[6] With other-regarding preferences, the risky project's BOA becomes

$$\phi_\alpha = 1 - \frac{(1 - \alpha_i)(\pi^s - \pi^l)}{\pi^h - \pi^l + \alpha_i(\pi^s - \pi^l + R - B)} \tag{3}$$

[6] The literature distinguishes between equality preferences stemming from envy or charity, that is, from earning less or more than others. Both effects are important for our predictions. Envy implies a dislike for the leader's bonus, while charitable preferences allow players to recognize the leader's risk exposure. While straightforward, considering different parameters for envy and charity is unnecessary for our purposes. Further, the literature sometimes considers the average rather than the sum of payoff differences with the other players. We do not vary the team size, and thus, the predictions are independent of this modeling choice.

Column 7 of table 1 shows the risky project's BOA for $\alpha_i = 0$ and $\alpha_i = 0.25$. Without inequality concerns, the BOA is the same for all treatments. With positive α_i, leader bonuses decrease the BOA, while risk exposure increases the BOA. This comparison illustrates the general comparative statics forming our main hypotheses.

Hypothesis 1: *The team members' probability of choosing the risky project is higher in a team with a leader whose incentives are symmetric to those of the team members (i.e., $B = 0$ and $R = 0$) than in a team with no leader.*

This hypothesis follows because $\phi_\alpha > \phi$ if $B = 0$ and $R = 0$. The leader's presence increases the risky project's BOA because inequality-averse team members have a greater desire to coordinate on the leader's example.[7]

Hypothesis 2: *Increasing the leader's bonus (B) decreases team members' probability of following the leader in choosing the risky project.*

The second hypothesis follows because $\partial\phi_\alpha/\partial B < 0$, i.e., increasing the leader's bonus shrinks the risky project's BOA. The leader's favorable incentives undermine her ability to coordinate a team.

Hypothesis 3: *Increasing the leader's risk exposure (R) increases team members' probability of following the leader in choosing the risky project.*

The third hypothesis follows because $\partial\phi_\alpha/\partial R > 0$. The risky project's BOA increases even though the inequality in payoffs remains the same conditional on everyone coordinating on the risky project. What drives the prediction is that team members are responsive to the off-equilibrium miscoordination payoffs when evaluating equilibrium outcomes. Specifically, team members are willing to accept the pay inequality implied by the risky project because of the possibility of miscoordination, which would disproportionately harm the leader. Team members are predicted to perceive the leader as more deserving of higher earnings due to the elevated strategic risks faced by the leader.

We next turn to individual heterogeneity.

[7] If team members have other-regarding preferences towards other team members but not the leader, the BOA for $B = 0$ and $R = 0$ is $1 - (\pi^s - \pi^l)/(\pi^h - \pi^l + \alpha_i(\pi^s - \pi^l))$, which exceeds ϕ but is smaller than ϕ_α.

Hypothesis 4: *The probability that a team member follows the leader in choosing the risky project increases with the team member's (beliefs about) inequality tolerance and risk tolerance.*

Suppose some participants exhibit greater inequality aversion and also believe that others are inequality averse. Such individuals can be thought of as having a higher α_i. We have $\partial\phi_\alpha/\partial\alpha_i < 0$ if $B - R > \pi^h + \pi^s - 2\pi^l$. That is, increasing inequality aversion decreases the risky project's BOA if the leader bonus is large relative to her risk exposure. Hence, we expect participants with greater inequality aversion to respond more negatively to the bonuses.[8]

Lastly, we consider differences between the European and U.S. samples.

Hypothesis 5: *The adverse effects of bonuses on coordination are stronger in the European sample than in the U.S. sample.*

The literature documents substantial heterogeneity in fairness attitudes across countries and cultures (e.g., Falk et al., 2018; Cappelen et al., 2023). Almås et al. (2020) find that Americans are significantly more willing to accept inequality than Norwegians when making distributive decisions in an identical economic environment. Relative to Norwegians, Americans are less likely to divide equally (42.3% vs. 63.3%) and more likely to not redistribute (32.4% vs. 14.8%). Applied to our case, these results suggest that U.S. participants have a smaller α_i. Almås et al. further show that both the Americans and the Norwegians choose income distributions in the experiment that imply Gini coefficients similar to their countries' actual Gini coefficients. The European subsample comprises the Netherlands, France, Sweden, Finland, Denmark, Norway, and Iceland. The Gini coefficients in these countries are relatively similar and are all clearly below the the Gini coefficient in the U.S.[9] Hypothesis 5 is based on these observations.

[8]We also considered the effects of risk aversion based on the exponential utility function, $(1 - e^{-\rho_i u_i(\pi)})/u_i(\pi)$, where ρ_i is the risk aversion parameter. Risk aversion decreases the risky project's BOA. We avoid the details here because the result simply reflects the fact that risk-tolerant players are less afraid of strategic uncertainty.

[9]According to The World Bank, the U.S. has a Gini coefficient of 39.8. The European Gini coefficients are 26.0 (Netherlands), 30.7 (France), 28.9 (Sweden), 27.1 (Finland), 27.5 (Denmark), 27.7 (Norway), and 26.1 (Iceland). See https://data.worldbank.org/indicator/SI.POV.GINI.

2.5 Elicitation of risk and fairness attitudes

We elicited risk attitudes by asking each participant to choose one among the following six lotteries: 80% chance of winning $0.40, 70% chance of winning $0.60, 60% chance of winning $0.80, 50% chance of winning $1.00, 40% chance of winning $1.20, and 30% chance of winning $1.40. The lottery choices order subjects by risk preference, with the first lottery representing the most risk-averse choice and the last representing the most risk-loving choice. Participants also indicate on a ten-point scale if they are generally willing to take risks or if they try to avoid risks. As a proxy for a subject's risk tolerance, we use the average of the normalized incentivized (i.e., the lottery choices) and unincentivized measures. We do this to reduce measurement error. The results hold separately for each measure (see online appendix B.1).

To elicit participants' inequality tolerance, everyone has to choose one of two distributions determining payments for themselves and another randomly selected participant. The first distribution allocates $0.475 to oneself and $1 to the other person; these payoffs are proportional to those of a team member and the leader (including the bonus) for a successful risky project in the main game. The second distribution allocates $0.40 to both players; these payoffs are proportional to the safe project in the main game. Participants also indicate whether they are generally willing to accept inequalities or prefer to avoid them. We average the distribution choice and the unincentivized question to obtain a single measure for inequality tolerance (see online appendix B.1). Finally, we elicit beliefs about inequality tolerance by asking participants to guess the percentage of other participants who choose the first distribution in the above task. We incentivize guesses with $1 if the guess falls within 5% of the actual outcome.[10]

3 Results

Table 2 shows, for each treatment, the likelihood that team members follow leaders who choose the risky project, the implied distribution of outcomes, i.e., coordination on the safe project, miscoordination, or coordination on the risky project, and team members' average payoff gain relative to the safe payoff of $4.

[10] We randomize whether the risk and inequality tolerance elicitation tasks appear before or after the main experiment. Participants do not receive any feedback until the end of the experiment. Our results are independent of the order of the elicitation tasks and main experiment (see online appendix B.2).

3.1 Leaders improve team performance

In Treatment 1 (No Leader), 25.9% of the team members choose the risky project. The probability of both team members choosing the safe project is 54.9%. The probability of miscoordination, i.e., the two players choosing different projects, is 38.4%. The probability of a successful risky project, i.e., both players choosing the risky project, is only 6.7%. These results demonstrate the difficulties posed by strategic uncertainty in efficient team production. Indeed, the team members' payoffs in the leaderless treatment fall 25.3% short of the safe project's benchmark payoff of $4. Our first result compares the treatments with a leader to the benchmark behavior provided in Treatment 1 (No Leader).

Finding 1 (Support for Hypothesis 1)**:** *The presence of a leader increases the probability of a successful risky project and team member earnings.*

Support: Table 2 shows that in Treatment 3 (NoBonus-SameRisk), where the leaders' incentives are symmetric to those of the team members, team members follow the leader in choosing the risky project with a probability of 69.1%, which is significantly higher than when there is no leader (Wilcoxon ranksum, $p < .001$). How does this behavior translate into team outcomes? While leaders choose the risky project with a probability of only 38.9%, the probability of a successful risky project is 18.5%, which is three times as large as the probability when there is no leader.[11] In Treatment 3, miscoordination occurs in only 20.3% of the teams, which is half of the miscoordination rate observed when there is no leader. Team members' payoffs relative to the safe project thus increase from -25.2% in Treatment 1 (No Leader) to 4.6% in Treatment 3 (NoBonus-SameRisk) ($p < .001$). Comparing teams without a leader (Treatment 1) to teams with a leader, regardless of the bonus and risk structure (Treatments 2–6), we find that introducing a leader increases the probability of a successful risky project from 6.9% in Treatment 1 (No Leader) to an average of 34.7% in the other treatments ($p < .001$). Meanwhile, team member payoffs relative to the safe project payoff increase from -25.2% in Treatment 1 (No Leader) to an average of 8.6% in the other treatments ($p < .001$). We conclude that leaders promote team performance.

[11] For completeness, we note that the leaders' probability of choosing the risky project is 83.3% in Treatment 2 (NoBonus-LessRisk), 38.9% in Treatment 3 (NoBonus-SameRisk), 96.3% in Treatment 4 (Bonus-LessRisk), 78.4% in Treatment 5 (Bonus-SameRisk), and 67.2% in Treatment 6 (Bonus-MoreRisk). Online appendix B.4 examines leader behavior in more depth.

Table 2: Probability of Risky Project and Team Outcomes

	Team Members $Pr(risky \mid$ leader chose $risky)$	Outcome Distribution (safe, miscoord., risky)			Team Members' Payoff Gain (relative to safe)
No Leader	25.9%	54.9%	38.4%	6.7%	-25.3%
NoBonus-LessRisk	68.6%	16.7%	44.1%	39.2%	9.3%
NoBonus-SameRisk	69.1%	61.1%	20.3%	18.5%	4.6%
Bonus-LessRisk	59.5%	3.2%	62.7%	34.0%	-5.0%
Bonus-SameRisk	70.5%	21.6%	39.4%	39.0%	11.8%
Bonus-MoreRisk	75.7%	28.6%	32.8%	38.5%	14.4%

Notes: Table 2 shows the percentage of team members who choose the risky project conditional on the leader having done so (except in No Leader, where the percentage is unconditional), the distribution of outcomes (everyone chooses the safe project, players miscoordinate, or everyone chooses the risky project), and team members' payoff gain relative to the safe project payoff of $4.

3.2 Pay inequality undermines effective leadership

Finding 2 (Partial Support for Hypothesis 2)**:** *Leader bonuses ($B > 0$) decrease the probability that team members follow the leader in choosing the risky project, but only when the leader faces no risk.*

Support: Table 2 shows that team members' probability of following the leader in choosing the risky project is the lowest at 59.5% in Treatment 4 (Bonus-LessRisk). If the leader has no bonus in an otherwise identical environment, i.e., Treatment 2 (NoBonus-LessRisk), the team members' probability of following the leader increases to 68.6% (Wilcoxon ranksum, $p = .059$). Team members are more likely to follow the leader in Treatment 2 (NoBonus-LessRisk) than Treatment 4 (Bonus-LessRisk). Table 3 shows the coefficients of the OLS regressions for the probability of team members following the leader in choosing the risky project. The reference treatment is Treatment 1 (No Leader). Regression models (1), (3), (4), and (5) confirm that team members are more likely to follow the leader in Treatment 2 (NoBonus-LessRisk) than Treatment 4 (Bonus-LessRisk) (Wald, $p = .045$). Still, the results are not fully in line with Hypothesis 2 because bonuses do not decrease team members' probability of following the leader when the leader faces risk; the probability of following leaders is no different between Treatment 3 (NoBonus-SameRisk) and Treatment 5 (Bonus-SameRisk) (69.1% versus 70.5%, Wilcoxon ranksum $p = .758$).

3.3 Risk exposure justifies pay inequality

Finding 3 (Support for Hypothesis 3)**:** *Increased leader risk ($R > 0$) increases the probability that team members follow the leader in choosing the risky project. The effect occurs because the greater risk borne by the leader justifies the pay inequality.*

Support: Table 2 shows that the team members' probability of following the leader increases from 59.5% in Treament 4 (Bonus-LessRisk) to 70.5% in Treatment 5 (Bonus-SameRisk) (Wilcoxon ranksum, $p = .024$) and 75.7% in Treatment 6 (Bonus-MoreRisk) ($p < .001$). The difference in probability between Treatments 5 and 6 is insignificant ($p = 0.199$). Overall, the treatments in which leaders face the same or more risk than team members exhibit a significantly higher probability of team members following the leader than the treatments in which leaders face less risk than team members ($p = .004$). Interestingly, when there is no bonus, increasing the leader's risk exposure between Treatment 2 (NoBonus-LessRisk) and Treatment 3 (NoBonus-SameRisk) does not reduce team members' willingness to follow the leader (68.6% versus 69.1%, Wilcoxon ranksum $p = .922$). Thus, while the leader's greater risk exposure mitigates the adverse effects of pay inequality, risk exposure in the absence of pay inequality has no effect on team members' willingness to follow the leader.

The regressions in table 3 confirm the results of the non-parametric tests. Across the different regression models, the coefficient in Treatment 4 (Bonus-LessRisk) is significantly smaller than the coefficients in Treatment 5 (Bonus-SameRisk) (Wald, $p = .040$) and Treatment 6 (Bonus-MoreRisk) ($p < .001$). The coefficients in Treatment 2 (NoBonus-LessRisk) and Treatment 3 (NoBonus-SameRisk) do not differ ($p < .895$), implying that risk exposure works to justify inequality but has no effect on average team member behavior in the absence of bonuses. Regression model (6) uses the dummy Bonus for treatments with a bonus and the dummy Risk Exposure for treatments where the leaders are exposed to the same or more risk than team members. The results confirm that bonuses decrease team members' willingness to follow the leader. The significant interaction effect, Bonus $\times$ Risk Exposure, confirms that risk exposure serves to justify pay inequality.

3.4 Risk and fairness attitudes

We next turn to individual heterogeneity. We predicted in hypothesis 4 that risk tolerance and inequality tolerance increase team members' willingness to follow the

Table 3: OLS Regressions – Probability of Choosing the Risky Project

Dep Var: $Pr(risky \mid \text{leader chose } risky)$	(1)	(2)	(3)	(4)	(5)	(6)	(7)
NoBonus-LessRisk	0.427***		0.412***	0.409***	0.383***		
	(0.044)		(0.044)	(0.044)	(0.069)		
NoBonus-SameRisk	0.432***		0.408***	0.401***	0.405***		
	(0.045)		(0.044)	(0.044)	(0.068)		
Bonus-LessRisk	0.336***		0.321***	0.316***	0.308***		
	(0.047)		(0.046)	(0.046)	(0.071)		
Bonus-SameRisk	0.446***		0.412***	0.408***	0.405***		
	(0.044)		(0.045)	(0.045)	(0.069)		
Bonus-MoreRisk	0.498***		0.475***	0.470***	0.443***		
	(0.038)		(0.038)	(0.038)	(0.061)		
Risk tolerant		0.365***	0.350***	0.340***			
		(0.068)	(0.064)	(0.064)			
Inequality tolerant		0.033	0.019	0.012			
		(0.061)	(0.055)	(0.055)			
Belief ineq. tolerance		0.246***	0.181***	0.170***			
		(0.060)	(0.056)	(0.056)			
US				-0.058**	-0.127**	-0.075***	-0.046*
				(0.025)	(0.062)	(0.028)	(0.028)
NoBonus-LessRisk x US					0.065		
					(0.090)		
NoBonus-SameRisk x US					0.016		
					(0.093)		
Bonus-LessRisk x US					0.025		
					(0.095)		
Bonus-SameRisk x US					0.055		
					(0.091)		
Bonus-MoreRisk x US					0.081		
					(0.079)		
Bonus						-0.095**	-0.320**
						(0.048)	(0.163)
Risk Exposure						-0.002	-0.437***
						(0.047)	(0.155)
Bonus x Risk Exposure						0.146**	0.678***
						(0.062)	(0.209)
Risk tolerant & Belief ineq. tolerance (RT&BIT)							0.217
							(0.189)
Bonus x RT&BIT							0.408
							(0.277)
Risk Exposure x RT&BIT							0.750***
							(0.254)
Bonus x Risk Exposure x RT&BIT							-0.948***
							(0.346)
Constant	0.259***	0.266***	-0.021	0.029	0.337***	0.727***	0.591***
	(0.029)	(0.046)	(0.047)	(0.053)	(0.051)	(0.035)	(0.113)
Observations	1300	1300	1300	1300	1300	1076	1076
R^2	0.125	0.048	0.159	0.162	0.134	0.019	0.064

Notes: * significant at 10%, ** significant at 5%, *** significant at 1%. The dependent variable is the team members' probability of choosing the risky project conditional on the leader having chosen the risky project. The reference treatment is Treatment 1 (No Leader) in models (1), (2), (4) and (5). In model (3), participants with low risk and low (beliefs about) inequality tolerance are the reference group. In models (6) and (7), the reference treatment is Treatment 2 (NoBonus-LessRisk). Bonus is a dummy for treatments with a bonus. Risk Exposure is a dummy for treatments where the leader is exposed to the same or more risk than team members. The variable RT&BIT averages an individual's risk tolerance and belief about inequality tolerance measures (normalized between 0 and 1).

leader. The data confirms our hypothesis, with some nuances.

Finding 4 (Support for Hypothesis 4)**:** *Greater risk tolerance and beliefs that other team members are inequality-tolerant increase team members' probability of following the leader. Moreover, the detrimental impact of pay inequality and the inequality-justifying effect of risk exposure is most pronounced for team members who are relatively risk-averse and who believe that others are inequality-averse.*

Support: Regression models (2)–(4) in table 3 show the effects of risk tolerance, inequality tolerance, and beliefs about whether others are inequality-tolerant. These variables come from the elicited measures described in section 2.5. Each of the variables is normalized to lie between 0 and 1. The regressions show that greater risk tolerance and beliefs that others are inequality-tolerant significantly increase team members' probability of following the leader. The effects are large, with a 36.5 percentage point difference between a risk-averse and risk-tolerant person and a 24.6 percentage point difference between someone who believes that others are inequality-averse and someone who believes that others are inequality-tolerant (model (2)). The estimates are stable when controlling for treatment and nationality (models (3) and (4)). In contrast, the regressions show that a team member's own inequality tolerance has no statistically significant impact on his project choice. These results suggest that it is primarily the strategic uncertainty caused by the presence of pay inequality that affects project choice, rather than inequality aversion itself.[12]

We find that risk tolerance and beliefs about inequality preferences matter most in conditions conducive to the belief that leaders are undeserving of bonuses. Regression model (7) in table 3 uses the variable Risk Tolerant & Belief Inequality Tolerance (RT&BIT). RT&BIT is the average of a participant's normalized risk tolerance score and his belief that others are inequality-tolerant. The estimates show that the presence of a leader bonus reduces the willingness to follow the leader by 32 percentage points for team members with low values of RT&BIT, that is, who are risk averse and believe that others are inequality averse. These participants are also most responsive to the leader's increased risk exposure, as shown by the positive interaction effect Bonus $\times$ Risk Exposure. That is, risk exposure alleviates the adverse impact of inequality particularly for those who are concerned about inequality. This conclusion follows

[12] Inequality tolerance becomes highly significant if one excludes the beliefs about others' inequality tolerance from the regression. Inequality tolerance and beliefs about others' inequality tolerance have a Pearson correlation coefficient of 0.64 ($p < .001$).

because the interactions with RT&BIT offset the above-discussed effects. That is, participants with higher risk tolerance levels and more optimistic beliefs about others' inequality tolerance are less affected by leaders' bonuses and changes in risk exposure.[13]

3.5 Comparison of the U.S. and Europe

Finding 5 (Rejecting Hypothesis 5)**:** *The adverse effect of pay inequality does not differ in magnitude between the European sample and the U.S. sample. However, there is a level effect, as Europeans are more likely to choose the risky project than Americans.*

Support: Regression model (4) in table 3 shows that Americans in the role of team members are, on average, 5.8 percentage points less likely to follow the leader in choosing the risky project than Europeans. Regression model (5) shows that, in Treatment 1 (No Leader) (the reference treatment), Americans are 12.7% less likely than Europeans to choose the risky project. However, Americans and Europeans do not respond differently to pay inequality. The coefficients of the interaction terms are insignificant and not different from each other. See online appendix B.3, where we report regression models (1)–(4) of Table 3 separately for the U.S. sample and the European sample and show that the treatment effects are similar.

Efficiency concerns can explain the similar treatment effects across countries. Recall that we elicit fairness attitudes by asking participants to select a payoff distribution: either $0.475 for oneself and $1 for the other person or $0.40 for both. We find that Europeans selected the unequal but efficient option more often than Americans (76% versus 59.4%, Wilcoxon ranksum, $p < .001$). Europeans also have more optimistic beliefs about the percentage of others selecting the unequal option than Americans (66.7% versus 57.4%, $p < .001$). Such differences do not appear in the unincentivized fairness elicitation question, which asks about their willingness to accept inequalities in a way that is independent of efficiency. The normalized score is 0.45 for Europeans and 0.44 for Americans ($p = .155$). These observations indicate that Europeans value efficiency in this setting, explaining why they are more willing to follow the leader across all treatments. Hence, team collaboration may be more affected by differences in beliefs and norms about cooperativeness—i.e., the desire to reach beneficial team

[13] Put differently, preference heterogeneity matters the most in Treatment 4 (Bonus-LessRisk): the willingness to follow the leader is 80% for team members with above-median risk tolerance and beliefs about others' inequality tolerance, 59.4% for those who are above the median on one measure but not the other, and 38.6% for team members with below-median scores on both measures. The latter percentage remains above 66% in the other treatments.

outcomes—than by differences in inequality attitudes. American teams could have improved their outcomes by being more trusting that others would also act in the team's interest.

4 Laboratory study

4.1 Purpose and sample

The leader bonuses in the online experiments allow leaders to earn almost twice as much as followers. However, in reality, pay inequalities can be more significant both in absolute and relative terms. Can risk exposure still justify pay inequality when bonuses are very large? In the lab experiments reported in this section, leaders earn 3.8 times more than team members when coordinating on the risky project. Moreover, the stakes are higher. Participants' earnings averaged \$44.35 for team members and \$84.12 for leaders. The highest-earning leader received \$173.97. The lab experiments also extend our main results in another empirically important direction by considering larger teams of six people.

The lab experiments were conducted between 2017 and 2020 at NYU Abu Dhabi. The participants are university students from all fields, between 19 and 24 years of age, and balanced by gender. The total number of participants is 228. The lab sessions lasted 75 minutes or less.

4.2 Weakest-link team production

Teams comprise one leader and five team members interacting over 15 periods. In each period, the leader first chooses an effort level between 0 and 7. After observing the leader's choice, all team members choose their effort level simultaneously. After each period, we inform everyone about their payoff, the minimum effort chosen in their team, and the leader's payoff. Subjects earn the sum of payments made over the 15 periods.

We generalize the modified stag-hunt game of the online experiments to larger teams. We achieve this by employing the weakest-link game (Van Huyck et al., 1990; Brandts and Cooper, 2006; Cooper and Weber, 2020). Individual i's payoff function is

$$\pi_i(x) = b \min x - cx_i, \tag{4}$$

Table 4: Treatments in Lab Experiment

Treatments	Subjects	Leaders	Team Members	Leader Bonus (B)	Leader Risk Exposure (R)	Leader Payoff Range (per period)
NoBonus-SameRisk	72	12	60	\$0	\$0	[\$0.19, \$2.85]
Bonus-SameRisk	72	12	60	\$1.33	\$0	[\$0.19, \$10.83]
Bonus-MoreRisk	84	14	70	\$1.33	\$0.76	[−\$3.80, \$10.83]

Notes: In all treatments, team members have a net benefit parameter of $\beta = 0.19$ and a cost of wasted effort of $c = 0.19$. The table shows the leaders' bonus (B) above the team members' net benefit, the leaders' excess risk (R) relative to the team members' cost of wasted effort, and the implied per-period payoff range for the leader.

where x is the six-dimensional vector of effort choices. The parameter c is a cost for exerting effort, and the parameter b is a benefit from production. Output depends on the minimum effort exerted by any team member. Effort costs are increasing in i's own effort.[14] Any strategy profile where everyone chooses the same effort level is a Nash equilibrium. The highest-effort equilibrium (everyone choosing an effort level of 7) generates the highest payoff for everyone but bears the most significant strategic risk. The lowest-effort equilibrium is the safest choice, with payoffs independent of others' choices.

4.3 Treatments

It is helpful to rewrite the payoff function in (4) as

$$\pi_i(x) = \beta \min x - c x_i^w \tag{5}$$

where $\beta \equiv b - c$ is the net benefit per unit of minimum effort and $x_i^w \equiv x_i - \min x$ is individual i's wasted effort, i.e., the effort that exceeds the minimum effort level. We define $B \geq 0$ as the difference between the leader's and team members' values for β. Thus, B represents the leader's bonus. Similarly, let $R \in \mathcal{R}$ be the difference between the leader's and team members' values for c. Thus, R is the leader's risk exposure in excess of that of the team members.

[14]The payoffs in (4) generalize the ones used in the online experiments as follows. Restrict effort to be either 0 or 1, and suppose the team comprises one leader and two team members. Then, the incentives of the online experiments can be generated by setting $b = \$2$, $c = \$1.25$, and adding a constant payment of \$4.

Table 5: Leader Payoffs in Lab Experiment

NoBonus-SameRisk

Own effort	*Minimum effort* **7**	**6**	**5**	**4**	**3**	**2**	**1**	**0**
7	150	130	110	90	70	50	30	10
6	-	140	120	100	80	60	40	20
5	-	-	130	110	90	70	50	30
4	-	-	-	120	100	80	60	40
3	-	-	-	-	110	90	70	50
2	-	-	-	-	-	100	80	60
1	-	-	-	-	-	-	90	70
0	-	-	-	-	-	-	-	80

Bonus-SameRisk

Own effort	*Minimum effort* **7**	**6**	**5**	**4**	**3**	**2**	**1**	**0**
7	570	490	410	330	250	170	90	10
6	-	500	420	340	260	180	100	20
5	-	-	430	350	270	190	110	30
4	-	-	-	360	280	200	120	40
3	-	-	-	-	290	210	130	50
2	-	-	-	-	-	220	140	60
1	-	-	-	-	-	-	150	70
0	-	-	-	-	-	-	-	80

Bonus-MoreRisk

Own effort	*Minimum effort* **7**	**6**	**5**	**4**	**3**	**2**	**1**	**0**
7	570	460	350	240	130	20	-90	-200
6	-	500	390	280	170	60	-50	-160
5	-	-	430	320	210	100	-10	-120
4	-	-	-	360	250	140	30	-80
3	-	-	-	-	290	180	70	-40
2	-	-	-	-	-	220	110	0
1	-	-	-	-	-	-	150	40
0	-	-	-	-	-	-	-	80

Notes: Leader's payoffs in the different treatments for all combinations of own effort and minimum effort. Team members' payoffs are identical to the leader's in treatment *NoBonus-SameRisk*, that is, the first table provides the incentives faced by team members.

The treatments vary B and R, as summarized in table 4: NoBonus-SameRisk, Bonus-SameRisk, and Bonus-MoreRisk. The team members' payoff parameters in all three treatments are $\beta = c = \$0.19$. Everyone receives an additional fixed amount of \$1.52 per period to avoid team members earning a negative amount. We use experimental currency units (ECU) to describe the incentives to the participants. Specifically, to describe the leaders' incentives, we use the payoff tables in table 5. For example, in the second treatment (Bonus-SameRisk), the leader earns 420 ECU if choosing an effort level of 6 and the minimum effort level chosen in the team is 5.

In NoBonus-SameRisk, leaders and team members face the same payoff parameters, i.e., leaders cannot earn a bonus ($B = \$0$) and face no additional risk exposure ($R = \$0$). Leaders and team members can earn between \$0.19 (10 ECU) and \$2.85 (150 ECU) per period. In Bonus-SameRisk, we increase the leaders' bonus to $B = \$1.33$ per effort level such that leaders can earn between \$0.19 and \$10.83 (570 ECU) per period. In Bonus-MoreRisk, we increase the leaders' risk exposure to $R = \$0.76$; leaders can still earn \$10.83 per period but can also *lose* up to \$3.80 (-200 ECU) in case of coordination failure.

The hypotheses for the lab experiment follow those of the online experiments. We expect that leader bonuses decrease team members' willingness to follow the leader. Moreover, increasing leaders' risk exposure is expected to mitigate this effect.

4.4 Results

We separate the discussion into period-1 behavior and behavior over time. Examining behavior in the first period is essential because it allows us to observe independent decisions that can be meaningfully compared to the online experiments. Once leaders and team members receive feedback about past team outcomes, decisions are no longer independent. Hence, the interest shifts to studying behavioral convergence over time.

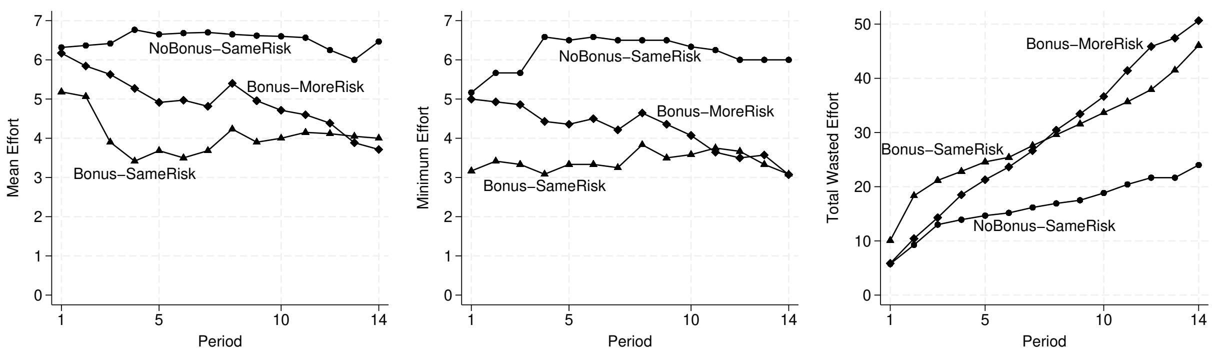
4.4.1 Initial behavior

The period-1 behavior in the lab experiment aligns with the conclusions from the online experiments.

Finding 6: *In the first period of the lab experiment, (i) pay inequality significantly reduces team performance, and (ii) increasing leaders' risk exposure restores team performance.*

Figure 2: Team Performance in Lab Experiment

(a) Mean Effort (b) Minimum Effort (c) Wasted Effort



Notes: Panes (a), (b), and (c) respectively show the mean effort, minimum effort, and wasted effort averaged over teams for all treatments. Wasted effort is effort above the minimum effort, where a flattening of the line indicates equilibrium convergence. Period 15 is dropped for better visualization due to a last-period effect causing effort level to drop in all treatments.

Support: Figure 2 shows that leader bonuses adversely affects team performance. Comparing period-1 behavior in NoBonus-SameRisk with Bonus-SameRisk, the mean team member effort level drops from 6.3 to 5.2 (Wilcoxon ranksum, $p = .017$) and the minimum effort drops from 5.2 to 3.2 ($p = .048$). Just as we observed in the online experiments, pay inequality undermines leadership effectiveness. To assess the impact of greater risk exposure for leaders, we compare period-1 behavior in Bonus-SameRisk to Bonus-MoreRisk. Increasing the leader's risk exposure raises the mean team member effort level from 5.2 to 6.2 ($p = .023$) and the minimum effort level from 3.2 to 5.0 ($p = .043$). Similarly, just as we observed in the online experiments, risk exposure justifies pay inequality in the eyes of team members and reduces strategic uncertainty. In period 1, team members' behavior in Bonus-MoreRisk is indistinguishable from that in NoBonus-SameRisk.

4.4.2 Behavior over time

Figure 2 depicts the evolution of the team members' mean and minimum effort level over time. This analysis is exploratory. In NoBonus-SameRisk, effort level remains high over time and converge to efficient high-effort equilibria. Interestingly, as shown in panel (b), the minimum effort level increases initially as players who choose low initial efforts are pulled upwards toward the mean. The efficient equilibrium is a strong attractor because there is no trade-off between efficiency and equality.

In Bonus-SameRisk, pay inequality hinders the ability of teams to reach high-effort outcomes. The mean and minimum effort levels start at a lower level than in NoBonus-SameRisk. In contrast with NoBonus-SameRisk, the mean effort levels are pulled downward to approach the minimum effort level over time. The mean effort level averaged over periods is significantly lower in Bonus-SameRisk than NoBonus-SameRisk (4.03 versus 6.45, Wilcoxon ranksum $p = .002$). The same holds for the minimum effort level (3.40 versus 6.16, $p = .002$).

While increased risk exposure in Bonus-MoreRisk eliminates the adverse effects of leader bonuses in period 1, it fails to do so consistently over time. The mean and minimum effort levels in Bonus-MoreRisk approach the levels observed in Bonus-SameRisk, falling to the same level by the last period. The data suggests that two main mechanisms are in play. First, panel (c) in figure 2 shows the sum of wasted effort aggregated over time. A flattening line, as seen in NoBonus-SameRisk, indicates that teams choose more similar effort levels over time. In contrast, the treatments with bonuses do not exhibit convergence to an equilibrium. These results suggest that the tension between efficiency and inequality is never resolved, precluding dynamic coordination. Second, there is another noteworthy pattern in Bonus-MoreRisk. Five of the fourteen teams fully coordinated on an effort level of 6 or 7 at some point; however, coordination subsequently broke down. This pattern occurred only in one team in each of the other treatments. The results suggest that team members initially accept and believe that others accept the leaders' high earnings in Bonus-MoreRisk. However, the effect of risk exposure weakens once teams have achieved coordination; after all, if everyone expects others to choose a high effort level, the strategic risk is minimal even if miscoordination is associated with high costs. Some team members thus develop discontent with the accumulating pay gap and eventually choose to decrease their effort level.

5 Conclusion

We conduct controlled experiments to evaluate the causal impact of pay inequality and risk inequality on the ability of leaders to coordinate the actions of their teams. We find that pay inequality increases coordination failure by decreasing the willingness of team members to follow their leader in choosing a risky project. When the leader faces increased risk, however, team members are more likely to follow them. The data suggest that team members agree that the additional risk borne by leaders justifies the leaders' higher compensation. Leaders who face significant strategic risks cause better team coordination.

Our study contributes to the literature exploring factors influencing the effectiveness of leadership. An important focus in this literature is the psychological traits of effective leaders. These traits include charisma (e.g., Platow et al., 2006), authenticity (e.g., Woolley et al., 2011), conviction (e.g., Bolton et al., 2013), and cooperativeness (e.g., Gächter et al., 2012). The literature distinguishes between transactional leaders who ultimately achieve their goals by shaping their followers' incentives and transformational leaders who use their abilities to motivate their followers, provide them with a shared vision, and give them a sense of identity (e.g., Bass, 1990; Shamir et al., 1993; Akerlof and Kranton, 2000). Our study combines transactional and transformational concepts by exploring how financial incentives — i.e., pay inequality and risk inequality — affect perceptions, shared beliefs, and actions. We show that pay inequality can reduce team members' willingness to follow a leader. On the other hand, leaders who face greater risks benefit from a greater ability to influence their teams' decisions. Transformational leadership qualities constitute not just the leaders' psychological traits, but emerge as a result of the organizational incentive structure (e.g., Platow et al., 2006).

The consequences of the pay inequality between leaders and followers has received considerable attention in the management literature. Empirical studies typically focus on the trade-off between the incentive potential of pay dispersion and its inequality-driven disruptiveness (e.g., Bebchuk and Fried, 2004; Downes and Choi, 2014). Some studies suggest that pay inequality can be detrimental to performance in interdependent work settings (e.g., Bloom, 1999; Guo et al., 2017). Other studies, however, find that social comparisons induced by pay transparency do not have an adverse effect on team collaboration (Ohlmer and Sasson, 2018; Long and Nasiry, 2020; Obloj and Zenger, 2022). Shaw and Gupta (2007) and Trevor et al. (2012) differentiate between pay inequality explained by productivity-relevant inputs and pay inequality that is independent of an individual's performance, and show that the former type of inequality does not adversely affect team collaboration. Our findings highlight that risk inequality can reduce the deleterious impact of pay inequality on team coordination. Importantly, the risk is not realized in equilibrium, that is, there are no lotteries or chance events—all risk is strategic in nature.

Our work is related to a growing body of research in economics that uses controlled experiments to study the impact of leadership in a range of settings. Brandts and Cooper (2006, 2007), Brandts et al. (2007), Brandts et al. (2015), and Brandts et al. (2016) study how leadership can help teams break out of low-performance traps.Weber et al. (2004), Cartright et al. (2013), Sahin et al. (2015), Gächter and Renner (2018) and Eisenkopf (2020) study leading by example and leader communication in coordination, public goods, and contest games, in the absence of pay or risk inequality.[15] Other studies on leading by example include Potters et al. (2007) who investigate cases where leaders have private information and Jack and Recalde (2015) who conducts a field experiment in rural Bolivia. Harbring and Irlenbusch (2008) and Balafoutas et al. (2012) show that managerial performance bonuses can lower leaders' cooperativeness, while Nikiforakis et al. (2019) show that managerial performance bonuses can cause leaders to coerce their subordinates into exerting unfairly high effort levels. By focusing on team members' perceptions of the leader, we highlight a new channel through which leader bonuses can interfere with team performance, and we show that risk inequality is a crucial alleviating factor.

Interestingly, despite recent evidence documenting differences between the U.S. and Northern Europe in perceptions of fairness, we observe relatively small differences in the response to pay inequality in our North European and U.S. samples. American team members are about 6% less likely to follow the leader than their European counterparts. The difference stems from differences in beliefs that others will act to maximize efficiency, i.e., fairness preferences do not explain the cross-continent differences. American teams could have improved their outcomes by being more trusting that others will cooperate. Increasing trust levels requires a shift in common expectations, emphasizing the benefits of promoting cooperative team norms.

Future research could explore how pay inequality and risk inequality impact leadership effectiveness in other settings. We have established our results in an environment where monetary incentives are perfectly aligned and the primary obstacles are strategic uncertainty, which is exacerbated by pay inequality. The documented effects of pay inequality will likely increase when monetary interests are only partially aligned, as is the case in many real-world scenarios (e.g., Zehnder et al., 2017). In such settings, the role of a leader's risk exposure in justifying pay inequality will likely be even more important. It will also be interesting to explore how leaders select into positions with varying degrees of pay inequality and risk inequality. Research suggests that the most

[15] See Cooper and Weber (2020) for a recent review of the experimental literature on coordination games. See also Andreoni et al. (2021) who study related questions in the context of norm change.

effective leaders are those who take individually costly actions (Arbak and Villeval, 2013). Hence, while many leaders may prefer positions with high pay and low risk, all else equal, the ones who will be most effective may be those who select into positions in which pay inequality is proportional to risk inequality.

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A Online appendix – Experimental instructions

Experimental Instructions
Bonus-SameRisk

Your group

You are in a group of three, you and two other participants.

The other persons in your group are chosen randomly among the other study participants. So, the other persons in your group are real and participate in this study just like you.

Continue ...

Your task

Your task will be to choose between two projects: the **blue project** and the **orange project**.

The other two persons in your group will also choose between the **blue** project and the **orange** project.

Continue ...

The projects

As will become clear throughout the instructions, the two projects can be thought of as follows:

- Choosing the **blue** **project** is the safe choice. You will earn a certain amount for choosing it, which will not depend on the choices of the other persons in your group.
- Choosing the **orange** **project** is the potentially more rewarding choice. However, it is also more risky because it will produce high earnings *only if everyone else in the group also chooses* **orange**. If another person in your group chooses **blue**, choosing the **orange** project will give you low earnings.

Continue ...

First-mover and other group members

In your group, there will be:

- one *first-mover*
- two *other group members*

You will be assigned one of these roles on the next screen.

Continue ...

Role assignment

You were selected to be one of the two other group members.

Another person was selected to be *the first-mover* of your group.

Continue ...

Timing of actions

The first-mover will make their decision before the two other group members. More precisely, the timing will be as follows:

1. The first-mover will choose between the **blue** project and the **orange** project
2. The other group members will observe the first-mover's decision
3. Each of the other group members will choose between the **blue** project and the **orange** project, independently and without communication

The experiment is being conducted during a 48-hour window. First, we ask the participants who are assigned the role of the first-mover to choose a project, then we ask those who are assigned the role of a group member to choose a project. This allows us to inform the group members of the first-mover's project choice. The timing of actions is common knowledge, so the first-mover will be aware that his/her project choice will be observed by the other group members before they will make their decisions.

Continue ...

Your earnings

We will next explain how the project selection determines your earnings as a group member:

- If you choose the **blue** project, you will earn **$4**, irrespective of the colors chosen by the first-mover and the other group member
- If you choose the **orange** project and *both the first-mover and the other group member also choose* **orange**, you will earn **$4.75**
- If you choose the **orange** project and *at least one other person (the first-mover, the other group member, or both) chooses* **blue**, you will earn **$2.75**

As you can see, choosing the **blue** project gives you a safe payoff of $4, while choosing the **orange** project can give you the highest payoff of $4.75 but only when the others in your group also choose the **orange** project.

Continue ...

Earnings of the first-mover

The earnings of the first-mover are determined as follows:

- If the first-mover chooses the **blue** project, they will earn **$4**, irrespective of the colors chosen by you and the third group member
- If the first-mover chooses the **orange** project and you and the third group member also choose **orange**, the first-mover will earn **$10**
- If the first-mover chooses the **orange** project and at least one other person (i.e., you, the third group member, or both) chooses **blue**, the first-mover will earn **$2.75**

The first-mover thus has a higher potential benefit than the other group members. To see this, note that **the first-mover earns more than twice the amount of you ($10 versus $4.75)** if everyone chooses the **orange** project.

Continue ...

Examples

Before continuing to the comprehension questions, let us look at a few examples. Recall that you have been assigned to be one of the two other group members (not the first-mover).

Example 1: Suppose you choose the **blue** project. In this case, you would earn $4. When you choose **blue**, your earnings are independent of the project colors chosen by the other persons in your group. You can thus think of the **blue** project as the safe choice. Note that if you choose **blue**, it does not imply that others also earn $4 (it depends on their decisions).

Example 2: Suppose the first-mover chooses the **orange** project and, after observing the first-mover's choice, you and the other group member also choose **orange**. Then, you and the other group member would earn $4.75. The first-mover would earn $10. So, if everyone chooses it, the **orange** project yields high returns. The first-mover earns more than twice the amount of the other group members.

Example 3: Suppose the first-mover chooses the **orange** project and, after observing the first-mover's choice, you choose **orange** and the other group member chooses **blue**. Then, you would earn $2.75. The first-mover would also earn $2.75. The other group member who chose **blue** would earn $4. So, if *not* everyone chooses it, the **orange** project yields low returns.

Continue ...

SoPHIE LABS 0:24

Summary

- You are in a group of 3. Each person will choose between the **blue** project and the **orange** project.
- You are **one of the other group members**. You will choose your project color after the first-mover. You and the other group member will know which project the first-mover chose when making your decisions.
- Your earnings will depend on the colors chosen in your group:

	You choose **blue**	You choose **orange** and both others also choose **orange**	You choose **orange** and at least one person chooses **blue**
Earnings if you are the first-mover	**$4**	**$10**	**$2.75**
Earnings if you are another group member	**$4**	**$4.75**	**$2.75**

- Choosing **blue** will guarantee you a payoff of **$4**.
- If you choose **orange** and both other persons in your group also choose **orange**, you will earn:
  - **$10** if you are the first-mover, or **$4.75** if you are another group member
  - As you can see, the first-mover earns more than twice the amount of the other group members if everybody chooses **orange**
- If you choose **orange** and at least one other person in your group chooses **blue**, you will earn:
  - **$2.75** if you are the first-mover, or **$2.75** if you are another group member

Continue ...

SoPHIE LABS

Comprehension Questions I

Solve the following comprehension questions. You have at most two attempts and can only proceed with the study if you answer all questions correctly. Use the "Summary of instructions" button to find the correct answers.

Summary of instructions

A. How many persons are in your group (including you)?

B. Are you the first-mover or one of the two other group members?

- First-mover
- Group member

C. The first-mover chooses their project color before the two other group members. The two other group members will choose their project simultaneously (without observing each other's choice), but they will know which project the first-mover chose.

- True
- False

Submit

SoPHIE LABS

Comprehension Questions II

Solve the following comprehension questions. You have at most two attempts and can only proceed with the study if you answer all questions correctly. Use the "Summary of instructions" button to find the correct answers.

Summary of instructions

A. What will your earnings be (in $) if you choose **blue**?

B. Suppose everybody in the group chooses **orange**. What would your earnings be (in $)?

C. Suppose everybody in the group chooses **orange**. What would the first-mover's earnings be (in $)?

D. Suppose you choose **orange**, and at least one person in your group chooses **blue**. What would your earnings be (in $)?

E. Suppose the first-mover chooses **orange**, and at least one person in your group chooses **blue**. What would the first-mover's earnings be (in $)?

Submit

SoPHIE LABS

This concludes the instructions and comprehension questions. On the next two screens, we will tell you which project the first-mover chose and you will choose your project color.

Continue ...

SoPHIE LABS

First-mover's project choice

Before you choose your project, we will tell you which project the first-mover chose:

The first-mover chose the blue project.

Continue ...

SoPHIE LABS 0:04

DECISION

Summary of instructions

	Chooses **blue**	Chooses **orange** and both others also choose **orange**	Chooses **orange** and at least one person chooses **blue**
Earnings if first-mover	**$4**	**$10**	**$2.75**
Earnings if group member (you)	**$4**	**$4.75**	**$2.75**

The first-mover chose the **blue** project.

You are one of the two other group members. It is now the group members' turn to choose a project color. You choose simultaneously with the other group member and you don't know if they will choose **blue** or **orange**.

Please choose your project:

- **I choose blue**
- **I choose orange**

Submit

Choose a lottery

Please select one of the following six lotteries. Each lottery has a different chance of winning and a different winning amount. For the lottery you select, the computer will determine whether you will win or not according to the chance of winning. If you win, the winning amount for the chosen lottery will be added to your bonus payments. If you don't win, your earnings remain unchanged. Choose your preferred lottery:

- ○ **Lottery 1: a 8 in 10 chance to win $0.40**
- ○ **Lottery 2: a 7 in 10 chance to win $0.60**
- ○ **Lottery 3: a 6 in 10 chance to win $0.80**
- ○ **Lottery 4: a 5 in 10 chance to win $1.00**
- ○ **Lottery 5: a 4 in 10 chance to win $1.20**
- ○ **Lottery 6: a 3 in 10 chance to win $1.40**

Submit ...

SoPHIE LABS 0:03

Please answer the question below

How do you see yourself: Are you a person who is generally willing to take risks, or do you try to avoid taking risks?

not at all willing to take risks										very willing to take risks
○	○	○	○	○	○	○	○	○	○	○
0	1	2	3	4	5	6	7	8	9	10

Submit

SoPHIE LABS 0:08

Choose a distribution

Please choose one of the following two payment distributions for you and another study participant. The other study participant is randomly chosen among all study participants. The distribution you select will be implemented with a probability of 50%, in which case you and the other participant will receive the selected payments.

○ **Distribution 1: You receive $0.475, and the other person receives $1**

○ **Distribution 2: You receive $0.4, and the other person receives $0.4**

Submit

On the previous screen, about 100 study participants have chosen a payment distribution for themselves and another person.

Distribution 1: The participant selects that they receive $0.475 and the other person receives $1

Distribution 2: The participant selects that they receive $0.4 and the other person receives $0.4

What do you think is the percentage of participants who choose Distribution 1?

My best guess is that **55**% of the other participants chose Distribution 1 on the previous screen.

You will receive $1 if the difference between your estimate and the true percentage is 5% or less.

Submit

SoPHIE LABS 0:03

Please answer the question below

How do you see yourself: Are you a person that is willing to accept inequalities, or do you prefer to avoid inequalities?

not at all willing to accept inequalities										very willing to accept inequalities
○	○	○	○	○	○	○	○	○	○	○
0	1	2	3	4	5	6	7	8	9	10

Submit

Experimental Instructions
Bonus-MoreRisk
(only the screens that differ from before)

SoPHIE LABS

You can proceed to the next screen when ready
0:00

Earnings of the first-mover

The earnings of the first-mover are determined as follows:

- If the first-mover chooses the **blue** project, they will earn **$4**, irrespective of the colors chosen by you and the third group member
- If the first-mover chooses the **orange** project and you and the third group member also choose **orange**, the first-mover will earn **$10**
- If the first-mover chooses the **orange** project and at least one other person (i.e., you, the third group member, or both) chooses **blue**, the first-mover will earn **$0**

The first-mover thus has a higher potential benefit than the other group members, but he/she also faces a larger risk. To see this, note that **the first-mover earns more than twice the amount of you ($10 versus $4.75)** if everyone chooses the **orange** project. However, in contrast to you, **the first-mover also faces the risk of earning $0** (no payment in this part of the study) when choosing **orange** and another group member chooses **blue**.

Continue ...

SoPHIE LABS 0:35

Examples

Before continuing to the comprehension questions, let us look at a few examples. Recall that you have been assigned to be one of the two other group members (not the first-mover).

Example 1: Suppose you choose the **blue** project. In this case, you would earn $4. When you choose **blue**, your earnings are independent of the project colors chosen by the other persons in your group. You can thus think of the **blue** project as the safe choice. Note that if you choose **blue**, it does not imply that others also earn $4 (it depends on their decisions).

Example 2: Suppose the first-mover chooses the **orange** project and, after observing the first-mover's choice, you and the other group member also choose **orange**. Then, you and the other group member would earn $4.75. The first-mover would earn $10. So, if everyone chooses it, the **orange** project yields high returns. The first-mover earns more than twice the amount of the other group members.

Example 3: Suppose the first-mover chooses the **orange** project and, after observing the first-mover's choice, you choose **orange** and the other group member chooses **blue**. Then, you would earn $2.75. The first-mover would earn $0. The other group member who chose **blue** would earn $4. So, if *not* everyone chooses it, the **orange** project yields low returns. This is particularly true for the first-mover who faces the risk of earning $0 (no payment in this part of the study), a risk the other group members don't face.

Continue ...

Summary

- You are in a group of 3. Each person will choose between the **blue** project and the **orange** project.
- You are **one of the other group members**. You will choose your project color after the first-mover. You and the other group member will know which project the first-mover chose when making your decisions.
- Your earnings will depend on the colors chosen in your group:

	You choose **blue**	You choose **orange** and both others also choose **orange**	You choose **orange** and at least one person chooses **blue**
Earnings if you are the first-mover	**$4**	**$10**	**$0**
Earnings if you are another group member	**$4**	**$4.75**	**$2.75**

- Choosing **blue** will guarantee you a payoff of **$4**.
- If you choose **orange** and both other persons in your group also choose **orange**, you will earn:
  - **$10** if you are the first-mover, or **$4.75** if you are another group member
  - As you can see, the first-mover earns more than twice the amount of the other group members if everybody chooses **orange**
- If you choose **orange** and at least one other person in your group chooses **blue**, you will earn:
  - **$0** if you are the first-mover, or **$2.75** if you are another group member
  - As you can see, the first-mover faces a larger risk than the other group members because he/she earns no payoff ($0) in this part of the study if another person chooses **blue**

Continue ...

First-mover's project choice

Before you choose your project, we will tell you which project the first-mover chose:

The first-mover chose the orange project.

Continue ...

SoPHIE LABS 0:06

DECISION

Summary of instructions

	Chooses **blue**	Chooses **orange** and both others also choose **orange**	Chooses **orange** and at least one person chooses **blue**
Earnings if first-mover	**$4**	**$10**	**$0**
Earnings if group member (you)	**$4**	**$4.75**	**$2.75**

The first-mover chose the **orange** project.

You are one of the two other group members. It is now the group members' turn to choose a project color. You choose simultaneously with the other group member and you don't know if they will choose **blue** or **orange**.

Please choose your project:

- (selected) **I choose blue**
- **I choose orange**

Submit

B Online appendix – Additional analyses

B.1 Robustness check of behavioral measures

Below we reproduce the OLS regressions of table 3 in the paper separately for the incentivized behavioral measures (i.e., the lottery choice and the distribution choice) and the self-reported measures of risk and inequality tolerance. The results remain unchanged; that is, risk tolerance and beliefs about others' inequality tolerance increase team members' probability of following leaders in choosing the risky project. A person's own inequality tolerance is insignificant.

Table 6: OLS Regression – Incentivized versus self-reported measures

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
NoBonus-LessRisk	0.427***		0.418***	0.413***		0.400***	0.396***
	(0.044)		(0.044)	(0.044)		(0.044)	(0.044)
NoBonus-SameRisk	0.432***		0.411***	0.405***		0.405***	0.398***
	(0.045)		(0.045)	(0.045)		(0.044)	(0.044)
Bonus-LessRisk	0.336***		0.324***	0.318***		0.314***	0.308***
	(0.047)		(0.046)	(0.047)		(0.046)	(0.046)
Bonus-SameRisk	0.446***		0.423***	0.417***		0.405***	0.398***
	(0.044)		(0.045)	(0.045)		(0.045)	(0.045)
Bonus-MoreRisk	0.498***		0.481***	0.477***		0.463***	0.459***
	(0.038)		(0.038)	(0.039)		(0.039)	(0.039)
Lottery choice		0.157***	0.174***	0.169***			
		(0.050)	(0.047)	(0.047)			
Distribution choice		0.054	0.036	0.033			
		(0.040)	(0.037)	(0.037)			
Belief ineq. tolerance		0.212***	0.156***	0.170***	0.271***	0.196***	0.211***
		(0.063)	(0.059)	(0.059)	(0.047)	(0.046)	(0.048)
US				-0.057**			-0.062**
				(0.027)			(0.027)
Self-reported risk tolerance					0.373***	0.318***	0.335***
					(0.061)	(0.059)	(0.060)
Self-reported ineq. tolerance					-0.055	-0.039	-0.014
					(0.054)	(0.050)	(0.051)
Constant	0.259***	0.373***	0.065	0.132	0.285***	0.017	0.095
	(0.029)	(0.041)	(0.045)	(0.113)	(0.045)	(0.046)	(0.111)
Observations	1300	1300	1300	1300	1300	1300	1300
R^2	0.125	0.034	0.148	0.156	0.052	0.158	0.169

Standard errors in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

B.2 Order of elicitation tasks

We randomized whether participants first completed the risk and inequality preference elicitation tasks or the team production game. The table below reproduces table 3 of the manuscript separately for both orders. Models (1) to (4) contain the data from subjects who first did the elicitation tasks; models (5) to (8) the subjects who first played the team production game.

Table 7: OSL regressions – Order effects

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
NoBonus-LessRisk	0.411***		0.396***	0.385***	0.426***		0.422***	0.420***
	(0.066)		(0.066)	(0.067)	(0.060)		(0.060)	(0.060)
NoBonus-SameRisk	0.438***		0.409***	0.393***	0.427***		0.415***	0.419***
	(0.061)		(0.060)	(0.061)	(0.067)		(0.066)	(0.065)
Bonus-LessRisk	0.391***		0.364***	0.355***	0.272***		0.273***	0.278***
	(0.063)		(0.063)	(0.063)	(0.070)		(0.067)	(0.067)
Bonus-SameRisk	0.473***		0.435***	0.416***	0.417***		0.388***	0.394***
	(0.062)		(0.064)	(0.064)	(0.064)		(0.063)	(0.063)
Bonus-MoreRisk	0.520***		0.483***	0.472***	0.474***		0.473***	0.480***
	(0.052)		(0.054)	(0.054)	(0.056)		(0.055)	(0.055)
Risk tolerant		0.261***	0.211**	0.216**		0.473***	0.503***	0.508***
		(0.094)	(0.088)	(0.089)		(0.097)	(0.093)	(0.093)
Inequality-tolerant		0.075	0.049	0.049		-0.003	-0.006	0.010
		(0.084)	(0.078)	(0.080)		(0.088)	(0.078)	(0.080)
Belief ineq. tolerance		0.277***	0.211***	0.213***		0.225**	0.149*	0.165*
		(0.081)	(0.077)	(0.077)		(0.090)	(0.083)	(0.084)
US				-0.086**				-0.029
				(0.038)				(0.038)
Constant	0.235***	0.256***	-0.009	-0.162	0.286***	0.260***	-0.048	0.256
	(0.039)	(0.066)	(0.066)	(0.160)	(0.044)	(0.066)	(0.069)	(0.173)
First part	elicitation	elicitation	elicitation	elicitation	main	main	main	main
Observations	645	645	645	645	655	655	655	655
R^2	0.139	0.049	0.166	0.177	0.115	0.054	0.162	0.180

Standard errors in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

The main results are order-independent. One difference is that the willingness of team members to follow the leader in Bonus-LessRisk is lower when the elicitation tasks come second. That is, exposing subjects to the elicitation tasks makes them a bit more accepting of inequality in the team production game. If anything, the results reported in the study thus underestimate the effect of bonuses and the inequality-justifying effect of risk exposure compared with the case where subjects face the main game without any prior tasks. This is because the more relevant order for the behavior in the team production task is the one where the elicitation tasks come second. We implemented the elicitation tasks first for 50% of the subjects to be certain that the effects of the elicited measures do not arise due to playing different treatments in the main game.

B.3 Further comparisons of U.S. and European samples

The table below splits the main regressions shown in table 3 of the paper by U.S. and European participants. The first three regression models include only Americans; regressions (4) to (6) include only Europeans. As already shown in the manuscript, the treatment effects are similar across subsamples: the willingness to follow leaders is lowest in Bonus-LessRisk, and adding risk exposure considerably alleviates this effect. The main difference is that European subjects are generally more willing to follow leaders, as reflected by the higher constant in the regression model (4) compared to model (1). In addition, one can see a significant effect of inequality tolerance for the European sample, whereas this variable was insignificant in the pooled analysis or when considering only the U.S. sample. Beliefs about inequality still play a role for Europeans, but the effects are more noisy. Beliefs play a more critical role in the behavior of Americans. We leave further exploration of these potentially important differences for future research.

Table 8: OLS regression – US versus European sample

	(1)	(2)	(3)	(4)	(5)	(6)
NoBonus-LessRisk	0.448***		0.442***	0.383***		0.370***
	(0.057)		(0.056)	(0.069)		(0.070)
NoBonus-SameRisk	0.421***		0.411***	0.405***		0.376***
	(0.063)		(0.060)	(0.068)		(0.068)
Bonus-LessRisk	0.333***		0.335***	0.308***		0.285***
	(0.063)		(0.060)	(0.071)		(0.071)
Bonus-SameRisk	0.460***		0.444***	0.405***		0.366***
	(0.059)		(0.060)	(0.069)		(0.069)
Bonus-MoreRisk	0.524***		0.512***	0.443***		0.419***
	(0.050)		(0.049)	(0.061)		(0.062)
Risk tolerant		0.378***	0.396***		0.314***	0.270***
		(0.091)	(0.085)		(0.101)	(0.099)
Inequality tolerant		-0.097	-0.113		0.183**	0.179**
		(0.082)	(0.074)		(0.090)	(0.084)
Belief ineq. tolerance		0.298***	0.219***		0.154*	0.111
		(0.082)	(0.077)		(0.086)	(0.082)
Constant	0.210***	0.261***	-0.043	0.337***	0.301***	0.036
	(0.035)	(0.058)	(0.057)	(0.051)	(0.078)	(0.084)
Region	US	US	US	Europe	Europe	Europe
Observations	683	683	683	617	617	617
R^2	0.145	0.045	0.181	0.094	0.047	0.129

Standard errors in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

B.4 Leader behavior and team outcomes

The paper focuses on team members' behavior, as we are interested in how team members change their behavior in response to changes in the leaders' incentives. Nonetheless, the following observations on leaders and team outcomes are worth making.

Interpreting team outcomes requires some caution. First, team outcomes depend on a leader's decision on whether or not to initiate the risky project. Theoretically, a reasonable assumption is that leaders will anticipate the equilibrium among team members and respond optimally. Second, the welfare implications will likely depend on the chosen parameters, e.g., whether it is more important to avoid miscoordination altogether or allow for some miscoordination to increase the probability of successful risky projects. Our design, hypotheses, and results deliberately focus on the team members' behavior conditional on leader choices, which avoids this indeterminacy. Nonetheless, we now present some generalizable patterns about team outcomes.

We find that leader bonuses increase and risk exposure decreases the probability of leaders choosing the risky project. Leaders' probability of choosing the risky project is 83.3% in NoBonus-LessRisk, 38.9% in NoBonus-SameRisk, 96.3% in Bonus-LessRisk, 78.4% in Bonus-SameRisk, and 67.2% in Bonus-MoreRisk. These differences are large and significant. Thus, leaders seem relatively unafraid of the possibility that their bonuses will discourage team members from following their lead. We also checked the effect of leaders' risk and fairness attitudes. Risk and inequality-tolerant leaders have a higher probability of initiating the risky project than their less risk and inequality-tolerant counterparts. In contrast, leaders' beliefs about others' inequality tolerance do not affect their project choices, indicating again that, at least in our setting, leaders pay limited attention to team members' strategic uncertainty when choosing a project.

The outcome distributions in Table 2 show that the miscoordination rates differ between treatments. In Bonus-LessRisk, there is a large discrepancy between what leaders want—almost all leaders initiate the risky project—and what team members do, as many of the latter opt for the safe project. This discrepancy causes coordination failure in 62.7% of the teams. Miscoordination becomes less frequent as the gap between leaders and team members in their willingness to choose the risky project diminishes. The miscoordination rate is 39.4% in Bonus-SameRisk, 32.8% in Bonus-MoreRisk, and 20.3% in NoBonus-SameRisk. Team members' payoff gains relative to the safe project are therefore increasing in leaders' risk exposure from -5% in Bonus-LessRisk to 11.8% in Bonus-SameRisk (Wilcoxon ranksum, $p < .001$) and 14.4% in Bonus-

MoreRisk ($p < .001$). The generalizable insight arising from these observations is that teams will better coordinate if leaders and team members face similar trade-offs between projects.

B.5 Subtreatments of Bonus-MoreRisk

Treatment Bonus-MoreRisk was divided into two subtreatments. In the first one, we assigned roles exogenously, as in all other treatments. This treatment has 297 subjects, 213 team members and 84 leaders. In the second one, the participants could indicate preferences over the leader and team member roles after reading the instructions and being aware of the game's payoffs and timing. If none of the three participants in a group preferred the leader role, they played the game without a leader. If exactly one participant preferred the leader role, that participant became the group's leader. If more than one participant preferred the leader role, we randomly selected the leader among the interested parties. We implemented the treatment to examine leader emergence. This treatment has 288 subjects, 192 team members and 96 leaders.

Treatment Bonus-MoreRisk is used to test Hypothesis 3 in the manuscript on the question of whether risk exposure succeeds in justifying the leader bonuses. Recall that in Bonus-LessRisk, the team members' probability of following the leader in choosing the risky project was 59.5%. In the Bonus-MoreRisk subtreatment with exogenous roles, the probability is 72.9%, significantly different from Bonus-LessRisk (Wilcoxon ranksum, $p = .007$). In the Bonus-MoreRisk subtreatment with endogenous roles, the probability is 79.4%, also significantly different from Bonus-LessRisk (Wilcoxon ranksum, $p < .001$). The two subtreatments are not significantly different (Wilcoxon ranksum, $p = .182$). Thus, looking at the subtreatments of Bonus-MoreRisk separately provides independent evidence supporting Hypothesis 3, which states that higher risk exposure by leaders increases leader effectiveness.

We next turn to leader emergence, which in our setting boils down to the question of who chose the leader role in the corresponding subtreatment of Bonus-MoreRisk. We find that the willingness to assume the leader rather than the team member role is a key dimension along which Europeans and US Americans in our sample differ: American participants chose the leader role more often than Europeans (71.8% versus 60.8%, Wilcoxon ranksum, $p = .049$). Further, beliefs about others' inequality tolerance are the dominant factor in choosing the leadership role. Intriguingly, believing that others are more inequality-tolerant significantly reduces the probability of choosing the leader role: 60.9% for participants with above-median beliefs on inequality tolerance versus 73.7% for participants with below-median beliefs (Wilcoxon ranksum, $p = .021$). Indeed, American participants are more likely to hold below-median beliefs. Taken together, American participants likely choose the leader role more often than Europeans because they believe other leaders would be reluctant to initiate the risky project. That is, Americans have a greater desire to ensure that the leader will be someone who focuses on efficiency rather than equality.