Disentangling trust from risk-taking: Triadic approach

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Abstract: The willingness to trust human receivers is compared to the inclination to take lottery risk in six distinct scenarios, controlling the return distributions. Trust shows significantly smaller responsiveness to return expectations compared to parallel pure-risk lottery allocation, and paired comparisons reveal that investors sacrifice 5% of the expected payoff to trust anonymous receivers. Trust is more calculated and volatile for males, while appearing relative stable for females. The results complement the accumulating evidence regarding physiological differences between trust and risk, in addition suggesting that the trust-risk gap is larger for females.

Keyword: Trust, risk, gender, ambiguity, betrayal aversion

JEL classifications: C72, C90, D80

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1. Introduction

Common definitions of trust speak of accepting temporary vulnerability based upon positive expectations of others (Rousseau et al., 1998). Subjective return expectations and personal risk appetites accordingly play major roles in individual trust decisions (Ben-Ner and Putterman, 2001; Eckel and Wilson, 2004). If two potential trustors similarly believe that the trustee is as likely to double their investment or choose zero return, then the more risk-averse would emerge as less trusting (Schechter, 2007). Vice versa, it is reasonable to assume that agents with more optimistic expectations would exhibit larger trust, beyond the effect of personal risk preference and unobservable covariates (Fehr, 2009). Experimental and survey studies indeed illustrate that trust strongly correlates with expected returns, but the findings for exogenous risk preference measures are generally mixed and inconsistent (compare Lönnqvist et al., 2015 and Butler et al., 2016 results for the Holt and Laury, 2002 measure).

The current paper adopts an integrative approach to explore the threefold interaction between trust, trustworthiness expectations, and individual risk preference. We run a multi-task survey experiment where subjects submit their trust decisions in a sequence of six distinct trust scenarios, simplifying the Berg et al. (1995) familiar investment game. The possible return levels are denominated in proportional terms, so that trustees commit to some fixed ratio of return without being able to condition on the selected investment. The menu of possible return levels is changed between games to examine the response to institutional change and characterize individual trust across distinct environments. A separate section of the questionnaire, elicits subjects' beliefs regarding the trustworthiness of randomly chosen trustees in each of the relevant trust environments. The elicited beliefs are finally used to define pure-chance lotteries with return distributions that copy the subjective assessments that subjects delivered for the trust games. The triadic design therefore consists of 3 components: trust games, belief elicitations, and pure-risk decisions, where each component sequentially refers to several distinct scenarios, based on trust games with distinct proportional return possibilities.

As we cannot actually play that many games in the lab, we use an incentivized survey, where MBA students (N=110; 48 females; mean age 33) take the experiment for grade bonus knowing that one of the tasks would be selected to determine their participation fee.

Since the six conditions triadic design is rather rich, we cannot list the many hypotheses that can be examined with such data. When designing the survey, for instance, we confidently hypothesized that the pure-risk decisions would strongly respond to expected returns, but were curious to learn if trust decisions show similar sensitivity to subjective expectations. The elicitation of six trust decisions and six parallel pure-risk choices per subject has the additional virtue that endogenous confounds, such as hidden norms or personal traits that mutually affect trustworthiness expectations and trust, are controlled at the individual level. With six conditions per subject, the relative responsiveness of trust and risk to expected return may be compared, across the sample, for each of the six scenarios first, and then additionally compared at the individual level to verify that the cross-section results sustain when hidden covariates are controlled.[1] The results indeed prove that trust shows much smaller responsiveness to expected returns compared to the parallel pure-risk decision, in each of the six conditions and at the individual level. The relative rigidity of trust is costly. Paired comparisons show that subjects sacrifice about 5% of the expected payoff to trust anonymous receivers.

We also point at some intriguing gender differences and discuss few discrepancies between the paired trust and risk decisions and findings of the decision under ambiguity literature. With this respect, the paper joins the emerging trust-as-trait research, pointing at distinctive properties of the inclination to trust compared to parallel risk-taking (see the neuroimaging studies of McCabe et al., 2001; Kosfeld et al., 2005; Krueger et al., 2012).

[1] If trustor A, for example, is a pessimist with negative return expectations that always invests about 20% of the budget and B is an optimist with positive expectations that always invests about 80% of the budget then trust positively correlates with expected returns across the sample, but the correlation follows from optimism and does not show at the individual level.

Moreover, the trust vs. risk difference is more pronounced for females compared to males.

The paper proceeds with brief literature review (Section 2), closer discussion of the design (Section 3) and comments on the statistical method (Section 4). Section 5 presents the main results, while sections 6-8 more closely discuss the results in light of relevant background literatures. Section 9 concludes.

2. Literature review

In Berg et al. (1995) two-stage trust game, the trustor first selects an investment X which triples to 3X at the hands of the trustee. The trustee then decides on the return Y ($0 \le Y \le 3X$) that would be paid back to the trustor for making the investment. If both players are endowed with 100, the final balance of the investor is 100-X+Y, while the receiver ends with 100+3X-Y. Part of the vast interest in the game follows from the large distance between the grim equilibrium solution and typical experimental results. In equilibrium, the self-regarding trustee always keeps the tripled transfer, so the rational trustor does not invest. Johnson and Mislin (2011) meta-analysis of more than 150 experiments contrarily reveals mean investment of about 50% of the endowment, with payback ratio close to 37% of the amount received.

The anticipated correlation between trustworthiness expectations and levels of trust has repeatedly surfaced in diverse cross-sample studies. Positive correlations emerged in multicultural studies (Ashraf et al., 2006), in repeated test-retest examinations (Lönnqvist et al., 2015), and in experiments where quadratic scoring rules were used to incentivize belief elicitation (Butler et al., 2016). In few papers, belief elicitation was conditional, so that subjects reported their expected return for each possible transfer (Sapienza et al., 2013), but we are not aware of studies that elicit the likelihood of each possible return, similarly to the approach of the current experiment. Fehr (2009) discusses the empirical problems that arise due to the endogeneity of trustworthiness expectations, illustrating that the correlation between expectations and trust may be an artifact of hidden covariates. Costa-Gomez et al. (2014) apply an instrumental variable approach, randomly perturbing the returns to prove the causal relation between expected trustworthiness and trust. A more direct approach is taken by Fetchenhauer and Dunning (2012) that provide subjects with exogenous information regarding the distribution of returns. One group played a binary trust game with relatively generous trustees, while the other played the game with more egocentric responders. The trust levels of the subjects with good return prospects significantly exceeded the trust of subjects with poor return chances. The difference was even larger when the second player was eliminated and the tasks were framed as pure-risk decision problems. Overall, however, the trust-game literature uniformly confirms that expectations play significant role in individual trust decisions. Optimistic proposers transfer larger amounts to the receivers.

The experimental findings regarding the link between individual risk appetite and inclination to trust, on the contrary, are generally mixed and frequently fail to produce the anticipated correlation. The Holt and Laury (2002) 10 levels risk aversion scale (henceforth: the HL measure) was tested in several studies that also controlled for subjective return expectations. The results were negative, finding no significant correlation between HL risk aversion and trust decisions in Eckel and Wilson (2004), Houser et al. (2010) and Lönnqvist et al (2015); but turned positive for the larger sample of Butler et al. (2016). Significant correlations between risk preference and trust also emerged when the pure-risk assignment was structured similarly to the trust game (Schechter, 2007), when a finer 15 points scale was used to characterize personal risk attitude (Sapienza et al., 2013), and when subjects ranked their general inclination to take risk in 0-10 ordinal scale (Lönnqvist et al., 2015, utilizing the Dohmen et al. 2011 stated risk preference measure). We avoid verbal risk preference statements in the current study, suspecting that these may affect (or be affected by) choices in other parts of the questionnaire. Alternatively, we utilize the lottery choice task of Weinstock and Sonsino (2014) that proved successful in terms of showing strong predictive power for forecast-optimism. The task is presented in Section 6.

Finally note that while the literature generally agrees that females are more risk averse than males (e.g., Borghans et al., 2009), the evidence regarding gender, trust, and trustworthiness is mixed. Several papers propose that males invest more than females but females are more trustworthy (Croson and Gneezy, 2009), but one or both of these findings are contradicted in other studies (Chaudhuri and Sbai, 2011; Dittrich, 2015).

3. The questionnaire design

3.1: General method

The questionnaire was distributed in MBA classes between May 2014 and March 2015. We took the entire 90 minutes session, so participation time was not effectively constrained. The booklet was divided into short chapters, with task-specific instructions preceding each section (Web supplement A). The procedure of the experiment and specific tasks were presented by the blackboard first, directing students to refrain from public comments. All tasks were denominated in hypothetical currency and one task was randomly selected to derive the participation bonus. The conversion ratio of currency units to participation fees was not announced in advance, but participants were told that the expected bonus is around 80-100 NIS, with individual payments ranging between 20 and 200 depending on choices and luck.[2] The payments derivation date was announced in advance and the participants were invited to supervise the process. The questionnaire did not ask for names or addresses. The results were announced by email, and id numbers were used for the bonus distribution. We have used two versions of the questionnaire, counterbalancing the order of tasks within chapters, but keeping the chapters' order fixed. The main chapters are described next.

3.2: Trust games with binary return possibilities

We use a simultaneous version of Berg et al. (1995) investment game where the trustor selects an investment $0 \leq X \leq 100K$ and the trustee concurrently chooses between low and high proportional returns (see Figure 1 for an

[2] The US$ was traded at 3.5 NIS around the experiment; the Euro rate was 4.7-4.8 NIS.

example).[3] Both players are initially endowed with 100K and the investment X is tripled at the transfer. The return on investment is negative when the trustee selects the low return level (henceforth: LRL), but turns positive when the high return level (HRL) is chosen. The instructions adopted a neutral frame, using A and B to address the two players, and telling subjects that they would be randomly matched with students from a distinct class of undergrad or grad students, majoring in business or other topic, from the same college or a different academic institute. The matching with anonymous partners from a loosely identified pool increases the social distance between players (Charness et al., 2007) compared to within-session or same-campus matching. Intuitively, we suspect that risk-taking considerations play stronger role in trust decisions when social distance is large. We therefore test if trust systematically differs from equivalent risk-taking in settings where the two decisions have relatively strong chances to coincide.

In particular, chapter 1 of the questionnaire consisted of 5 binary-return trust games: the 4 games that emerge when LRL $\in$ {0.15, 0.9} and HRL $\in$ {1.35, 1.8}, and a filler game with LRL=0.75 and HRL=1.2 (the filler is discussed later). Each of the 5 games was presented in a separate page and page-turning or note-taking were forbidden. The upper snapshot of Figure 1 presents the (translated) 0.9-1.8 condition. The possible return levels are denominated in terms of the tripled amount (3X) and the transfer (X) in parallel; e.g., LRL=0.9 is described as "return of 30% (of 3X) = 0.9X". The participants first select an investment level, assuming they are assigned to player A's role, and then choose a return level assuming they play the role of player B. The instructions emphasized that since the payment task is randomly drawn, only one of the decisions may actually determine their bonus. To verify comprehension, subjects were asked to calculate the final balance of the two players in some hypothetical scenario and the experimenter assisted the few students with difficulties.

[3] Simultaneous trust games were used at Servátka at al. (2008) and Costa-Gomes et al. (2014). Triadic designs were also utilized to disentangle trust and reciprocity (Cox, 2004).

3.3: Belief elicitation

As part of the triadic examination, we elicit subjects' beliefs regarding the likelihoods of low and high returns. Beliefs were elicited in a later chapter of the questionnaire, with at least one intervening chapter. The tasks were separated to avoid the possible impact of concurrent or preceding elicitation on trust decisions (cf. Schotter and Trevino, 2014). Again, subjects were faced with the four games that emerge when LRL $\in$ {0.15, 0.9} and HRL $\in$ {1.35, 1.8}, as well as a filler game with LRL=0.15 and HRL=1.05. The second snapshot of Figure 1 presents the 0.9-1.8 assignment. The participants fill-in the likelihood that they assign to each return level and then copy one of the assessments, marked by the letter Q, to a supplementary page that was distributed with the main questionnaire. The extra page included a table with 5 capital letters in one column and an empty second column where subjects copied their probability assessments.[4] The table was utilized later to construct the lotteries that match the trust games. The filler problems were included to mask the link between the trust games and the parallel lottery allocation tasks. The filler return levels were modified between chapters to enhance the masking. A standard quadratic scoring rule was used to incentivize the belief elicitations.

3.4: Lottery allocations

A snapshot of the 0.9-1.8 lottery allocation task is provided at the bottom of Figure 1. Subjects are requested to copy the value of Q from their supplementary page and choose an investment level 0≤X≤100K assuming the investment may bring 0.9 or 1.8 return with probabilities Q and 100-Q. While the procedure of connecting the trust game beliefs to the lottery allocation tasks could be run more efficiently in a computerized experiment, we chose to run in-class sessions in order to approach MBA students that would not show to discretionary laboratory sessions. The lottery allocation tasks were presents in a distinct chapter, and the filler parameters were altered again (LRL=0.45; HRL=1.5). In addition, this chapter included 2 lottery allocation tasks that were presented before the respective trust games. The flow of

[4] The copied probabilities referred to LRL and HRL interchangeably.

tasks in the binary games and the reversed-order games is contrasted in Figure 2. The reversed-order conditions are discussed next.

3.5: Games with exogenous return distributions

To be able to present lottery allocation tasks before the respective trust games we have run a preliminary short experiment in an undergrad business class, asking the students to make decisions in two simultaneous trust games where player B selects one of four return levels. The possible return levels (denominated as fraction of X) were 0.45, 0.75, 1.35, 1.65 in one game, compared to 0.15, 0.45, 1.65, 1.95 in the other. The experimental method of the undergrads experiment was similar to the trust game method of the main experiment. Subjects were requested to make decisions as player A and B, assuming their partner would be randomly selected from a different class and the roles would be randomly assigned to derive the participation fees. The undergrad class' return distributions were then used to define the main experiment reversed-order lottery allocation tasks (see the first snapshot of Figure 3 for the 0.15-1.95 lottery). The instructions for the respective trust games emphasized that these games would be played with students from a distinct experiment whose return choices were collected in advance. The return distribution was presented as part of the trust game description, and the subjects submitted their trust decision but were not requested to select a return level (see the second snapshot of Figure 3).[5] The extra games were presented at the last chapter of the booklet; together with two of the binary-return games that were presented again to test for consistency (see Web supplement B).

4. Notation and statistical method

Table I introduces some notation to simplify the discussion of results. The abbreviations INV and LOT represent the trust game investments and the respective lottery allocations, with Δ=INV-LOT denoting the signed differences. The variables are presented in K units, so that investment of 50,000 is shortened to 50. The variable R is used for the selected return level

[5] The reversed order tasks are similar to Fetchenhauer and Dunning (2012), but we run the comparisons within subject.

(LRL or HRL), while %(HRL) is the proportion of subjects choosing high return. P(HRL) denotes the likelihood that subjects assign to high return, and E(R) is the expected return on investment as derived from P(HRL). Subscript 6 is used to represent averages across the six conditions; e.g., LOT_6 is the average investment in the 6 lotteries (the filler is always ignored). The subscript 4 is similarly used for the conditions with binary returns. σ(Z) is the standard deviation of Z, and ρ(Z1,Z2) is the Pearson correlation between Z1 and Z2. Statistical tests are run on individual averages where applicable; e.g., to compare the LRL=0.15 and LRL=0.9 trust levels, we subtract the average INV at the two 0.15 games from the average INV at the two 0.9 games and apply the test to the paired differences. A sign-test is used for testing one-sample hypotheses, while the Pitman permutation test is used for between-sample comparisons. We always report 2-tails significance, using ***,**,* for p<0.01, p<0.05, p<0.1.

Table I: Notation

Symbol	Description	Scale / range
INV	The amount invested by the trustor	0-100
LOT	The amount allocated to the lottery	0-100
Δ=INV-LOT	The paired difference INV minus LOT	Between -100 and +100
R	The return selected by the trustee	LRL or HRL
%(HRL)	The proportion choosing HRL	0-100% percent
P(HRL)	The likelihood assigned to high return	0-100% percent
E(R)	The expected return on investment	Between LRL and HRL

5. Results

5.1: Trust decisions in the binary-return games

On average, the levels of trust in the current experiment are close to those observed in experiments with dynamic trust games, although belief in conditional reciprocity cannot motive trustors when decisions are simultaneous.[6] The mean investment in the 4 binary-return games (INV_4) was 46 with standard deviation 22.6, and the hypothesis that subjects invest half of the endowments could not be rejected (p=0.28). Johnson and Mislin (2011)

[6] In dynamic setting, investment of large X may follow from the belief that X is essential for generous return.

meta-analysis of 167 trust decisions similarly revealed mean percentile investment of 50%.

Table II: General results*

	(a)	(b)	(c)	(d)	(e)	(f)	(g)
Condition	INV	E(R)	%(HRL)	P(HRL)	R	LOT	Testing INV=LOT
0.9-1.35	57	1.11	47%	47%	1.11	59	N.S (p=0.53)
0.15-1.35	33	0.71	48%	47%	0.73	33	N.S (p=0.29)
0.15-1.8	37	0.81	42%	40%	0.84	29	p<0.02
0.9-1.8	57	1.26	31%	40%	1.18	57	N.S (p=0.67)
4 conditions average	**46**	**0.97**	**42%**	**44%**	**0.96**	**45**	**N.S (p=0.69)**
0.45-1.65	54	-	-	-	1.25	58	N.S (p=0.21)
0.15-1.95	44	-	-	-	1.15	45	N.S (p=0.99)
6 conditions average	**47**	**-**	**-**	**-**	**1.05**	**47**	**N.S (p=0.99)**

*Columns (a)-(b) and (d)-(f) present the mean values of the variables.

Column (a) of Table II however shows that levels of investment strongly differed between games. The mean investment in the games with low return level of 0.15 was 35 compared to mean investment of 57 in the LRL=0.9 games, and only 20 participants showed stronger willingness to trust when LRL=0.15 (sign-test of the equality of investments at the 0.15 and 0.9 games; p<0.01). When the expected return on investment is derived from the likelihood that each subject assigns to high and low return, the average expected return is 1.19 for the games with LRL=0.9 compared to 0.76 for the games with LRL=0.15 (Column (b) of Table II). Sign-tests confirm that subjects expected significant losses in each of the 0.15 games, while expecting significant gains in the games with LRL=0.9 (p<0.01 in all 4 tests). The strong decrease in investments when LRL=0.15 therefore suits the shift in expectations.

The impact of HRL on trust, however, was weaker. On average, the HRL=1.8 investments were only 2K larger than the HRL=1.35 investments and repeated measures analysis confirmed that neither HRL nor the interaction between LRL and HRL affected investments (Web supplement C). The mean expected return, however, increased from 0.71 to 0.81 ($p=0.12$) in the structural shift from 0.15-1.35 to 0.15-1.8, while increasing from 1.11 to 1.26 ($p<0.01$) in the move from 0.9-1.35 to 0.9-1.8. The weak response to HRL illustrates that trust shows limited adaptivity to expectations. The restricted responsiveness would surface repeatedly at the next sections.

5.2: Trustees decisions in the binary-return games

We now turn to subjects' decisions at the trustee's role. Over all 4 games, LRL was selected more frequently than HRL (58% vs. 42%), but equality could not be rejected (N=52 subjects with %(HRL)<50%; N=35 with %(HRL)>50%; $p=0.09$). About 1/3 of the subjects (N=37) chose the low return level in all 4 games, while only 1/6 (N=19) always chose the high return level. On average, the trustees returned 0.96 of the transfer which represents 0.32 of the tripled amount. The average return in the 137 experiments covered by Johnson and Mislin (2011) was 0.37.

Column (c) of Table II compares the frequency of generous (HRL) return across games. Unsurprisingly, the high return is selected less frequently when HRL=1.8 compared to the games with HRL=1.35 (36% compared to 48%, $p<0.01$). Since the trustee pays back 60% of the tripled transfer when HRL=1.8, compared to 45% when HRL=1.35, the lower generosity at the 1.8 games may represent aversion to disadvantageous split of the tripled transfer. Aversion to advantageous, but strongly unequal, split shows in the increase in generosity from 31% to 42% ($p=0.04$) when LRL decreases from 0.9 to 0.15 and HRL is fixed at 1.8. Since the trustee brings a loss of 85% to the trustor when choosing LRL=0.15, compared to loss of only 10% when LRL=0.9, a similar adjustment could be anticipated for the games with HRL=1.35. The increase in %(HRL) in 0.15-1.35 compared to 0.9-1.35 however was only 1% and statistically insignificant.[7]

To understand the return patterns more closely we run cluster analysis on the 4 binary return decisions. Table III shows the bottom line results for 5 clusters ($R^2=0.74$), dividing the pool of 110 participants into 4 main clusters C1-C4

[7] Table III suggests that the difference largely follows from cluster 3.

with at least 14 subjects in each, and a small cluster of only 7 (C5). Cluster C1 is the largest counting 50 participants. The subjects in this group can be classified as egocentric or lacking other-regarding concerns as they almost always choose the LRL. In particular, this group includes the 37 subjects that chose the low return level in all 4 games. Cluster C2 (N=24) contrarily contains the altruistic or strongly other-regarding types that chose the HRL constantly. Clusters C3 and C4 are smaller, counting 15 and 14 participants. The subjects in C3 show signs of egalitarian preferences, as they always choose the close to equal (45% to A, 55% to B) split of the tripled transfer when such split is possible. The 14 subjects in C4 alternatively show preference for almost-fair reciprocation, as they always choose the 0.9 return where possible. Finally, the few subjects in C5 (N=7) are 100% generous when LRL=0.9, but grab almost all of the tripled investment when it is possible to pay back only 5% (LRL=0.15).

Table III: Cluster analysis of returns*

Clusters	**C1** N=50	**C2** N=24	**C3** N=15	**C4** N=14	**C5** N=7	**Sample N=110**
%(HRL)						
0.9-1.35	18%	88%	100%	0%	100%	**47%**
0.15-1.35	0%	100%	100%	100%	0%	**48%**
0.15-1.8	8%	92%	53%	64%	43%	**42%**
0.9-1.8	6%	100%	0%	0%	100%	**31%**
σ_6(INV)	21.9	17.9	22.7	16.9	33.2	**21.2**
σ_6(LOT)	28.9	24.6	26.5	18.3	33.4	**26.6**
ρ_6(LOT,Δ)	-0.68	-0.62	-0.57	-0.58	-0.30	**-0.61**

*The upper panel presents the frequency of generous return in each game, for each cluster. The lower panel is discussed in Section 5.7. The subscript 6 is used for subject-level statistics; e.g., ρ_6(LOT,Δ) is the subject-level correlation between LOT and Δ, building on 6 observations. The table presents the mean subject level statistics for the N=110 participants.

5.3: Comparing INV and LOT

Column (f) of Table II presents the mean lottery allocation in each condition, while column (g) shows the results of testing the equality INV=LOT. First glance at the statistics does not reveal consistent differences between the paired investments. The mean INV and LOT are almost equal in 3 conditions. The lottery allocations are smaller at 0.15-1.8 ($p<0.02$), but the differences diminish when the most pessimistic subjects are ignored (mean INV 39 vs. mean LOT 35 for the 92 subjects with E(R)>0.25; p=0.24). The correlations between INV and LOT are positive, but far from perfect, ranging between 0.11 and 0.39 (Table IV).

Table IV: Comovement of INV and LOT *

Condition	ρ(LOT,INV)	ρ(LOT,Δ)	σ(INV)	σ(LOT)	Meff E(R) on INV	Meff E(R) on LOT
0.9-1.35	0.25	-0.69	29	35	0.66	1.93
0.15-1.35	0.30	-0.73	27	35	0.17	0.54
0.15-1.80	0.39	-0.63	30	34	0.09	0.38
0.9-1.80	0.11	-0.74	31	36	0.19	0.86
4 conditions	**0.33**	**-0.67**	**23**	**27**	**0.24**	**0.67**
0.45-1.65	0.46	-0.56	27	29	-	-
0.15-1.95	0.51	-0.57	24	27	-	-
6 conditions	**0.44**	**-0.61**	**20**	**22**	**-**	**-**

* "Meff E(R) on Y" represents the marginal effect of E(R) on Y as explained in the text. The "4 (6) conditions" results build on the average investments or returns; e.g., the 0.33 at the left column represents the correlation $\rho(LOT_4, INV_4)$.

Closer look at the joint distributions however shows that INV exhibits a regressive pattern relatively to LOT, as subjects trust more than they risk when their lottery allocations are relatively small, while trusting less than risking when their lottery allocations are larger. At 0.9-1.35, for example, the correlation between INV and LOT is 0.25 (p<0.01), but a median split reveals that the subjects with smaller lottery allocations invested almost 70% more in the trust game (mean LOT 29 compared to mean INV 49; N=55; p<0.01), while the subjects with larger lottery allocations invested about 30% less in the trust game (mean LOT 89 compared to mean INV 65; N=55; p<0.01). The correlation between LOT and Δ=INV-LOT is accordingly negative -0.69 (p<0.01) and the standard deviation of INV is 29 compared to standard deviation of 35 for LOT (p<0.03 by Pitman-Morgan test for the equality of dependent variances). Table IV shows that similar patterns emerge in all other conditions. The correlations between LOT and Δ are negative -0.6 to -0.7 although INV and LOT positively correlate, and the standard deviation of the trust game investments is always smaller than the standard deviation of the respective lottery allocations (see Figure 4(a) for scatterplot of the 0.15-1.35 data). The 2 columns at the right of the table relatedly show that LOT shows stronger responsiveness to expected returns compared to INV. To measure responsiveness, we run Tobit regressions of INV or LOT on the subjective E(R), taking into account the possible censoring at 0 and 100, and use the results to estimate the marginal effect of E(R) on investments. The table shows that LOT responsiveness to expected returns is 3-4 times larger in all 4 conditions.[8] The lottery allocation decisions therefore appear more calculated and volatile compared to the relatively stable trust game investments.

5.4: The price of trust in terms of reduced expected profitability

Intuitively, we suspect that the smaller responsiveness of trust to expected returns may be costly, since subjects trust too much when the expected return is unattractive while trusting too little when the return prospects are appealing. To check this intuition we calculate the expected payoff on each trust decision using the direct formula (100-INV)+INV·E(R), and use the 4 games average as measure of the "expected payoff on trust". The expected payoffs on the respective lottery allocations is similarly derived using (100-LOT)+LOT·E(R), and the 4 conditions average is used again to measure the "expected payoff on risk-taking". The (mean) expected payoff on trust, by these calculations, is 102.6, compared to expected payoff of 108.2 on risk-taking. Paired comparisons reveal that 88 subjects expect larger return on risk-taking, while only 17 subjects exhibit the reversed ranking ($p<0.01$). By way of interpretation, the comparison suggests that subjects sacrifice 5.2% of the return that they expect to collect in the pure-risk assignments, when the tasks are framed as trust games. The smaller adaptivity of trust is expensive, at least in terms of expected payoffs.[9]

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[8] The marginal effect is separately calculated for each subject and the table presents the mean effects for the 110 participants. The stronger responsiveness of LOT to E(R) also shows when the standard deviation of the subjective return is included as additional explanatory variable.

[9] See Web supplement D for more details. Note also that when the trust game payoffs are calculated assuming the mean return rates of Table II (e.g., the payoffs at 0.9-1.35 are (100-INV)+INV·1.11), the trust game payoffs fall further to 100.4. The additional decrease mostly follows from 0.9-1.8 where expectations were too optimistic. The comparison of this figure to the 108.2, however, is problematic in terms of interpretation.

5.5: Results for the games with four return levels

Recall that the lotteries with four return levels were presented before the respective trust games and the distribution of returns was provided as part of the game description, decreasing the distance between the paired tasks (Figure 3). The lower panel of Table IV, however, shows that trust is still less volatile than risk-taking and the correlation between LOT and Δ=INV-LOT stays negative, close to -0.6. When the sample is median split by LOT, the subjects with larger lottery allocations show smaller trust (mean INV 61 compared to mean LOT 71; N=54; INV=LOT rejected at p<0.01), while the subjects with smaller lottery allocations show the reversed ranking (mean INV 37 compared to mean LOT 30; N=47; p=0.02). Figure 4(b) depicts the results for 0.15-1.95.[10]

5.6: Individual-level analysis

When the standard deviation of the 6 trust game investments and the 6 lottery allocations is separately calculated for each subject (using subscripts 6 again for the six conditions statistics), the mean $\sigma_6(\mathrm{INV})$ is 21.2 compared to mean $\sigma_6(\mathrm{LOT})$ of 26.6. Paired comparisons reveal $\sigma_6(\mathrm{LOT}) > \sigma_6(\mathrm{INV})$ for 76 subjects, while the ranking is reversed for only 31, confirming that INV shows lower volatility at the individual level (p<0.01). The regressive pattern of INV relatively to LOT also manifests at the individual level, in spite of the small samples of 6 observations. The correlation between LOT and INV is positive for 71 subjects, averaging at 0.26 (N=110; p<0.01), while the correlation $\rho_6(\mathrm{LOT},\Delta)$ is negative for 98 subjects, averaging at -0.61 (p<0.01). Subject-level regressions (similar to the sample Tobit regressions of Section 5.3) reveal almost 2.5 stronger effect of E(R) on the individual lottery allocations. The mean marginal effect of E(R) on INV is 0.27 compared to mean marginal effect of 0.61 on LOT. N=82 subjects show larger responsiveness to expected return in the lottery allocations, while only 25 show the opposite ranking (p<0.01).

[10] Non-surprisingly the results are somewhat weaker for these games. The equality of variances could not be rejected: p=0.11 for 0.15-1.95; p=0.26 for 0.45-1.95.

5.7: Other-regarding preferences

The lower volatility of trust could follow from altruistic preferences of the trustor. To illustrate the intuition note that trustors with other-regarding preferences would recognize that the trustee is expected to gain 3-E(R) when their expected return is E(R). Assuming linearity for simplicity, let $\mathrm{INV} = \mathrm{a} + \mathrm{b} \cdot \mathrm{E(R)} + \mathrm{c} \cdot (3 - \mathrm{E(R)})$ represent an investment model where the trustor responds to expected returns, but also takes into account the residual return to the trustee. Assuming $c < b$ since self-regard is stronger than altruism, the effective slope of INV with respect to $\mathrm{E(R)}$ is $(\mathrm{b} - \mathrm{c})$. If the lottery allocation decisions take the simpler form $\mathrm{LOT} = \mathrm{a}' + \mathrm{b} \cdot \mathrm{E(R)}$, then trust responsiveness to expected returns would appear smaller because of the moderating effect of altruistic concerns.[11]

Recall however that almost 1/2 of the sample (N=50) chose the low return level in almost all binary-return games (cluster C1 of Table III). It is reasonable to assume that such subjects are close to egocentric or have negligible other-regarding preferences. If the smaller responsiveness of INV to expected return follows from altruistic concerns, the difference should diminish and even disappear for this group of egocentric participants. The statistics at the bottom of Table III however strongly contradict this prediction. The mean σ_6(INV) of these subjects is around 29 compared to mean σ_6(LOT) of 22 and the individual-level regressions suggest that the mean responsiveness of LOT to E(R) is more than twice larger than the mean responsiveness of INV to E(R) in this subsample (mean marginal effects: 0.62 compared to 0.27; $p<0.01$). Trust is therefore significantly less volatile than parallel lottery allocation even for the 50 subjects that show strong selfishness at the trustee role. The bottom lines of Table III additionally illustrate that the lower volatility of trust shows for each of 4 main clusters of trustees.

[11] When designing the questionnaire we considered a quadruple design where subjects also decide on the amount they allocate to risky lotteries that pay R to the decision maker and 3-R to a passive counterpart (similarly to the risky dictator games of Bohnet and Zeckhauser, 2004). Such quadruple design would have considerably increase the length of the questionnaire and strengthen the risk that subjects respond to the link between tasks. Preceding trust game studies moreover show that choices in risky dictator games do not differ systematically from choices in pure-risk tasks (Bohnet et al., 2008).

6. Gender and risk preference

To characterize individual risk preference outside the paired INV-LOT decisions, we use the gain-domain risk preference test of Weinstock and Sonsino (2014) as presented in Table V.

Table V: The risk preference task

Problem	Risky lottery	Safe lottery	Risk premium	%(safe) sample	%(safe) males	%(safe) Females
GAINS1	1000 or 200	700 or 600	-50	86%	82%	92%
GAINS2	900 or 100	550 or 450	0	77%	73%	83%
GAINS3	900 or 0	400 or 350	+75	79%	69%	92%
GAINS4	1000 or 250	550 or 400	+150	41%	34%	50%
GAINS5	1000 or 100	300 or 200	+300	17%	11%	25%

* Risk premium is the difference between the expected payoff on the risky lottery and the expected payoff on the safe lottery; %(safe) is the proportion of subjects choosing the safe lottery.

The task consists of 5 binary choices between risky and safe 50-50 lotteries, where the premium for taking risk increases with the index number of the problem. The right columns of the table disclose the proportion of risk averse choices in the MBA sample, showing that risk-taking generally increase with the index and the males show smaller risk aversion compared to females (54% risk-averse choices for males compared to 68% for females; $p<0.01$).[12] The next paragraphs summarize the gender differences in trust and pure risk-taking in 5 short observations, using Tables VI-VIII to support the discussions. RA_G is used for the proportion of risk-averse choices at GAINS2-GAINS5 (including GAINS1 slightly weakens the correlations).

Observation 1: The trust game investments of males and females are similar, but males strongly respond to subjective expected returns while females' trust is relatively stable.

[12] The Weinstock and Sonsino (2014) task also includes 5 loss-domain choice problems. As in Croson and Gneezy (2009), the gender differences weaken in loss-domain (61% risk averse choices for males; 67% for females; $p=0.28$). The loss-domain risk preference measures did not interact with the triadic design variables of interest.

At first glance, the trust games investments of males and females appear similar. The mean INV_6 is about 47 for both genders (Table VI), and equality could not be rejected for any of the six games. The females were slightly more pessimistic regarding trustworthiness (mean average expected return 0.94, compared to 1.0 for the males; p=0.25), but again equality could not be rejected for any of the games. The left panel of Table VII however illustrates that males' investments strongly respond to subjective expected returns, while females' investments detach from expectations. The correlations between INV and E(R) are always positive, larger than 0.2, for males, but mixed in sign and clearly insignificant for females. The discrepancy also shows in game-specific Tobit regressions that control for RA_G (the left panel of Table VIII). The E(R) coefficients are statistically significant at $p<0.05$ in 3 of 4 games, and marginally significant at p=0.1 in the remaining case, for the males. The coefficients are never significant for the females. Finally, the difference reflects in larger volatility of males' investments: The mean $\sigma_6(INV)$ is 24 for males compared to 18 for females and equality is easily rejected at $p<0.01$.[13] The trust game investments of males, in conclusion, appear more calculated and expectations-based compared to the relatively stable investments of the females.

Table VI: Gender comparison

	Males (N=62)	Females (N=48)	Significance
INV_6	47	47	N.S (p=0.99)
$E(R)_4$	1.0	0.94	N.S (p=0.25)
R_4	0.98	0.95	N.S (p=0.69)
$\sigma_6(INV)$	24	18	p<0.01
LOT_6	51	42	p=0.02
$\Delta_6=INV_6-LOT_6$	-4	5	p=0.02
$\sigma_6(LOT)$	29	24	p=0.05

*The shading highlights significant differences

[13] Closer look shows that the stronger volatility of males' investments does not follow from more volatile expectations.

Table VII: Pearson correlations between INV (LOT) and expected returns

	Trust decisions		Lottery allocations	
	Males	Females	Males	Females
0.9-1.35	0.27**	0.09	0.64***	0.47***
0.15-1.35	0.39***	-0.15	0.68***	0.49***
0.15-1.8	0.23*	0.04	0.72***	0.55***
0.9-1.8	0.20	-0.02	0.60***	0.52***
Avg level	0.37***	0.00	0.68***	0.55***

Table VIII: Responsiveness of INV and LOT to E(R) and RA_G

	Trust game investments (INV)				Lottery allocations (LOT)			
	E(R)		RA_G		E(R)		RA_G	
	Males	Females	Males	Females	Males	Females	Males	Females
0.9-1.35	0.89**	0.24	-11.4	-8.6	2.1***	1.44***	-11.6	-21.7
0.15-1.35	0.32***	-0.06	-24.9**	11.1	0.61***	0.36***	-5.2	-13.8
0.15-1.8	0.15**	0.03	-26.2**	0.01	0.41***	0.29***	-10.5	5.8
0.9-1.8	0.28*	-0.02	-15.5	-3.8	0.88***	0.76***	-15.7	-14.6
0.45-1.65	-	-	-37.3***	-15.2	-	-	-34.3***	-3.5
0.15-1.95	-	-	-26.3***	-13.5	-	-	-33.0***	-16.4

* The table summarizes the results of regressing INV (left panel) or LOT (right panel) on E(R) and RA_G. The Tobit regressions were separately run for males (N=62) and females (N=48), and the table presents the mean marginal effects by each estimation. The shading is used to highlight cases where a Wald test rejected the equality of coefficients for males and females at p<0.05. Note that since the estimated E(R) and RA_G effects on females' INV are very noisy, the Wald test sometimes could not reject equality although the effects are significant for males but insignificant for females

Observation 2: RA_G negatively correlates with males' trust, but does not interact with females' trust. The risk-seeking males accordingly show the highest levels of trust.

Analysis of the correlation between RA_G and trust again reveals a fundamental difference between the results for males and females. The disparity clearly shows at the average 6-game level. The correlation between RA_G and INV_6 is negative -0.33 for males (p<0.01), compared to insignificant -

0.07 (p=0.62) for females. The mean investment of the N=41 risk-seeking males ($RA_G \le 0.5$) is about 51 compared to 39 for the N=21 relatively risk-averse (p<0.05). The respective figures for females are 48 and 46 (p=0.8). The significant correlations for males, but not for females, also show at the Tobit regressions of Table VIII. The RA_G coefficients are negative and statistically significant in 4 of 6 cases for males. The effects are mixed in sign and insignificant in the regressions for females.[14] The usefulness of experimental risk preference tasks where subjects select between stylized lotteries has been debated in Dohmen et al., (2011), Lönnqvist et al., (2015) and others. The results here suggest that controlling for gender is essential in such discussions.

Observation 3: Males' lottery allocations exceed those of females (beyond RA_G), especially in the conditions where the lotteries are relatively attractive.

The smaller risk aversion of males shows again in the lottery allocation assignments. The mean LOT_6 of males is 51 compared to 42 for females (p=0.02) and the allocations of males exceed those of females in all 6 conditions. Web supplement E moreover illustrates that the males show larger lottery investments even when RA_G is controlled. The mean LOT_6 of the N=18 males with RA_G=0.5 is 56 compared to 46 for the N=17 females with the same RA_G (p<0.05). The respective figures for the 16 males and 14 females with RA_G=0.75 are 52 and 35 (p=0.06). It is interesting however to note that the difference mainly follows from larger investments of males in relatively attractive lotteries. When the expected return on investment is divided by the standard deviation to obtain the Sharpe ratio, the average ratios exceed 3.3 in 3 cases (0.9-1.35, 0.9-1.8, 0.45-1.65), but fall below 1.7 in the other 3 conditions (0.15-1.35, 0.15-1.8, 0.15-1.95). The equality of males and females LOT is rejected for each of the relatively attractive lotteries, but cannot be rejected for each of the less attractive lotteries.[15]

[14] RA_G did not interact with E(R) for males or females. Web supplement E contrasts the INV, LOT and E(R) of males and females in each game, controlling for RA_G. Web supplement F shows the RA_G correlations with INV, LOT and other key variables for males and females.

[15] The mean investment of males in the 3 attractive lotteries is 64 compared to 51 for females (p<0.01). The statistics for the 3 unattractive lotteries are 39 and 32 (p=0.19).

Observation 4: Female's responsiveness to expected return, which was close to zero in the trust games, turns significant in the lottery tasks, but males' responsiveness is stronger.

The right panel of Table VII shows that females' investments, that did not respond to expected returns in the trust games, significantly correlate with expected returns in each of the 4 lottery allocation tasks. At 0.9-1.35, for example, the correlation between females' LOT and E(R) is 0.47 ($p<0.01$), compared to 0.09 ($p=0.53$) correlation between INV and E(R). The respective correlations for males are 0.64 ($p<0.01$) and 0.27 ($p=0.04$), suggesting that the males, similarly to the females, are more attentive to expected returns in the lottery tasks. The right panel of Table VIII however proves that males' LOT responsiveness to expected returns is stronger, as the equality of the E(R) coefficients is rejected in all 4 estimations (Wald tests; $p=0.04$ for 0.9-1.8; $p<0.01$ for the three other games). The difference in responsiveness finally reflects in higher volatility of the males' lottery allocations across the 6 conditions: the mean σ_6(LOT) is 29 for males compared to 24 for females ($p<0.05$).

Observation 5: The risk-seeking males exhibit the strongest LOT volatility.

The stronger predictive power of RA_G for males, compared to females, emerges again when the volatility of the 6 lottery allocations is examined. The correlation between RA_G and σ_6(LOT) is -0.27 ($p=0.03$) for males, compared to insignificant -0.15 ($p=0.32$) for females. The average σ_6(LOT) of the relatively risk-seeking males is 31 compared to 24 for the risk-averse ($p<0.05$). The respective figures for females are 25 and 23 ($p=0.40$).

7. Is trust a special case of decision under uncertainty?

Choice theory draws a distinction between conditions of uncertainty or ambiguity where the probabilities of events are unknown, and cases of risk where the probabilities are exogenously provided (Knight, 1921). From this perspective, trust falls closer to decision under uncertainty, since trustors decide on the transfer without knowing the chances for high or low return, while our lottery allocation tasks match the paradigm of decision under risk, since the probability distribution of returns is provided. Corcos et al. (2012) indeed show that when the Holt and Laury (2002) risk attitude test is modified to measure ambiguity aversion, the adapted measure significantly correlates with trust, while the original HL measure does not exhibit such correlation. In Houser et al. (2010) moreover the HL usual risk-aversion measure correlates with investments in pure-risk type of scenarios, but the correlation dissipates for similarly structured trust decisions. These findings bring up the question whether the differences between the parallel trust and pure-risk decisions of the current experiment match the results of comparative studies of decision under uncertainty versus decision under risk. We discuss three aspects of the current results that conform or depart from findings of the decision under ambiguity literature: [16]

(a) The lower volatility of trust compared to the respective lottery allocations intuitively relates to the stronger "likelihood insensitivity" in decision under uncertainty compared to decision under risk (Wakker, 2010). Likelihood insensitive decision-makers slowly respond to changes in given or perceived likelihoods of events. Tversky and Kahneman (1992) probability weighting function[17], for instance, implies that an increase from 30% to 40% in the probability of winning a prize, increases the subjective decision-weight by 5%. Abdellaoui et al. (2011) show that likelihood insensitivity under uncertainty exceeds likelihood insensitivity under risk, concluding that decisions-makers are less sensitive to changes in (perceived) probabilities in domains of uncertainty. In the current application, the difference may reflect in lower responsiveness of trust to the likelihood assessments and explain its lower volatility compared to the lottery allocations.

(b) The literature on probability weighting (under risk) repeatedly shows that females exhibit stronger likelihood insensitivity compared to males (Fehr-

[16] In general it is impossible to predict if uncertainty would increase or decrease risk-taking relatively to similar pure risk scenarios (see Gollier 2011 for theoretical discussion; Charness and Gneezy, 2010 for experimental evidence), so ambiguity aversion cannot be invoked to claim that LOT should exceed INV or vice versa.

[17] $w(p)=p^{\gamma}/[p^{\gamma}+(1-p)^{\gamma}]^{1/\gamma}$ with γ estimated at 0.61

Duda et al., 2006; Charupat et al., 2013). This nicely fits the lower volatility of females' lottery allocations compared to males' lottery allocations (Table VI). If the stronger likelihood insensitivity of females extends to the weighting of uncertain events, then likelihood-insensitivity may also explain the weaker volatility of females' trust investments (but we could not find studies that point at gender differences in likelihood sensitivity under uncertainty).

(c) Some finance field studies (e.g., Yilmazer and Lyons, 2010; Speelman et al., 2013) and experiments (e.g., Borghans et al., 2009) suggest that females take less risk than males under uncertainty, similarly to their stronger risk aversion when chances are known (Charness and Gneezy, 2012). In our sample, however, the trust of females did not differ consistently from the trust of males, although the females' lottery allocations were significantly smaller. Again, we attribute the discrepancy to the idiosyncrasy of trust for females. Females' trust levels are large, relatively to their smaller lottery allocations, and very weakly respond to changes in perceived trustworthiness.

8. The disappearance of betrayal aversion

The literature on betrayal aversion (Bohnet and Zeckhauser, 2004; 2008) suggests that decision-makers willingness to trust a human counterpart lags behind their willingness to engage in similarly-structured risky gambles. In the simplified trust game of Figure 5, player A chooses between ending the game with payoffs (10,10) or passing to B who makes binary choice between (15,15) and (8,22). Subjects at player A's role are asked to state how large probability of being paired with B that selects the (15,15), they demand for passing the game. The experiment is incentivized so that stating the true Minimal Acceptance Probability (MAP) is a dominant strategy. The average MAP in the 2004 paper was 0.54, indicating that subjects demand a premium of about 17.8% (the difference between 0.54*15+0.46*8 and 10) to take the risk of trusting player B. The premium, however, significantly reduced when subjects played a similarly structured pure-risk game, as illustrated at the bottom of Figure 5. The threshold MAP probability of receiving the 15 payoff, demanded for taking the lottery risk was only 0.37, indicating that subjects are willing to take risk for much modest premium of 5.9%.

While betrayal aversion remerged in diverse follow-up studies (see Aimone et al., 2014 for recent discussion), the results of Fetchenhauer and Dunning (2012) and the current study suggest that willingness to trust may be similar and even exceed risk-taking when the return distribution is controlled. We propose 3 plausible explanations to the disappearance of betrayal aversion in the current experiment:

<u>(a) Procedural variation</u>: Betrayal aversion mostly emerged in experiments using the MAP procedure. The current experiment contrarily elicited the willingness to invest in nominal 0-100K currency amounts. The difference in results may thus be classified as a case of procedural variation (Tversky and Thaler, 1990). When MAP is used to determine the willingness to take risk, in particular, subjects may instinctively begin by calculating the break-even probability for taking risk (p'=2/7 in Figure 5), and adjust from this self-generated anchor (Epley and Gilovich, 2001) to arrive at their MAP. When MAPs are elicited for the trust games, however, the break-even anchor becomes less relevant and fear of betrayal can induce an emotional effect (Inbar and Gilovich, 2011) that increases the gap between the benchmark and the reported MAPs. Strack and Mussweiler (1997) illustrate that numeric anchors are assimilated when the anchor is sufficiently similar to the target, but a contrast effect may emerge when the anchor is different. The 2/7 threshold probability could, in this spirit, be assimilated into the reported MAP in the pure-risk condition, while the contrast pushed MAP away in the trust games. The investment choice procedure of the current experiment did not open space for such differences.

<u>(b) The within-subject design of the current questionnaire:</u> In the MAP experiments, the trust and pure-risk games were played in the laboratory by separate groups of subjects. The current questionnaire oppositely compared six trust and pure risk decisions within-subject, using random task selection for incentivization. To decrease the distance between the experiments and test the robustness of the current results, it would be interesting to implement the triadic design in a laboratory, using procedures that get closer to standard trust game experiments, while increasing the stakes. Subjects would clearly recognize the link between the single trust game and the later lottery allocation task in such design, but if one of the 3 tasks is randomly selected for payouts, the procedures are clear, and stakes are substantial, the trust game decisions and lottery allocations may systematically differ.

(c) Cultural differences: Bohnet et al. (2008) find large between-country differences in betrayal aversion (MAP of 0.17 for the U.S. compared to 0.03-0.04 for Switzerland and Brazil). It is possible that Israeli MBAs would not show betrayal aversion even in MAP experiments.

9. Concluding discussion

Berg et al. (1995) already propose that trust is a primitive predisposition of human decision (see also Ortmann et al., 2000). Indeed the literature that has evolved around the trust game shows that genetic variation plays important role in personal trust (Cesarini et al., 2008), and neuroeconomic studies point at physiological differences between trust and pure risk-taking (McCabe et al., 2001; Kosfeld et al., 2005; Krueger et al., 2012). The results of the current study complement the trust-as-trait literature illustrating that trust still responds to the microstructure of the environment, but its adaptivity is much smaller than parallel pure risk-taking. The trust of males strongly responds to expected returns while females' trust is relative stable, and an exogenous measure of personal inclination to take lottery-risk shows predictive power for males', but not for females', decisions along the experiment. By way of interpretation, trust is closer to a stable trait for females, while appearing more circumstances-dependent for males. The results additionally propose that controlling for gender is essential in testing the predictive power of exogenous risk attitude tools for context-specific decisions. Since the typical findings of the betrayal aversion literature do not replicate, additional experimental work is required to determine the scope of betrayal aversion in trust.

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Figure 1: Snapshots of the translated assignments

Investment game 1 (the 90%-180% game)

In game 1 player "B" selects the return level (Y) from the next two possibilities:
(recall that X presents the amount sent by A, but this amount is tripled in the hands of B)

Return of 30% (of 3X)=0.9X
Return of 60% (of 3X)=1.8X

1. Choosing X

Assume the random assignment has placed you at the role of player "A"
What is your choice as player "A"? How much would you invest in "B"?

I choose to invest in "B" _______ (of 100,000)
(recall: you may choose any investment from 0 to 100,000)

2. Choosing Y

Assume the random assignment has placed you at the role of player B
What is your choice as player B? How much would you return A for her investment?

Mark one alternative clearly:
___ **Return of 30% (of 3X)=0.9X**
___ **Return of 60% (of 3X)=1.8X**

Return prediction assignment 3

The current assignment refers to the game where player "B" selects the return level (Y) from the next two possibilities: (recall that X presents the amount sent by A, but this amount is tripled in the hands of B)

Return of 30% (of 3X)=0.9X
Return of 60% (of 3X)=1.8X

We ask you to predict the choice of player B from "the other class", as explained in the instructions. Please fill-in your prediction at the next table:

The return selected by player B	Probability
The probability, in my opinion, that B would return 0.9X is	**Q**
The probability, in my opinion, that B would return 1.8X is	
	100%

Please copy Q to the supplementary handout !

Did you fill-in values for Q and 100-Q in the table above? If so you may proceed to the next page

Lottery 5

The next table presents the payoffs on investment of X NIS in Lottery 5. The probability Q should be filled-in from your supplementary handout. Please copy the value of Q from your page and accordingly fill-in the complement to 100% in the 100-Q slot.

The return on investment of X	Probability
0.9X	Q
1.8X	100-Q
	100%

How much do you choose to invest in the lottery depicted in the table?

I chose to invest in Lottery 5 _______ (of 100,000)

Recall that 1 of assignments would be randomly drawn to calculate your participation bonus.
Please fill in your choices independently in each task

Figure 2:

The flow of tasks in the binary-games and reversed-order games

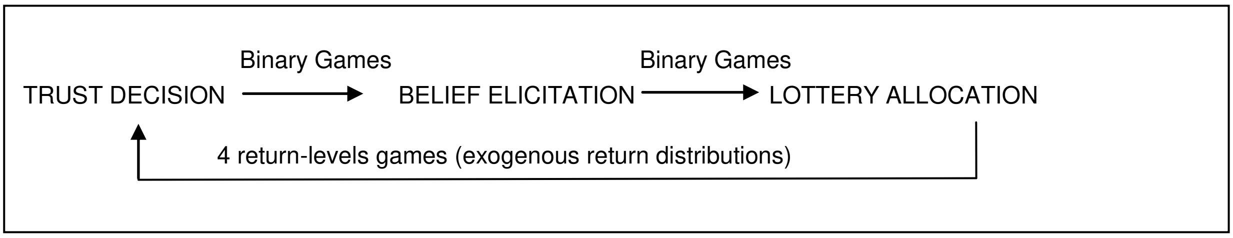


Figure 3: The reverse-order tasks (0.15-1.95)

Lottery 7

The next table presents the payoffs on investment of X NIS in Lottery 7.

The return on investment of X	Probability
0.15X	**16%**
0.45X	**24%**
1.65X	**52%**
1.95X	**8%**
	100%

How much do you choose to invest in the lottery depicted in the table?

I chose to invest in Lottery 7 _______ (of 100,000)

Recall that 1 of assignments would be randomly drawn to calculate your participation bonus.
Please fill in your choices independently in each task

Additional Investment game 3

In additional game 3, player "B" selects between 4 return levels (Y)

In this case, we have preceded the current questionnaire, collecting the choices of players B in a distinct experiment **Z**, with participants that may resemble or appear different from the current class in terms of return patterns. The next table summarized the choices of the participants in experiment Z:

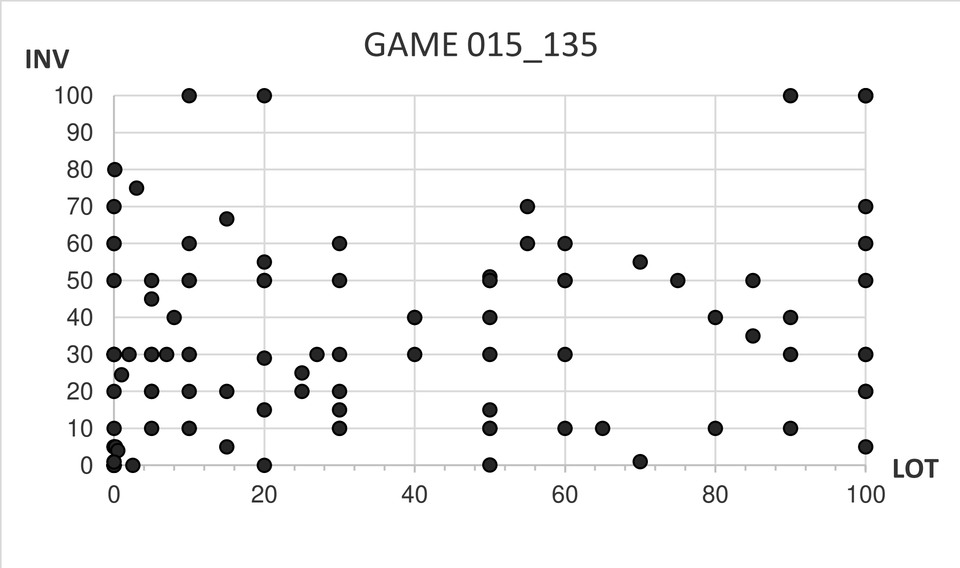
The choice of player B in experiment Z	Frequency in%
Return of 5% (of 3X)=0.15X	16%
Return of 15% (of 3X)=0.45X	24%
Return of 55% (of 3X)=1.65X	52%
Return of 65% (of 3X)=1.95X	8%

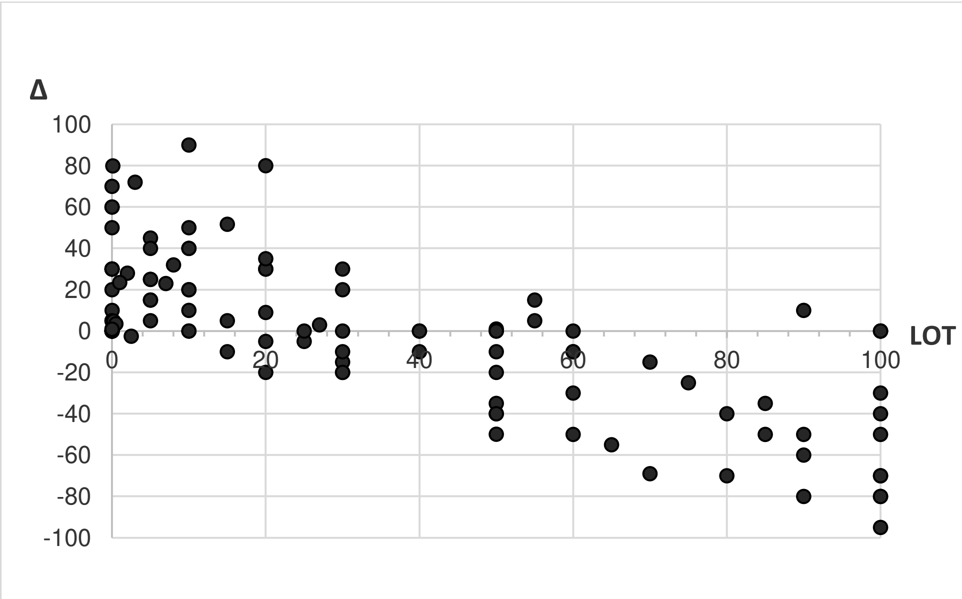
To determine your final balance for this task we would randomly match you with some player B from the "other class" **Z**. What is your choice as player "A"? How much would you invest in "B"?

I choose to invest in "B" _______ (of 100,000)
(recall: you may choose any investment from 0 to 100,000)

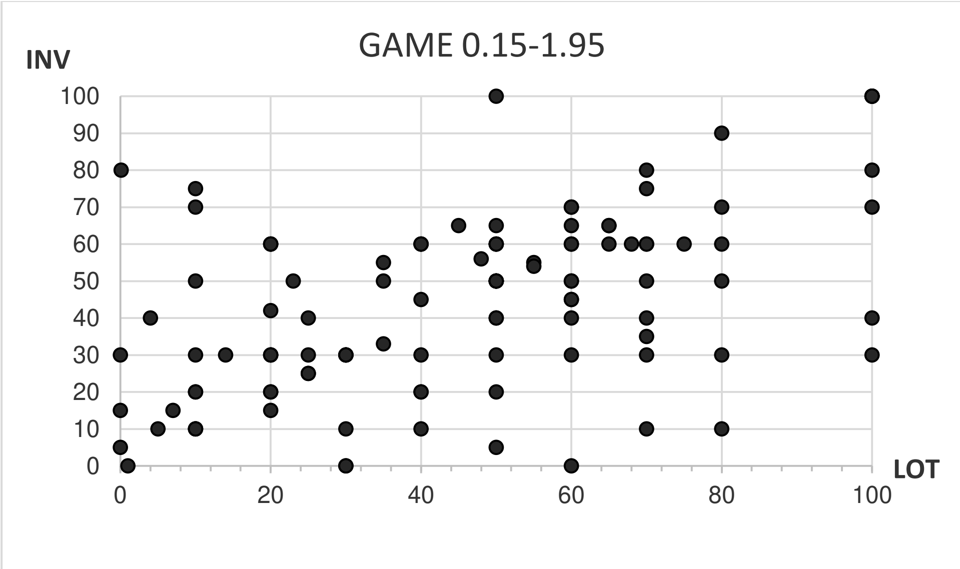
Figure 4: The comovement of INV, LOT and Δ

4 (a): 0.15-1.35





4 (b): 0.15-1.95


GAME 0.15-1.95
INV
100
90
80
70
60
50
40
30
20
10
0
0
20
40
60
80
100
LOT

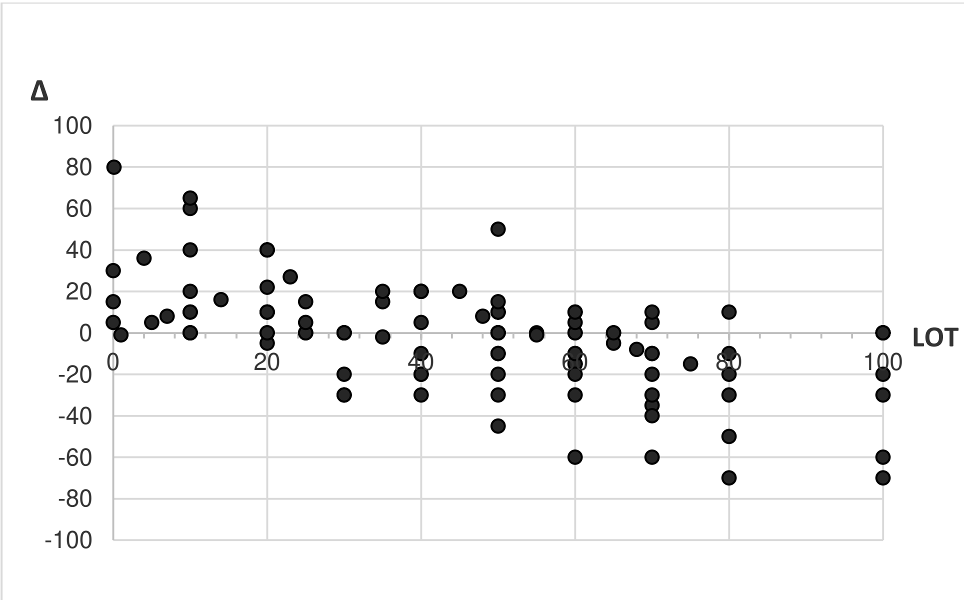

Δ
100
80
60
40
20
0
-20
-40
-60
-80
-100
0
20
40
60
80
100
LOT

Figure 5: The Betrayal Aversion games