A friend is a treasure: On the interplay of social distance and monetary incentives when risk is taken on behalf of others

A friend is a treasure. On the Interplay of Social Distance and Monetary Incentives When Risk is Taken on Behalf of Others*

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Abstract

We study decision making on behalf of others where the profit maximizing choice is to take no risk. We investigate the effect of introducing or not monetary incentives for the decision maker (i.e. whether the decision maker's payment is fixed or variable, in other words if it depends or not on the outcome of the investment) in the presence of different levels of social distance (i.e., whether the person affected by one's decision is an unknown stranger or a friend) between who makes the decision and who is affected by it. In our setting, we find that monetary incentives do not vary the level of risk taking by the decision makers. When controlling for expected profit maximizer individuals (i.e. those who always invest zero irrespectively of the identity of the person affected by the decision), we find that variable payment leads to an increase in risk taking compared to fixed payment. Social distance reduces risk taking, increasing the expected payoff of the person affected by the decision; notably this is true irrespective of monetary incentive suggesting that social distance plays a major role in the decision making process on behalf of others.

JEL classification: A13; C91; D64; D81.

Keywords: Risk Seeking, Monetary Incentives, Friends, Decisions on Behalf of Others, Responsibility

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1 Introduction

People take risky decisions affecting others in many different contexts. Politicians decide, for example, environmental policies for their citizens. Family members make financial decisions about mortgages and investments for their household. Mutual fund managers select stocks in which to invest their clients' money. A common element of these situations is that the decision maker makes a risky choice affecting others, frequently in a significant way. In contrast, these situations vary in two main dimensions: monetary incentives of the decision maker and social distance between the decision maker and the person affected by the choice. First, concerning monetary incentives, in some cases the decision maker's payment may or may not depend on the outcome of the decision, to some extent. While politicians usually earn a fixed salary, managers of corporate and financial companies have remunerations linked to performance. Moreover, there are circumstances, such as those related to household finance, in which the outcomes of both the decision maker and the other involved people are closely intertwined. Second, the level of social distance between the decision maker and the person affected by the decision can be high, as between a mutual fund manager and his/her clients, or low, such as between a husband and wife. If, in one case, the decision maker knows nothing about the people for whom he/she is deciding, in the other case the proximity of the relationship is significant and the decision maker better knows the preferences of the passive participant.

In this paper we investigate risk seeking choices when deciding for others under different monetary incentive schemes, and test whether different monetary incentives perform differently depending on the level of social distance. The investigation of the interplay of monetary incentives and social distance would allow better understanding of decision making outcomes where the process is characterized by the presence of an active participant making risky choices on behalf of passive participants such as the prevention of excessive risk taking on behalf of others. More generally, merging the two lines of research may help to identify why, in different contexts, monetary incentives seems to vary.

Our work builds on a recent strand of research in economics investigating decision making on behalf of others under risk [see e.g. Andersson et al., 2014, Bolton et al., 2015]. We focus on a lottery-choice with a negative expected

value first presented in Montinari and Rancan [2018].[1] In our experiment the decision maker (henceforth active participant) makes a decision for another person (henceforth passive participant) concerning a risky lottery with a negative expected value where the profit maximising choice is to take no risk, investing zero. The feature of negative expected value induces in the active participant a strong feeling of responsibility for the passive participant's gains and losses, reflecting many real life situations where the decision maker's choice has tremendous impact on others' outcomes. Situations in which people take risk despite negative expected value are not rare; some examples are represented by lotteries and commercial gambling [Kearney, 2005, Clotfelter and Cook, 1990], self-employment and inventive activities with, on average, high variance [Åstebro, 2003], investment in stocks with high volatility and large positive skewness [Kumar, 2009], and lending to risky projects in peer-to-peer platforms [Braggion et al., 2018]. In the same vein, corporate decisions like mergers [Graham et al., 2015] and takeovers [Schneider and Spalt, 2017] are driven by CEOs' gambling attitudes, which follow more aggressive corporate strategies [Ben-David et al., 2013].
Our main contribution is the attempt to merge two lines of research investigating relevant features of the decision making process on behalf of others under risk: the first one is the impact of social distance between the decision maker and the passive participant; the second is the role of different monetary incentives offered to the decision maker.

With respect to the first line of research, we define social distance as the degree of similarity, closeness, or "emotional proximity" between individuals involved in a certain situation [Charness and Gneezy, 2008]. In a parallel investigation Montinari and Rancan [2018] showed that the decision maker's closeness to the person affected by the decision is found to be an important element in the decision making process. Specifically, people take less risk on behalf of others under low level of social distance compared to high level. Similarly, in the current experimental study we vary social distance so that the active participant makes decisions both for an anonymous stranger and for a friend who came to the laboratory together with the decision maker. Deciding for an anonymous stranger well-approximates a high level of social

[1] Usually the task used to study decision making in behalf of others in a risky context is a lottery-choice with a positive expected value. A few exceptions are Shupp and Williams [2008], Pahlke et al. [2015], Li et al. [2017], who consider lotteries in different domains and for different probability levels.

distance in which the active participant knows nothing of the passive participant, a stranger to him/her. Deciding for a friend allows us to study decision making under a low level of social distance: in a relationship that has developed over time, the active participant has a personal knowledge of the passive participant (friend). Moreover, it is likely that friends will talk together about the experiment and each one's payment.[2] While Montinari and Rancan [2018] focused on social distance between active and passive participants, the novelty of this study consists in the analysis of two different types of monetary incentives for the active participants in the presence of different levels of social distance. The main goal of this paper is therefore, to test whether the results reported in Montinari and Rancan [2018] are robust to different incentive schemes.

With respect to the second line of research, we add to a few recent works [see e.g. Andersson et al., 2018, Füllbrunn and Luhan, 2017] analyzing how different monetary incentives offered to the active participant affects the level of risk taken on behalf of the passive participant. In our experiment incentive schemes are manipulated between subjects, with variations across treatments applied only to the decision maker. As a consequence, the passive participant's payoffs always depend on the amount of money put at risk by the active participant and the lottery realization. Specifically, we implement two treatments: in the Symmetric Variable Payment treatment (SVPT) the decision maker receives the same payoffs as the passive participant. Thus the incentives of the active participant are perfectly aligned with others' payoffs and both parties are subject to the same risk. In the Asymmetric Fixed Payment treatment (AFPT) the active participant receives a fixed payment which does not depend on either her choice (the investment) or the lottery realization. Instead, the passive participant's payoffs remain uncertain, depending on the risky choice made by the active participants and the associated lottery outcome. This implies an asymmetry in the payments between the active and passive participants. Notably, the payment scheme is held constant across different levels of social distance – whether the active participant decides for the anonymous stranger or the friend – allowing us to investigate these two dimensions simultaneously. In this way, we can derive some into regarding the interaction of monetary and non-monetary aspects of decision

[2]Despite a possible ex-post discussion of the experiment between friends, the decision making in our design is driven by cognitive and emotional factors that go beyond accountability. Some studies find that accountability plays a role [Pollmann et al., 2014], while others find no effect [Kling et al., 2019].

making on behalf of others, which may also be relevant for contract design. Indeed, such an analysis can inform a number of real situations, including household saving and investment choices.

Our results provide new insights concerning decision making on behalf of others. Overall, we find that monetary incentives do not vary the level of risk taking by the decision makers. However, after accounting for subjects who are expected profit maximizers (i.e. who always choose to invest no money in the lottery), we find that the asymmetric fixed payments scheme leads to an increase in risk taking compared to the symmetric variable payments, suggesting that the majority of individuals act less cautiously when their payoff is not aligned to that of the person for whom they decide. We also find that social distance plays a major role in the decision making process on behalf of others: a lower level of social distance reduces risk taking, increasing the expected payoff for the person affected by the decisions. Notably this is true irrespective of the monetary incentives. When accounting for individual characteristics, the relevance of social distance is further confirmed, while the role of monetary incentives appears weaker. Overall, our results suggest that an inappropriate incentive scheme and a high level of social distance may be quite detrimental for the people affected by the investment decisions, with the decision maker taking far too much risk. In the financial industry these features have been observed both in the type of payment provided (e.g. stock-options),[3] and in the way some services are offered to clients (which retain anonymity between the parties involved in the transaction).[4] More generally, the monetary incentives of the active participants and the social distance between the parties involved in the decision making process are features that are important not only for financial or economic decisions but whenever a choice implying some risk is made on behalf of others.

The paper is structured as follows. Section 2 locates the paper in the actual debate. Section 3 details the design of the experiment. Sections 4 and 5 respectively describe our main hypotheses and the experimental procedures. Sections 6 presents the main results, while section 7 concludes.

[3]In 2009 U.S. Treasury Secretary Geithner in his testimony to Congress on the Treasury budget claimed that "compensation and the incentives that created risk taking did contribute in some institutions to the kind of vulnerability we saw in this financial crisis. Ellul and Yerramilli [2013], Cheng et al. [2015], Shue and Townsned [2017] provide some empirical evidence.

[4]While this is typically the case for investment services, emerging digital innovation allows for even more opportunities, e.g. peer-to-peer lending, cryptocurrency markets, in which the identity of the transacting parties is not revealed.

2 Literature Review

Our paper contributes to a growing body of literature investigating decision making in social context under risk.[5] Particularly, regarding monetary incentives, most of the authors have considered a setting in which the active participant receives the same payoffs as the passive participant [Bolton and Ockenfels, 2010, Pahlke et al., 2015, Montinari and Rancan, 2018]. This choice is usually justified by the need to avoid inequality concerns which may occur in laboratory settings.[6] The importance of making payoffs symmetric is further justified by findings in which payoff commonality was sufficient to obtain group membership [Charness et al., 2007b]. Differently, others [Chakravarty et al., 2011, Eriksen and Kvaloy, 2010] study the case in which the decision maker's payoff does not depend on his choice. According to Eriksen and Kvaloy [2010] this setting should guarantee that any difference in the decision is due only to other regarding concerns. This implies, however, that any difference in payoffs between the active and the passive participants may become relevant to the decision. Other papers have systematically explored the importance of incentive schemes in deciding for others. Füllbrunn and Luhan [2015] in their study of both symmetric and asymmetric payments, reported as a main result a decrease in investment when deciding for others. While the reduction was bigger for the asymmetric treatment, the difference was not statistically significant compared to the symmetric treatment.[7] Andersson et al. [2018] considered different payment treatments and found that risk taking on behalf of others under high-incentives (bonus and tournament) was higher compared to cases where no incentive (no payment) was offered. Similarly, Kirchler et al. [2018] show that tournament incentives induced an increase in risk taking.[8] In a different fashion, Linde and Sonnemans [2012]

[5] Besides the study of decision making in social context under risk over the last decades, research in economics has highlighted the relevance of others' payoffs in many different situations [see e.g. Fehr and Schmidt, 1999, Charness and Rabin, 2002, Charness and Jackson, 2009, Sutter, 2009, Bolton and Ockenfels, 2010], mostly focusing on distributional games under certainty or uncertainty in dictator games [Bolton and Ockenfels, 2010, Brock et al., 2013] and allocation task [Cettolin and Riedl, 2016].

[6] Inequality aversion has been included in economic models [see e.g. Fehr and Schmidt, 1999] and tested in laboratory using different settings [Herreiner and Puppe, 2010, Höchtl et al., 2012].

[7] Füllbrunn and Luhan [2017], also studying loss aversion on behalf of others, considered a setting with symmetric payment, and another in which the decision maker's choices were found to have no impact on her own payoff.

[8] Other papers investigate different types of incentives, which are not fully symmetric/asymmetric, such as a scheme with limited liability Kling et al. [2019], option [Lefebvre and Vieider, 2014] and competition [Agranov et al., 2014] to approximate contract compensation features of financial advisors, CEOs and hedge fund managers.

exploited variation in the payment of the passive player. They found that decision makers are more risk averse when they earn *at most as much as* the others compared to the case in which they will earn *at least as much as* their referent, confirming the finding that people dislike the disadvantageous inequality more than the advantageous.
The novel contribution of our paper to this literature consists in our analysis of the role of monetary incentives in decision making on behalf of others under different levels of social distance. Indeed, the majority of cited works have examined decision making for another under a given level of social distance and, to the best of our knowledge, none has analysed the performance of monetary incentives in the presence of different levels of social distance.

Our paper relates in general to the literature investigating decision making on behalf of others. While some studies provide evidence for more cautious behaviour when others are involved [Füllbrunn and Luhan, 2017, Bolton et al., 2015], and other studies report opposite findings [Sutter, 2009, Chakravarty et al., 2011], yet other works find, in certain cases, no effect [Andersson et al., 2014] and [Ifcher and Zarghamee, 2018]. Apart from differences in the experimental design that may partially explain this contrasting evidence, an important point, and the aim of our contribution, is to understand the circumstances under which decision making on behalf of others induces less/more risky choices and what factors enter into the decision making process.[9]

Finally, our results also contribute to the literature studying social ties and their impact on economic decision making. In many experimental studies, social ties are artificially created in the lab by revealing the full names of participants to signal gender and ethnicity [Holm, 2000, Fershtman and Gneezy, 2001], by having individuals participate in games before the main task [Linde and Sonnemans, 2012], or by allowing for some interaction [Jagau and Offerman, 2018]. Charness et al. [2007a] considered a trust game letting subjects participate in a traditional classroom setting or online. In Humphrey and Renner [2011], the decision maker had the responsibility for the payoff of a friend. These works suggest that the degree of closeness to the person affected by the decision should induce the decision maker to act more favourably. With respect to these studies, our contribution consists in expanding the study of social distance in order to assess whether, and to

[9]Previous papers identify roles for social responsibility [Bolton et al., 2015], stereotypes [Daruvala, 2007], and conformity to the majority preferences of others [Jagau and Offerman, 2018].

what extent, its positive impact is robust relative to different monetary incentive systems offered to the decision maker. A related stream of literature has explored how decision making for others is influenced by interpersonal interaction and persuasion [Shupp and Williams, 2008, Charness et al., 2013], communication [Heinrich and Mayrhofer, 2018], and accountability [Pahlke et al., 2012, Pollmann et al., 2014, Kling et al., 2019]. Their results are mixed though not easily comparable due to slight differences in their design. Nonethless, while these settings may be interpreted as a reduction in the level of anonymity between the two parties, our friend treatment goes beyond a situation of mere ex-post communication/accountability.

3 Experimental design

In this section we illustrate the risky choice task (Sect. 3.1) and the treatments implemented (Sect. 3.2).

3.1 The risky choice

We use the same risky choice task as in Montinari and Rancan [2018]. The task is obtained by introducing a small variation to the task used in Gneezy and Potters [1997] and Charness and Gneezy [2010] such that our lottery has a negative expected value. Each participant is given 100 ECUs (where ECUs denote the experimental currency unit, and 1 ECU corresponds to 1 eurocent) as an endowment and asked to choose the portion of this amount (between 0 and 100) that he wishes to put on the lottery. The ECUs not used in the lottery together with the ECUs gained determine the earnings obtained from a given risky choice.

Table 1: Lotteries

	Success		Failure		Expected Value
	Earnings	Probability	Earnings	Probability	for full risky choices $q = 100$
Lottery A	$2.5q$	.33	0	.67	82.5
Lottery B	$1.8q$	.25	$0.5q$	.75	82.5

Our experiment has three parts. In each part, participants are confronted with an identical sequence of 12 independent risky choices, presented in four blocks of three identical lotteries each.[10] As shown in Table 1, in each experi-

[10]We use the same wording used in Charness and Gneezy [2010] which explicitly refer to a "risky option" and to a "risky investment". Subjects are informed that the three

mental part risky choices from 1 to 6 (i.e., block 1 and block 2) correspond to lottery A. Lottery A is successful with 0.33 probability, returning 2.5 times the amount put, while it fails with a complementary probability of 0.67, returning 0. Risky choices from 7 to 12 (i.e., block 3 and block 4) correspond to lottery B. Lottery B is successful with 0.25 probability, returning 1.8 times the amount put, while it fails with a complementary probability of 0.75, returning half of the amount put. The two lotteries give the same (negative) expected value, but differ both in their variance ($Var(A) > Var(B)$) and in the fact that money put on the lottery can be totally or partially lost in the case where a negative outcome is realized. The main reason for including these two lotteries is to verify if investment in the loss domain was affected by the amount lost in cases where the "bad" state of the world is realized.[11] Note that a decision maker who adopts the expected value criterion for his decision (e.g., maximizes a utility function simply based on expected value) would never put any amount in either of the two lotteries.

3.2 The treatments: social distance and monetary incentives

Our experimental design varies two main factors: the social distance (SD) and the monetary incentives for the decision makers. The SD is varied within subjects and, therefore, within a session subjects experience different levels of SD (one in each of the last two experimental parts). The monetary incentives are varied between subjects and, therefore, within a session, participants always face the same type of monetary incentives for all three parts. Table 2 summarizes our treatments.

In all treatments, each subject is informed of the outcome of the lottery after a block of three periods, and he then makes a risky choice for a block of three periods at a time. Therefore, each subject, at the beginning of each block of risky choices, has to decide how much of his 100 ECUs endowment to put on the lottery for the three subsequent periods, and these risky choices are restricted to being equal within each block.[12]

decisions contained in each block are identical. More details can be found in the Instructions reproduced in English in the online Appendix.

[11] Compared to the Gneezy-Potters setup, we have shifted slightly the probabilities associated to lottery A from 1/3 to 0.33 and from 2/3 to 0.67 in order to make the expected values identical between lotteries A and B.

[12] This feedback scheme corresponds to the the infrequent feedback treatment in Montinari and Rancan [2018] who, as in Gneezy and Potters [1997] and Charness and Gneezy [2010], implement two variations (between subjects) in the feedback frequency in order to study the impact of Myopic Loss Aversion. Specifically, in the frequent feedback treatment (not analyzed in this paper) in each of the twelve risky choices, each subject first decides

We ran separate sessions for male and female participants based on previous evidence showing both i) differences in decision making under risk across gender [Croson and Gneezy, 2009] and, ii) the relevance of gender stereotypes, e.g. females being more risk averse than males as passive participants [Daruvala, 2007] as well as beliefs about others' risk preferences when deciding on behalf of others [Chakravarty et al., 2011].

Table 2: Treatments: Social Distance and Monetary Incentives

	Social Distance	Symmetric Variable Payment	Asymmetric Fixed Payment
Part 1: Own (OT)	No social distance	-	-
Part 2: Stranger(ST)	High social distance	SVP-ST	AFP-ST
Part 3: Friend (FT)	Low social distance	SVP-FT	AFP-FT

In Part 1 (OT) both active and passive participants were confronted with the same sequence of 12 decisions.

3.2.1 Social distance

To investigate the impact of SD we ran three treatments within subjects. In the own treatment (OT), each participant decides only for himself and his decisions have no consequences for anyone else. The OT constitutes our measure of individual propensity to risk taking in the environment under consideration. In the other two treatments, subjects are divided into active and passive participants and retain their role over the two treatments featuring decisions on behalf of others. In the stranger treatment (ST), the active participant makes his risky choices on behalf of an anonymous passive participant. Anonymity is common knowledge in this treatment. In the friend treatment (FT), the active participant makes his risky choices on behalf of the friend who accompanied him to the lab. Thus, the identity of the decision maker is known to the passive participant in this treatment.

In the experimental sessions presented in this paper, participants experience the three treatments OT, ST and FT in a fixed order. Montinari and Rancan [2018] present results from additional sessions varying the order of the three

how many of the 100 ECUs to put on the lottery. Then he receives feedback about the outcome of the risky choice in that period, and after that, another period starts until the twelfth risky choice is completed. In this experiment we opt for the infrequent treatment which better approximates real-life situations and prevents excessive noise in the investment choices.

treatments to control for order effects such as learning or fatigue.[13]
A difference with respect to the majority of previous papers is that we consider the investment choices of the active players only. For example, in Chakravarty et al. [2011] every subject is both an active and a passive player.

3.2.2 Monetary Incentives

We implement two variations in the monetary incentives by varying, between subjects, the payment assigned to the decision makers in both the ST and FT, while the earnings of the passive participants remain the same. Similar variations are both presented in Füllbrunn and Luhan [2017] and Andersson et al. [2018]. In the Symmetric Variable Payment treatment (SVPT) in each of the twelve risky choices, both in ST and FT, we perfectly align the incentives of active and passive participants.[14] This means that the risky choices of the active participant determine the same identical payoff for himself and the passive participant.[15] In this way, we rule out by design any concerns about inequality of the experimental earnings between active and passive participants and, in general, any other form of other-regarding concerns based on the relative comparison of experimental payoffs. In the Asymmetric Fixed Payment treatment (AFPT) in each of the twelve risky choices, in both ST and FT the decision makers get a fixed payment while the earnings of the passive participants depend on the decisions of the active participants. Therefore, unlike than in the SVP treatment, active participants' decisions affect only the earnings of the passive participants and not their own. We opt for a fixed payment to the decision maker that is larger than what could be obtained by the passive participants, even in case of positive realizations. This makes

[13]Specifically, they ran four sequences varying i) whether the OT treatment was the first or last encountered, and ii) whether there was an increase or decrease in the social distance experienced by participants, that is the order of the ST and FT treatments.

[14]Notice that we could had chosen a variable payment but not perfectly symmetric with the payment of the passive participant, such as $Payment_{Active} = X * Payment_{Passive}$ with $X > 0$ or $X < 0$.

[15]Specifically, the decision situation for the active participant was described as follows: "*Now we are about to start the first (second/third/fourth) block of risky choices. Each block contains 3 risky choices. In each period of a block, you will face the same project and you have to make your risky choice for the passive participant.*" Then, on the decision screen the active participant was requested to: "*Please indicate how many ECUs of the PASSIVE participant you want to invest in Project 1. The ECUs that you don't invest will be accumulated in the total balance of the PASSIVE participant.*" Finally, in the instructions the following was specified: "*If this part, i.e., part 2, is selected, then: 1) the passive participant matched with you will earn the sum of the earnings obtained as a consequence of your risky choices in each of the 12 periods of part 2. 2) You will earn the same amount of ECUs he earns.*" See the online Appendix for more details.

the AFPT similar to the experiment in Linde and Sonnemans [2012]. In one of their treatments, the decision maker gains at least as much as the passive participant.[16]

3.2.3 Experimental Earnings and Feedbacks

Since we are interested in studying if (and how) individuals' decision making on behalf of others is affected by SD and monetary incentives for the decision makers, subjects are informed that only the risky choices made in one of the three experimental parts will be randomly selected to determine the experimental earnings. Within each part, however, all twelve decisions are considered in calculating the payoff of that part [as in Gneezy and Potters, 1997, Charness and Gneezy, 2010], and the earnings, cumulated in each period, are shown to the active participant in each part. At the end of the twelve risky choices, both in ST and FT, the passive participants are also informed about the risky choices made by the active participant with whom they are matched as well as about the outcome of the lottery in each period. Importantly, both in ST and FT, depending on the treatment, the active participants either earn exactly the same amount as the passive participants (SPT) or they earn a fixed amount (APT).

4 Hypotheses

Our experimental design is aimed at testing two main hypotheses.

HYPOTHESIS 1.
Monetary Incentives. Decisions made by active participants on behalf of a stranger (ST) and a friend (FT) differ depending on the monetary incentive. All else being equal, we expect that active participants take more risks in the AFPT compared to the SVPT.

Our first hypothesis compares the investment decisions in the SVP and the AFP treatments and aims to test the relevance of monetary incentives when deciding for others. While several factors, such as a feelings of responsibility, guilt aversion or emotional reactions may affect the investment decisions of

[16] Füllbrunn and Luhan [2015], in considering the asymmetric payment, varied the fixed amount gained by the decision maker to properly control for issues of payoff inequality but they found no difference between the two treatments.

the active participants irrespective of the treatments, in the AFP treatment the decision maker may have less cautious behaviour since his/her outcome would not be affected by riskier choices. Thus we expect larger investment in AFPT compared to SVPT. These two treatments differ in the relevance of other regarding concerns in the form of inequality aversion. Specifically, in the SVPT the active participants' inequality aversion is excluded by design, given that the earnings of the two participants are perfectly aligned. To the contrary, in the AFPT the earnings of the active participants are independent of the passive participants' earnings. Also by design, the passive participants could never earn as much as the active participants, irrespective of the investment choice, which mitigates concerns about inequality aversion. Our second hypothesis refers to the interaction between monetary incentives and social distance.

HYPOTHESIS 2.
Monetary Incentives and Social Distance. The effect of social distance interacts with the effect of monetary incentives.

Based on previous results we know that social distance has an impact on the active participant's decision making process and that decreasing the social distance also induces a reduction in risk taking by the active participants, Montinari and Rancan [2018]. Whether SD interferes with monetary incentives is however an open question for which we do not have previous theoretical predictions or evidence. Indeed, several cognitive and emotional factors enter into the decision making process under different levels of social distance.

5 Procedures

The experiment was programmed in z-Tree [Fischbacher, 2007] and conducted at the experimental laboratory of the Max Planck Institute of Economics Jena (Germany). Data from the Symmetric Payment treatment were collected in April 2013, while data from the Asymmetric Payment treatment were collected in September 2013. Recruitment was the same in each month. The participants were undergraduate students from the Friedrich Schiller University Jena who were recruited using ORSEE software [Greiner, 2004] and

invited to come to the lab with a friend of the same gender.[17] [18] All students participating were confronted with the same sequence of decisions: OT-ST and FT. Upon entering the laboratory, subjects were randomly assigned to visually isolated computer terminals. Participants were informed that the experiment had three parts and that they would receive instructions for the second (third) part once the first (second) part was completed. Our matching protocol is such that, in those parts where decisions on behalf of others have to be undertaken, each friend in the pair knows that everyone has the same probability of being assigned the role of active and passive participant.[19] Once roles are assigned, they are then also retained in the other experimental part where a decision has to be made on behalf of others. Subjects are informed about the content of each part (and about their role as active/passive participant not changing) and only then is the first decision on behalf of other undertaken (see the Instructions in the online Appendix for details).[20]

The two payment treatments were run in a between-subject design, i.e., each subject participated in only one of the two treatments.[21]

In both treatments participants were always confronted with the same sequence OT-ST-FT, whereby after deciding for themselves, participants next experienced a decrease in social distance by deciding for a stranger, and then for their friend. We ran ten sessions, five composed entirely of females and five composed entirely of males. Each session involved between 14 and 30 participants, as shown in Table 3. Sessions lasted about 80 minutes. Average earnings of the experiment were 16 euros, including 2.5 euros for showing up.

[17]The name, surname, and e-mail address of the friend had to be communicated via email to the experimenters at least 24 hours before the scheduled sessions in order to verify that s/he had not participated in another session of the same experiment before.

[18]Also in Gächter et al. [2015] participants brought a friend to the lab. Of course, although this requirement may affect the selection of participants in the experiment, we did not perceive any difference in the development of the recruitment stage compared to other experiments either in terms of time necessary to full the session or of non show-up of participants.

[19]Note that once two friends enter the lab, each of them has a 50% chance of becoming the active participant; therefore, in only 50% of the cases is the decision maker the participant who invited the friend to the lab, while the opposite is true for the other 50%.

[20]While the active participants were making their choices, we asked the passive participants to make hypothetical decisions identical to the ones faced by the active participants but irrelevant for the determination of their final payoff as passive participants. Details of the hypothetical decisions taken by the passive participants can be obtained from the authors on request.

[21]The data presented here for the SVP treatment have been used also in Montinari and Rancan [2018], while data on the AFP treatment have been collected subsequently in order to answer a different research question on the role of monetary incentives and their interaction with social distance.

Table 3: Participants and Treatments

	Symmetric Payment	Asymmetric Payment	Total
Session	6	4	10
Participants	124	98	222
Active Participants	62	49	111
N. of Males	31	22	53

6 Results

In this section we present our results. We focus on the decision of active participants in part 2 (Stranger treatment) and part 3 (Friend treatment), where the SD variation takes place, but also control for the decisions of active participants in part 1 (Own treatment) where there is no difference between our two treatments. In Table 4 we report some first summary statistics of the amount invested in each treatment. It can be noted that the average investment in the OT treatment does not differ depending on the monetary incentive (Mann-Whitney test, $z = 0.434$ $p = 0.6642$).

Table 4: Summary Statistics of the Amount Invested by Treatment

	Obs	Mean	Std. Dev.	Min	Max
AFP-OT	49	35.255	26.111	0	100
SVP-OT	62	34.427	21.443	0	100
AFP-ST	49	36.535	27.351	0	100
SVP-ST	62	34.403	22.303	0	100
AFP-FT	49	27.173	20.476	0	100
SVP-FT	62	27.884	22.965	0	100

Our analysis focuses on two measures: the average amount of ECUs put on the lottery by the active participants, and the average number of times an active participant decides to invest zero ECUs in the lottery. To deal with this second measure we define the variable *safe choice* as a dummy that, in each period, takes value 1 if the active participant does not invest any ECUs in the lottery while it is equal to 0 otherwise. Both the average amount of ECUs invested in the lottery and the variable safe choice are obtained, for each subject, by pooling the data from both lotteries and all blocks.[22] In addition, given that participants are confronted with a lottery yielding a negative expected value, we identify as expected profit maximizers (EPM, henceforth) those participants who decide not to invest any ECU in the lottery all three parts of our experiment (i.e. those who make a safe choice in each period of play).

[22]In the regression analysis we control for marginal effects of these components.

By definition, EMP participants do not respond to our treatment variations. Overall, we find that EPM participants represent 10.81% ($N = 12/111$) of the active participants only, and despite being more frequent in the asymmetric payment treatment than in the symmetric payment one (14.29% $N = 7/49$ vs 8.06% $N = 5/62$ respectively), this difference is not statistically significant according to Fisher's exact test (p-value= 0.363). When considering gender, we find that, overall, men are significantly more likely to be classified as EPM than women according to Fisher's exact test (men: $N = 10/50$ vs women $N = 2/61$, p-value= 0.006); however, when considering the gender differences within each treatment we find that the difference is driven by the AFPT sample (Fisher's exact test, p-value= 0.036), while in the SVPT differences do not achieve statistical significance (Fisher's exact test=0.166).

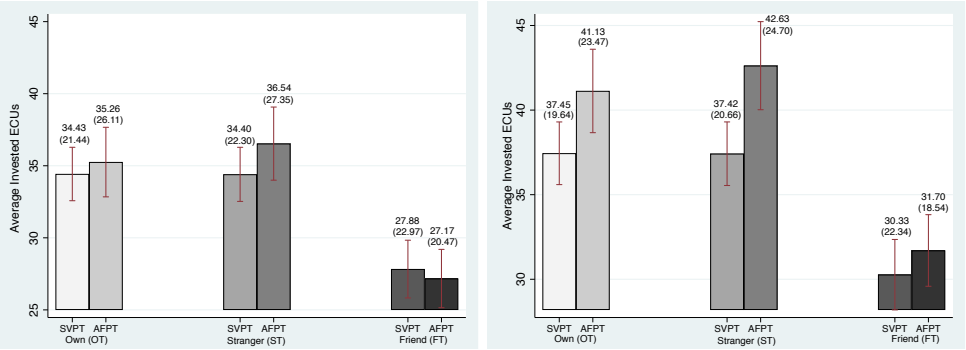
Our findings are summarized in the results below:

RESULT 1 *Amounts put in the lottery by active participants on behalf of a stranger or a friend are higher in the asymmetric fixed payment treatment (AFPT) rather than in the symmetric variable payment treatment (SVPT) for those individuals who invest a positive amount in the lottery. The impact of monetary incentives is greater for active participants who are not profit maximizers.*

RESULT 2 *When deciding on behalf of a stranger (ST) active participants put significantly more money in the lottery under the asymmetric fixed payment treatment (AFP) compared to the symmetric variable payment treatment (SVP). Monetary incentives have no impact when active participants decide on behalf of a friend (FT).*

Support for Results 1 and 2 can be found in Figures 1 and 2, then in Tables 5, 6 and 7. Figures 1 and 2 plot the average amount of invested ECUs and the average proportion of safe choices depending on the monetary incentives and the social distance both for the whole sample (panels a) and for the sample obtained when considering only those participants who are not expected profit-maximizers, i.e. who invest a positive amount in the lottery (panels b). Table 5 presents the results of a set of non-parametric tests both for the whole sample (panel a) and for the sample obtained when only the participants who are not expected profit-maximizers are considered (panel b). By looking at the Figures and the Tables 5 and 6, it can be noted that the av-

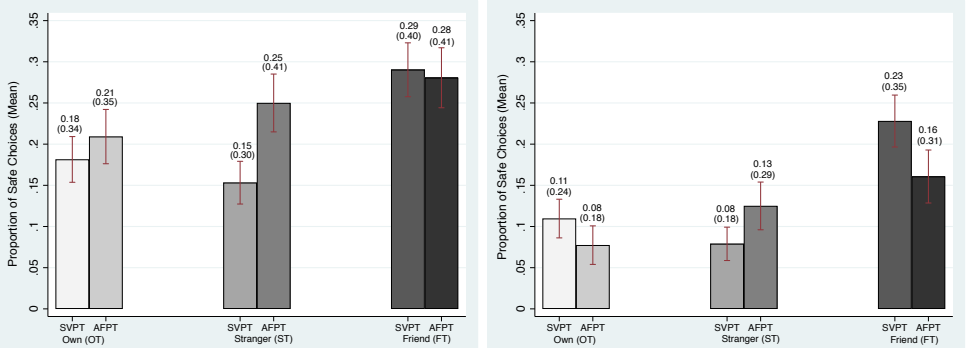
erage amount of ECUs invested (average proportion of safe choices) is greater (lower) in the AFPT compared to the SVPT but only when the social distance is high, i.e. when the active participants decide on behalf of a stranger compared to a friend. Specifically, differences are only statistically significant for the average amount of ECUs invested when only the participants who invest positive amounts in the lottery are considered (see panel b of Table 5). Shortening the social distance (i.e. when decisions are taken on behalf of a friend), the monetary incentives seem to have no effect on the decision making process of the active participants when it comes to the average amount of ECUs invested. Differently, we observe a significant difference in the average proportion of safe choices for the FT when the analysis is restricted to those participants who are not EPM (see panel b of Table 6).



(a) All participants (b) Only participants who are not EPM

Figure 1: Mean of invested ECUs Monetary Incentives and Social Distance.

Note. In panel (a) we have N=111 participants SVPT=62; AFPT=49. In panel (b) we have N=99 participants, SVPT=57; AFPT=42. Error bars, mean ± SEM.



(a) All participants (b) Only participants who are not EPM

Figure 2: Proportion of Safe Choices (Mean), Monetary Incentives and Social Distance.

Note. In panel (a) we have N=111 participants SVPT=62; AFPT=49. In panel (b) we have N=99 participants, SVPT=57; AFPT=42. Error bars, mean ± SEM.

Table 5: Results from non-parametric tests: the Role of Monetary Incentives

Panel A: All participants			
	OT	ST	FT
SPT vs APT	z=0.434	z=0.434	z=0.078
average amount of ECUs	p=0.331	p=0.332	p=0.469
put on the lottery			
SPT vs APT	z=0.273	z=0.767	z=0.345
average proportion of Safe Choices	p=0.393	p=0.222	p=0.365
Panel B: Only participants who are not EPM (i.e. with average investment > 0)			
	OT	ST	FT
SPT vs APT	z=0.103	z=1.701	z=1.031
average amount of ECUs	p=0.9182	p=0.045	p=0.152
put on the lottery			
SPT vs APT	z=0.051	z=0.606	z=1.600
average proportion of Safe Choices	p=0.6165	p=0.273	p=0.056

Note: According to Hp1, SVPT vs AFPT are compared using one-sided Mann-Whitney

Table 6: Results from non-parametric tests: the Role of Social Distance

Panel A: All participants						
	SVPT, N=62			AFPT, N=49		
	OT vs ST	OT vs FT	ST vs FT	OT vs FT	OT vs FT	ST vs FT
average amount of ECUs	z=0.239	z=2.951	z=2.793	z=1.470	1.695	z=3.059
put on the lottery	p=0.8111	p=0.0032	p=0.003	p=0.1416	p=0.0901	p=0.001
average proportion	z=0.627	z=2.382	z=3.772	z=1.327	z=1.679	z=0.376
of Safe Choices	p=0.5306	p=0.0172	p=0.001	p=0.1845	p=0.0931	p=0.354

Panel B: Only participants who are not EPM (i.e. with average investment > 0)						
	SVPT, N=57			AFPT, N=42		
	OT vs ST	OT vs FT	ST vs FT	OT vs ST	OT vs FT	ST vs FT
average amount of ECUs	z=0.270	z=2.964	z=2.819	z=1.339	z=1.1814	z=3.086
put on the lottery	p=0.7869	p=0.0030	p=0.003	p=0.1805	p=0.0696	p=0.001
average proportion	z=0.640	z=2.390	z=1.600	z=1.338	z=1.693	z=0.395
of Safe Choices	p=0.5223	p=0.0168	p=0.056	p=0.1808	p=0.905	p=0.347

According to Hp2 ST vs FT are compared using two-sided Signed Rank tests.

6.1 Heterogeneity in investment decisions

So far we have considered the average behavior of active participants. To shed light, however, on the decision making process when someone else is involved, in this section we report results from a regression analysis aimed at explaining behavioral patterns taking into account individual characteristics. Our findings can be summarized as follows:

RESULT 3 *Differences in risky choices across treatments are explained, to some extent, by individual risk attitudes, beliefs about the passive participant's risk attitude, and the decision maker's personality traits.*

Table 7 presents the results of a set of Tobit regressions[23] with robust standard errors clustered at the individual level analyzing the effect of social distance and monetary incentives on risk taking. In all models, the dependent variable is the amount of ECUs put in the lottery by active participants. In all models, we control for the lottery B (a dummy variable equal to 1 when subjects face lottery B, 0 otherwise); the presence or not of monetary incentives (captured by the dummy AFPT equal to 1 for the asymmetric fixed

[23]We choose a Tobit model since our dependent variable, the amount of ECUs put in the lottery, is censored.

payment treatment and 0 for the symmetric variable payment treatment); whether the participant is an expected profit maximizer (captured by the dummy EPM equal to 1 if the subjects always invest 0 ECUs in the lottery and 0 otherwise); the gender (where male is a dummy variable indicating the gender of the decision maker); and the player's self reported risk attitude, SOEP.[24]

In models 1-4 we pool observations of the two parts (ST and FT) and add a dummy variable for the Friend treatment, while in models 5 and 6 we consider either the ST or the FT treatment only. In model 2 we estimate the same model presented in column 1 but we also include the interaction between the treatments (i.e. AFPT x Friend (FT)). In models 4-6 we add as controls the age (in years) self-reported by the participants, whether the active player is attending/attended a program in economics (captured by the dummy Study Economics), and the income class.[25] Consistent with previous findings [see e.g. Chakravarty et al., 2011, Foerster et al., 2017], we also include beliefs about a passive participant's SOEP, i.e. beliefs about an anonymous stranger (friend)'s SOEP in ST(FT). This last variable allows us to control for the fact that concern for a passive participant may be the result of a willingness to do what the passive participant would have done. Finally, we also include the scores for the Trait Emotional Intelligence Questionnaire (TEIQue) and the variable (TIPI) Extraversion.

When looking at the regressions output, results are consistent with the pattern identified in the Figures and in Table 5. Consider first models 1-4 where data from both the ST and FT treatments are included. The Dummy variable accounting for the SD is always *negative* and significant while the dummy variable accounting for the monetary incentive is *positive* and significant, confirming our hypothesis 1: on average active participants take more risks under the AFPT compared to the SVPT. Males are also found to be more willing to take risks. Another factor positively affecting the investment in the lottery is represented by the active participant's self-reported attitude toward risk, captured by the variable SOEP, which is positive and

[24]The general risk question of the German Socio-Economic Panel (SOEP) asks participants to give an assessment of their own general willingness to take risks on a 0-10 scale. Participants were also asked to indicate an anonymous stranger's and their friend's general willingness to take risks. On the behavioral validity of this measure in economic experiments see [**?**]

[25]Participants indicated their monthly income after tax (including study loan and any transfer payments) by selecting from 8 income classes, from class 1: 0-500 Euros per month, to class 8: more than 2001 Euros per month, with intervals of 250 Euros each, etc: 501-750; 751-1000, etc.

significant.[26] The dummy variable lottery B is negative and statistically significant. In Model 2 the interaction term AFPT x Friend is not statistically significant, suggesting that when investing for a friend the decision is not affected by monetary incentives. In Model 3 we also include the active participant's beliefs about the risk attitude of the passive participants, which also seems to be an important factor in explaining the positive and significant risk taking on behalf of others: active participants try to match the (expected) risk attitude of the passive participants. In model 4, which replicates the estimates of Model 3 including a bigger set of controls, we find that results of Model 3 are confirmed. Finally, when considering models 5 and 6, which refer to the ST and FT respectively, we find that previous results hold with some exceptions. The coefficient accounting for the monetary incentive loses in the friend treatment. Income class enters with a negative sign while the dummy study economics is positive, but statistical significance is achieved in model 5 only. Finally, the TEIQue, assessing the active participant's emotional intelligence, achieves significance in the FT but not in the ST, suggesting that those who are better at managing their emotions are less likely to take risks on behalf of their friends.

Overall, our evidence suggests that, after accounting for several characteristics of the active participant, a lower social distance decreases risk taking; this is verified independently of monetary incentives and alignment in the payoffs of the active and passive participants. Thus, when deciding for others social distance seems to be an important determinant whose effect is robust and sizeable. In contrast, the effect of the type of monetary incentive provided to the active participants seems to be less clear. Our findings point in the direction of asymmetric fixed payments schemes leading to an increase in risk taking: the majority of individuals act in a less cautious way when their payment is not aligned to that of the person for whom they decide. However, this effect seems to be less robust to the variation in social distance. Indeed, the fact that the interaction term between monetary incentive and social distance does not achieve statistical significance suggests that deciding for a friend does not have a different impact depending on the monetary incentives provided to the decision maker, but rather proximity to the passive participant seems a more important factor affecting the decision making

[26] In this respect if, in order to account for the risk attitude of the active participant, we include in the estimation the number of safe choices taken by the active participant in part 1 (OT) rather than the SOEP, results do not change and the coefficient for this variable is negative and significant. Results are available from the authors upon request.

process.

7 Discussion and conclusions

In this paper, we investigated experimentally the role of monetary incentives and social distance in decision making on behalf of others under risk. Our results show that the decision maker invests a lower amount and behaves more consistently towards expected value maximization when deciding for others who are closer to them in terms of emotional proximity. Differently, monetary incentives that are not aligned with those affected by the decision lead to riskier decisions. This result is in line with recent studies investigating the role of monetary incentives in risk-taking on behalf of others [see, e.g. Andersson et al., 2018]. Still, the effect seems weaker after accounting for several individual characteristics and beliefs about others' risk taking. We also find that, independently of monetary incentives and alignment in the payoffs of the active and passive participants, the effect of social distance is robust and sizeable. Thus, in our setting, variation in monetary incentives seems to be less crucial than variation in levels of social distance. This result may be due to different cognitive and emotional factors, which become more or less important, under different settings.

Controlling for order effect in the SVPT, Montinari and Rancan [2018] found that the order of decisions made by the active participants for themselves does not matter, while the order of the decisions made on behalf of others does matter. That the order for their own treatment does not matter suggests that learning or fatigue did not play a major role in our environment. As for the order effect when deciding for others, we find that experiencing a decrease in social distance (i.e. deciding for a friend after having decided for a stranger) is crucial to the observation of this behavioral shift. A remaining open question is whether the same order effect would be found in the AFPT. One possible explanation is that experiencing a reduction in social distance makes salient the different level of responsibility associated with deciding for a friend rather than for a stranger. Based on these findings, we expect that, if anything, the same order effect would be found in the AFPT, given that the two treatments are similar in terms of cognitive load (in the SVPT the active and passive players earned the same amount, while in the AFPT the active players earned a fixed amount). This result also suggests that the decision making context can be designed to reduce the distance be-

Table 7: Invested ECUs in the Risky Project Active Participants.

Model	1	2	3	4	5	6
Estimation Method	Tobit Regression					
Independent Variable	y=ECUs invested in the Lottery					
Lottery B	-8.846***	-8.845***	-8.813***	-8.430***	-6.666**	-10.17***
	(2.298)	(2.298)	(2.289)	(2.262)	(2.598)	(3.063)
Friend (FT)	-11.02***	-9.833***	-10.96***	-10.49***	-	-
	(2.767)	(3.118)	(2.696)	(2.645)		
AFPT	9.816**	11.22**	9.266**	7.293*	7.575*	6.687
	(3.979)	(4.803)	(3.836)	(3.808)	(4.507)	(4.871)
Male	10.42**	10.42**	9.178**	7.126*	8.301*	5.873
	(4.425)	(4.424)	(4.292)	(3.866)	(4.666)	(4.615)
SOEP	2.935***	2.934***	2.406***	1.881**	1.819*	1.890
	(0.833)	(0.833)	(0.858)	(0.901)	(1.084)	(1.167)
EPM	-100.1***	-100.1***	-97.73***	-104.8***	-228.6***	-90.94***
	(14.818)	(14.869)	(14.390)	(23.351)	(11.422)	(27.675)
AFPT x Friend (FT)	-	-2.837	-	-	-	-
		(5.622)				
Beliefs SOEP	-	-	2.765**	2.516**	3.322*	2.369*
Passive Participant			(1.189)	(1.220)	(1.769)	(1.292)
Age (years)	-	-	-	-0.392	-0.390	-0.465
				(0.644)	(0.717)	(0.785)
Income Class	-	-	-	-3.763	-5.551*	-1.625
				(2.719)	(3.263)	(3.230)
Study Economics	-	-	-	33.50	35.04***	38.08
				(22.70)	(6.673)	(32.701)
Trait Emotional Intelligence	-	-	-	-4.601	-1.812	-7.186*
(TEIQue)				(3.137)	(3.881)	(3.802)
(TIPI) Extraversion	-	-	-	1.601	2.829	0.404
				(1.599)	(1.934)	(1.957)
Constant	23.230***	22.659***	13.997*	47.856*	27.188	54.946**
	(5.334)	(5.340)	(6.755)	(24.450)	(26.831)	(27.731)
Observations	2664	2664	2664	2640	1320	1320
N Subjects	111	111	111	110	110	110
Pseudo R^2	0.066	0.066	0.069	0.072	0.086	0.059
Log likelihood	-9662.293	-9661.680	-9633.533	-9513.967	-4846.390	-4634.718
F	12.66***	11.43***	11.45***	7.55***	70.69***	5.73***
Uncensored	1,896	1,896	1,896	1,893	987	906
Left-censored obs. at y=0	642	642	642	639	261	378
Right-censored	126	126	126	108	72	36
Part	2,3	2,3	2,3	2,3	2	3

Note. Robust standard errors adjusted for clusters in subjects are reported in parentheses.

$*, **, ***$ indicate $p < 0.10, 0.05, 0.01$ significance level, respectively.

tween the parties and induce the decision maker to feel closer to the passive participant and make choices closer to payoff maximization on his/her behalf.

Contract design has paid a lot of attention to monetary incentives, for example, to limit excessive risk taking by managers of companies. The issue is of primary importance in the financial industry, where portfolio managers may, under opaque investment strategy, invest the funds of their investors in a high risky manner. Our paper highlights that monetary incentives are not the only element that may align the decision makers' investment choices with the interests of the persons affected by those choices. Factors related to social distance and emotional proximity between the parties, a non-monetary element of the contractual relationship, are found to be effective in emphasizing the decision makers' responsibility for the outcome obtained by the passive participant, inducing more cautious behaviour. Moreover, when taken together, the effect of social distance seems to dominate that of monetary incentive. To conclude, our results suggest that contractual arrangements regulating those situations in which risky decisions are taken on behalf of others need to consider not only the type and magnitude of monetary incentives provided to the parties, but also take other aspects, such as the identity of the people involved and their emotional proximity, into account.

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Online Appendix-Experimental Instruction

A friend is a treasure. On the Interplay of Social Distance and Monetary Incentives When Risk is Taken on Behalf of Others

In this section, we report the instructions for our two treatments varying the monetary incentives of the active participant. We report, in parentheses, the text which is specific for the *Asymmetric Fixed Payment Treatment* (*AFPT)* and *Symmetric Variable Payment Treatment (SVPT)* respectively. The post-experimental questionnaire is available upon request.

Instructions

Welcome! You are about to participate in an experiment funded by the Max Planck Institute of Economics. Please switch off your mobile and remain quiet. It is strictly forbidden to talk to the other participants. Whenever you have a question, please raise your hand and one of the experimenters will come to your aid. You will receive 2.50 Euros for showing up on time. Besides this, you can earn more. The show-up fee and any additional amounts of money you may earn will be paid to you in cash at the end of the experiment. Payments are carried out privately, i.e., the others will not see your earnings. During the experiment we shall speak of ECUs (Experimental Currency Unit) rather than Euros. The conversion rate between them is 1 ECUs = 1 euro cent. The experiment consists of three parts. The instructions for the first part follow on the next page. The instructions for the second part will be distributed after all participants have completed the first part. The instructions for the third part will be distributed after all participants have completed the second part. All instructions are identical for all participants and we read them aloud such that you can verify this.

Detailed Instruction for Part 1

The experiment consists of 12 successive periods. The decisions will be organized in 4 blocks, and within each block, you will face the same identical decision 3 times. In each period you will receive 100 ECUs. You are asked to choose the portion of this amount (between 0 and 100 ECUs, inclusive) that you wish to invest in a risky project. The rest of the ECUs (those you don't invest) will be accumulated in your total balance.

The Risky Project.

In any particular period, there is a certain probability that the project will fail and a complementary chance that it will succeed. In each period you will be informed about:

1) of the probability of success and failure of the project,
2) the amount that you obtain in case of failure and in case of success.

In the box below you see two examples of risky project.

Example 1.

With a 40% chance the investment in the risky project will be successful, while with a 60% chance it will fail. If it is successful, you receive 2.5 times the amount invested. If the investment is unsuccessful, you lose the amount invested.

- If you invest 100 ECUs in the risky project,
  - if the investment is successful you will earn 250 ECUs,
  - if the investment fails, you will earn 0 ECU.
- If you invest 50 ECUs in the risky project,
  - if the investment is successful, you will earn 125 ECUs from the project + the 50 ECUs that you did not invest, for a total of 175 ECUs;
  - if the investment fails, you will earn 0 from the project + the 50 ECUs that you did not invest, for a total of 50 ECUs.

Example 2.

With a 50% chance the investment in the risky project will be successful, while with a 50% chance it will fail. If it is successful, you receive 1.5 times the amount invested. If the investment is unsuccessful, you will only earn 0.5 (i.e. half) of the amount invested.

- If you invest 100 ECUs in the risky project,

- if the investment is successful you will earn 150 ECUs,
- if the investment fails, you will earn half of what you invested, i.e 50 ECUs.

– If you invest 50 ECUs in the risky project,
  - if the investment is successful, you will earn 750 ECUs from the project + the 50 ECUs that you did not invest, for a total of 125 ECUs;
  - if the investment fails, you will earn 25 ECUs from the project + the 50 ECUs that you did not invest, for a total of 75 ECUs.

How Do We Determine if the Risky Project Succeeds?
The success of the project depends on a random drawing made by the computer. In each consecutive period the computer will make a random and independent throw, and the outcome in a given period is the same for all participants.

Feedback about the investment in the Risky Project.
At the beginning of period 1, after the projects are presented, you choose the amount you wish to allocate to the risky project for each block, i.e. for the next 3 periods (periods 1, 2, and 3). So, it means that you have to decide on your investment 4 in blocks of 3 periods each. Within each block the projects are identical, i.e. they have the same probabilities to be successful or not and the same amounts associated to success/failure. So, you choose to invest X ECUS in the project in period 1, X ECUS will also be invested in the project in periods 2 and 3. When period 3 is over you will get to see the outcome of the first three periods. Then period 4 starts and again you have to decide on how much to invest in the project for the next block of three periods (periods 4, 5 and 6). You will then see the outcome for the preceding periods (periods 4, 5 and 6). The same procedure applies for periods 7, 8 and 9 and for the last block of periods 10, 11 and 12. Note that the computer implements the random draw in each period, but that you decide on X ECUS for three consecutive periods.

Final Payments
At the end of the entire experiment, one of the three parts of the experiment will be selected to be relevant for your final earnings. If this part, which is part 1, is selected, then your total earnings for the experiment are the sum of the earnings in each of the 12 periods. The amount of ECUs you accumulated will be converted in Euros, summed to the show up fee and paid in cash.

Detailed Instruction for Part 2

In part 2, only half of the participants have to take a decision, we will identify these participant as active participants.
You will learn on your screen whether you will be randomly assigned to be an active or passive participant. All participants have the same probability of being assigned to be active or passive.

<u>If you are an ACTIVE participant</u>
You will face the same task as in Part 1 of the experiment.
The only difference in part 2 is that your decision will affect the earnings of another anonymous participant in this room (one of the passive participant). For all the 12 periods you will be paired to the same passive participant.
However, it will be not possible for you to know the identity of the passive participant for whom you have been deciding. Similarly, it will not be possible for him to know the identity of who took the decision which affects him. **Note that, this participant is NOT the friend who came with you today.**
Final Payments
At the end of the entire experiment, one of the three parts of the experiment will be selected to be relevant for your final earnings. If this part, i.e. part 2, is selected, then:

1) the passive participants matched with you will earn the sum of the earnings obtained as a consequence of you investment choices in each of the 12 periods of part 2.
2) [SVPT: you will earn the same amount of ECUs he earns.]
   [AFPT: you will earn a fixed amount of 1500 ECUs.]

The amount of ECUs accumulated will be converted in Euros, summed to the show up fee and paid in cash.

If you are a PASSIVE participant

While we are waiting the other participant to take his decision, we will ask you to answer some questions.

Final Payments

At the end of the entire experiment, one of the three parts of the experiment will be selected to be relevant for your final earnings. If this part, i.e. part 2, is selected, then:

1) you will earn the sum of the earnings obtained as a consequence of the investment choices made by the active participant in each of the 12 periods of part 2.
2) [SVPT: The active participant will earn the same amount of ECUs you earn.]
   [AFPT: The active participant will earn a fixed amount of 1500 ECUs.]

The amount of ECUs accumulated will be converted in Euros, summed to the show up fee and paid in cash.

Detailed Instruction for Part 3

In part 3, as in part 2, only half of the participants have to take a decision. In particular, if you were assigned to be an active participant in part 2, then, you will be active also in part 3. Similarly, if you were selected to be a passive participant in part 2, then you have to wait until all the active participants have made their choices.

If you are an ACTIVE participant

You will face the same task as in Part 1 of the experiment.

The only difference in part 2 is that your decision will affect the earnings of the friend who came with you at the lab today. For all the 15 periods you will be paired to the same participant, your friend.

Final Payments

At the end of the entire experiment, one of the three parts of the experiment will be selected to be relevant for your final earnings. If this part, i.e. part 3, is selected, then:

1) your friend will earn the sum of the earnings obtained as a consequence of you investment choices in each of the 12 periods of part 2.
2) [SVPT: you will earn the same amount of ECUs he earns.]
   [AFPT: you will earn a fixed amount of 1500 ECUs.]

The amount of ECUs accumulated will be converted in Euros, summed to the show up fee and paid in cash.

If you are a PASSIVE participant

While we are waiting the other participant to take his decision, we will ask you to answer some questions.

Final Payments

At the end of the entire experiment, one of the three parts of the experiment will be selected to be relevant for your final earnings. If this part, i.e. part 3, is selected, then:

1) you will earn the sum of the earnings obtained as a consequence of the investment choices made by your friend in each of the 12 periods of part 2.
2) [SVPT: Your friend will earn the same amount of ECUs you earn.]
   [AFPT: Your friend will earn a fixed amount of 1500 ECUs.]

The amount of ECUs accumulated will be converted in Euros, summed to the show up fee and paid in cash.