Words Speak Louder Than Money

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Abstract

This paper reports on an experiment studying the effectiveness of two types of mechanisms for promoting trust: pecuniary and non-pecuniary as well as their mutual interaction. Our data provide evidence that both mechanisms significantly enhance trust in comparison to the standard investment game. However, we find that the pecuniary mechanism performs significantly worse than the non-pecuniary one. Our results also point to the fact that pecuniary mechanism, which depends on monetary incentives, can be counterproductive when combined with mechanism which relies primarily on psychological incentives.

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1. Introduction

Trust and trustworthiness are vital components of social and economic exchange and without their presence many welfare-increasing interactions would not take place. In fact, Arrow (1974) notes that in the face of transaction costs trust is ubiquitous to almost every economic transaction. Several studies have argued that the level of trust has a positive impact on societies' well-being (e.g., Putnam (1993) and Fukuyama (1995)). These claims were further supported by empirical evidence of Knack and Keefer (1997), La Porta, Lopez-de-Salanes, Shleifer, and Vishny (1997), and Zak and Knack (2001) who find a strong positive relationship between estimated levels of trust and economic performance. This observation thus raises an important question: If societies benefit from maintaining stable levels of trust and trustworthiness, then what types of instruments are best suited for achieving this goal?

Recent theoretical and experimental literature has produced some relevant insights into various mechanisms that have been shown to influence the decisions of trustors and trustees.[1] In principle one can distinguish between two types of mechanisms for promoting trust: (i) pecuniary, which depend on economic (monetary) incentives; and (ii) non-pecuniary, which rely primarily on psychological incentives. At this point, it is an open question whether one of them dominates the other in terms of the levels of trust and efficiency. Arguably, in practice, most of these mechanisms involve both types of incentives – economic and psychological[2] – and therefore it could be that it is this interaction which is most effective at promoting trust[3].

Real life offers many examples of situations in which trust forms a bond of a relationship and is reinforced by monetary or/and nonmonetary means. A good example is marriage which in number of societies combines a public pledge – a non-pecuniary

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[1] For example, Berg, Dickhaut, and McCabe (1995), Ellingson and Johanesson (2004), Engle-Warnick and Slonim (2004), Andreoni (2005), Charness and Dufwenberg (2006), Huck, Ruchala, and Tyran (2007), Bracht and Feltovich (2008), Dufwenberg, Servátka, and Vadovič (2008), Servátka, Tucker, and Vadovič (2008a, 2008b) and many others.

[2] Non-pecuniary mechanism such as a handshake or an agreement which relies on guilt for example is usually observed in the repeated game context and hence monetary incentives could be present via reputation building. On the other hand, pecuniary mechanism such as a contract which relies on fines for default would not avoid a possibility of guilt or reciprocity.

[3] Fehr and Schmidt (2008) examine the interaction between psychological and economic incentives in the context of contracts and state explicitly: "However, we are just beginning to understand the interaction of explicit and implicit incentives, which is a fascinating field for future research."

instrument – with additional monetary incentives in various forms, i.e., a prenuptial agreement (in many Western countries), a dowry (Lithuania), or a bridal price (Sudan). Similarly, any international treaty or a business agreement combines a promise with possible sanctions for default which could take form of explicit fines or loss of reputation.

In this paper we select two comparable mechanisms, one pecuniary and the other non-pecuniary, and examine their relative performance. The former has monetary consequences and the latter operates through cheap talk communication (as seen from the perspective of standard neoclassical theory). We first pose a question whether these pecuniary and non-pecuniary mechanisms affect trust and trustworthiness to the same degree or whether one of them dominates the other. After we observe their performance in isolation, we examine the central question of this study, which is the outcome of their interaction. An important feature of our design is that in our Interaction treatment the agent has a complete freedom to use one or another mechanism. Therefore, the choices made reveal what he beliefs is the optimal usage of monetary and nonmonetary incentives in fostering trust. The aim of our study is two-fold: (1) to shed light on the relative importance of incentives created by comparable pecuniary and non-pecuniary mechanisms on trust and (2) to explore their interplay.

The interaction between psychological and economic incentives has been studied by Fehr and Schmidt (2008) in the context of labor contracts. They examine the interplay between binding fines for failing to meet the target and nonbinding bonus promises. The results point strongly in the direction of bonuses that predominate in the contracts designed by subjects. This study shares an important similarity in that subjects have a choice using just pecuniary or just non-pecuniary instruments or both. However, an important difference lies in the fact that in our case the pecuniary instrument does not depend on explicit enforcement by the third party and our non-pecuniary instrument does not involve monetary transfers. Therefore, we get a clean comparison of two qualitatively different instruments that have no common features.

Pecuniary mechanisms fostering relationships that rely on enforceable monetary payments such as satisfaction guaranteed and escrow accounts were experimentally studied respectively by Andreoni (2005) and Bracht and Feltovich (2008). In their setup,

giving the trustor an option to annul the transaction or forfeit the amount that the trustee deposited in the escrow account can provide sufficient incentives for the trustee to act upon the terms of deal. In practice, both of the mechanisms hinge on external enforceability, and thus it is not obvious whether they increase the intrinsic propensity to trust (i.e., that the trustors would act in the same manner if the annulment of the transaction or forfeiting the escrow account were up to the trustee's discretion) or only replace the incentives to trust with other monetary incentives that make the trustors behave optimally in the same way *as if* they were trusting.[4]

Servátka, Tucker, and Vadovič (2008b), develop a *deposit* mechanism which is based on the monetary transfer from the trustee to the trustor prior to playing the trust game. If implemented, the deposit makes the trustor at least as well off as if no transaction ever took place, but does not give him any means of enforcing the outcome of the transaction. It is this pecuniary mechanism that we use in our experiment as it provides comparable incentives to cheap talk communication.[5]

 Cox (2000) defines trust as an action that generates a monetary gain which could be shared with another agent and exposes trustor to the risk of a loss of utility if the other agent defects and appropriates too much or all of the monetary gain. Under this definition, experiments by Ellingson and Johanesson (2004) and Charness and Dufwenberg (2006) have provided evidence that agents are more likely to trust following a communication stage. While Ellingson and Johanesson focus on whether communication can alleviate a hold up problem and facilitate coordination in the Nash demand game following an investment, Charness and Dufwenberg study the effects of promises made by trustees in a hidden action game. Although from the standpoint of neoclassical theory, promises are considered nonbinding, Charness and Dufwenberg show that their enforcement is based on psychological motivations such as guilt (Battigalli and Dufwenberg (2007)).

While both strands of the literature find that the levels of trust and trustworthiness can be affected by the described mechanisms, they do not allow for a direct comparison

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[4] Trust is a vague term which is being used in different ways throughout the literature. To avoid the ambiguity we will refer to *intrinsic trust* whenever the trustor cannot legally enforce the contract.
[5] The mechanisms are comparable in the sense that neither relies on any enforcement or intervention from the external party, such as courts or escrow.

of their relative importance. This is due to different experimental settings across the studies, and more specifically and importantly, because of the enforceability differences. In what follows, we present an experiment specially designed to address these two issues.

The rest of the paper is organized in the following manner. Section 2 provides the experimental design, and Section 3 describes the experiment procedures. In Section 4, the experimental results are presented, and Section 5 concludes with a discussion.

2. The Experiment

Our experiment consists of a 2x2 design (presented in Table 1) with treatment variables being the ability to unilaterally communicate and to send a $10 deposit by the trustee. In all four treatments, subjects play the standard version of Berg, Dickhaut, and McCabe (1995) two stage investment game: There are two players, A and B, both endowed with $10. In stage one, player A decides how much of his initial endowment to send to her counterpart, i.e., he chooses a whole dollar amount $S \in \{0,1,\ldots,10\}$. The remaining portion of his endowment is his to keep. The amount sent is tripled by the experimenter. In stage two, player B decides how much of the tripled amount, $R \in \{0,\ldots,3S\}$, to return to player A. The amount kept by player B is added to his endowment (if any).

Table 1: Experimental Design

	No Deposit	**Deposit**
No Communication	Baseline	Deposit
Communication	Communication	Interaction

The treatments vary in the pre-game stage: *Baseline* does not have a pre-game stage; in *Communication,* player B can send a hand-written free form message to player A; in *Deposit,* player B has an option to transfer his whole $10 endowment to player A or keep it for himself (irrespective of player B's decision, player A is still constrained to send a maximum of $10 in stage one of the game); finally, in *Interaction,* we study the interplay of the two variables by allowing player B to send a message and transfer his endowment to player A.

Our objective is to compare two mechanisms for inducing trust: deposit and communication. We want to know the impact of the mechanisms on overall efficiency (as determined by the transfer of player A) as well as how individual behavior is affected from having the mechanism employed. Ex ante, it is not clear which of these mechanisms is more effective. It is important to note that both deposit and cheap talk (promise) can be interpreted in the same way in our design: Both can be viewed by player A as a strong signal that player B is trustworthy; or as a strategic move of player B to induce higher amount sent and a preparation for defection. Following our discussion in the introduction section, we have no theoretical reasons to favor one over another. A message may represent a promise[6] but it is still a cheap talk. A deposit, on the other hand, is a credible commitment which might be a good enough reason for thinking that it will perform better. Then again, it has been documented that money can sometimes crowd out intrinsic motivation (Ostrom (2000), Frey and Jegen (2001), Gneezy (2003), Gneezy and Rustichini (2000a, 2000b)).[7] It is, therefore, plausible that a deposit could have a negative effect on trust[8] and could perform worse than communication.

Both Deposit and Communication are intended to induce higher amounts sent by player A. We expect that giving a subject the option to use both will do at least as well as when they are limited to just using one of them. Our intuition is based on the fact that the subject can now take advantage of both worlds. That is, send a deposit to establish credibility (trustworthiness) via foregoing earnings as well as insuring that player A can be no worse off from investment than they were at the beginning of the game, and send a message to establish on psychological enforcements (e.g., reciprocity, guilt, conformism, etc…) and counteract/address the negative aspects of pecuniary methods that lead to the crowding out of intrinsic motivations. Lastly, if one of these mechanisms clearly

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[6] In the sense of Charness and Dufwenberg (2006).

[7] A nice exposition of possible detrimental effects of explicit monetary incentives can also be found in Fehr and Falk (2002).

[8] The behavior of players A and B can be seen as 'proxies' for trusting and trustworthy behavior (Charness et al. (2008)). There are other possible motivations why players would send and return positive amounts, such as other-regarding preferences (Cox (2004)) or preferences for increasing social welfare (Charness and Rabin (2002)). One could, of course, also ask a follow up question which is how do communication and deposit affect other-regarding preferences. In this paper we are primarily concerned with the size of the transfer and efficiency. We leave this other exploration for future research.

dominates the other, then one can simply choose to use that mechanism and abstain from the other.

3. Procedures

The experiment was conducted at the University of Canterbury, Christchurch, New Zealand in 2007. A total of 270 subjects participated in the study. Most of the students had previously participated in economics experiments, and some (but not a majority) had experience with investment-game-like-scenarios. Each subject only participated in a single session of the study. On average, a session lasted 50 minutes including initial instructional period and payment of subjects. Subjects earned on average 17.21 NZD.[9] All sessions were hand run in a classroom.

Each session included a minimum of 12 subjects who were randomly matched into pairs. The assignment of pairs was done according to the following process. The classroom was segmented in half such that all subjects of a given type would be located in the same half of the room. The desks for each type were arranged in two rows facing the wall, and thus neither type would be able to see the other when making decisions. The subjects were free to choose any seat upon entering the classroom. After the subjects signed experiment consent forms, the experimenters publicly flipped a coin to determine which side of the room was to be which type. The allocation of a player A and player B to a particular pair was done by experimenters randomly pairing one subject from each side of the room together.

The instructions were projected on the screen and read aloud. The investment game and general procedures were explained first. Only then did the experimenters announced that: "Before you play the described game, player B will have an opportunity to write a message / send their endowment / write a message and/or send their endowment to their counterpart player A" and projected as well as read aloud the instructions for the pre-game stage.[10] At the end of the instructional period, the experimenters privately answered subjects' questions (if any).

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[9] The adult minimum wage in New Zealand at the time of the experiment was 10.25 NZD per hour (1 NZD = 0.6943 USD).
[10] Obviously, there was no pre-game stage in the baseline treatment.

In the pre-game stage, players B were given the opportunity to write a message / transfer their endowment / write a message and/or transfer their endowment to their counterpart player A on the provided pre-game decision form. In the *Deposit* and *Interaction* treatments the experimenters then filled in the blank in the following sentence on players' A decision form:

> *Player B has transferred $_____ to you before the start of the game. This amount is yours to keep and will be added to your earnings.*

Players A were then asked to answer a question why they believed that player B transferred or did not transfer their $10 endowment to them in the pre-game. It was made common knowledge that this information would remain private.

In the *Communication* and *Interaction* treatments the experimenters passed the same pre-game decision sheet with (or without) a message to players A from their counterpart player B. Players A were asked to answer a question why they believed that player B sent or did not send a message to them in the pre-game and what did the message (a lack of message) mean to them. Again, it was made common knowledge that this information would remain private.

In stage one of the investment game, both players were endowed with $10NZ. Players A had to decide how much of this endowment they wanted to keep for themselves and how much to transfer to their anonymous player B counterpart. This was done by writing down a non-negative integer between 0 and 10 on their decision sheet. As a check for understanding, the players A also had to answer how much money they kept for themselves. Once everyone made their decisions, all the decision sheets were collected. The experimenters completed the following statement on players' B decision sheets in order to indicate to player B the amount sent to them from their counterpart player A and the tripled amount for which they need to make their allocation decision:

> *Player A has transferred $_____ to you in Stage 1.*
> *The experimenter has tripled this amount, and you have received $_____*

All decisions sheets were then returned to all players and players B decided how much of the tripled amount to transfer back to their counterpart player A and how much of it to keep for themselves. Once again as a check for understanding, players B had to write down both the amounts returned and kept for themselves.

Upon the completion of stage two the experimenters collected all decision sheets, transferred the decision information of players B to their player A counterparts' decision sheet, and returned the decision sheets to all players to reveal their overall earnings. Lastly, subjects completed a short survey on the experiment and general demographic information. Upon completion of the questionnaire, subjects were privately paid their earnings for the session.

4. Results

The behavior of subjects from all four treatments is presented in Figures 1-4 rank ordered by the amount sent by player A. The amount sent by players A is represented as a solid bar and the corresponding amount returned by their counterpart player B as an adjacent patterned bar.[11] From these broad first impressions of the data, we can make some general observations. First of all, the behavior of the baseline treatment is fairly consistent with the results of previous studies, i.e., players A on average sent 55% of their endowment and players B returned 31% of the tripled amount received. Also consistent with previous studies, the communication treatment exhibited quite high levels of trust and trustworthiness.[12] Interestingly, the deposit treatment appears to have performed slightly better than the baseline in terms of inducing trust, but very poorly in terms of trustworthiness, e.g., players B returned positive amounts in only 2 of the 10 instances in which players A sent less than the maximum. When both communication and deposit are available to player B, the mechanism seems to perform much better than deposit alone and almost as well communication alone.[13]

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[11] Note that the transfer decisions illustrated in Figures 2-4 are irrespective of whether a message and/or deposit was sent by player B.

[12] There was only one player B who did not send a message. The paired player A then sent 0 in stage one.

[13] There were only two players B who did not sent a message in the Interaction treatment. In one case the paired player A sent 0 and in the other he sent 6 while player B responded with returning 8.

Figure 1: Baseline treatment decisions.
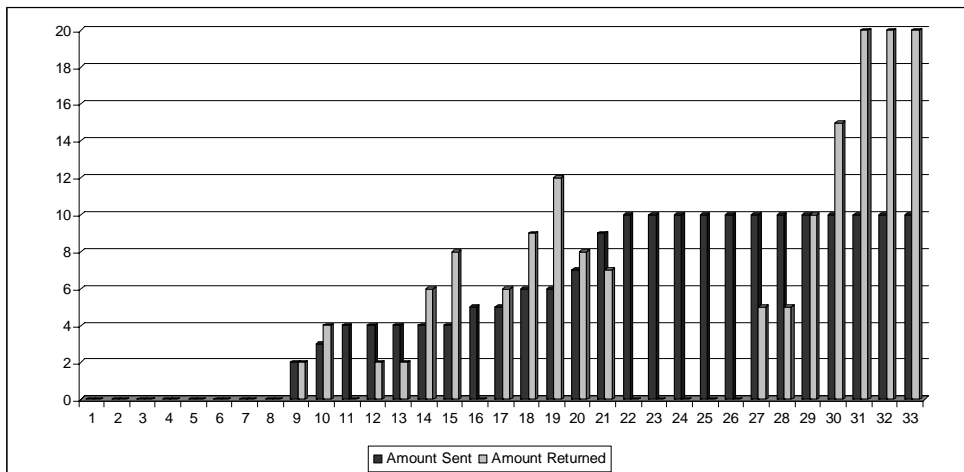
Figure 2: Communication treatment decisions.
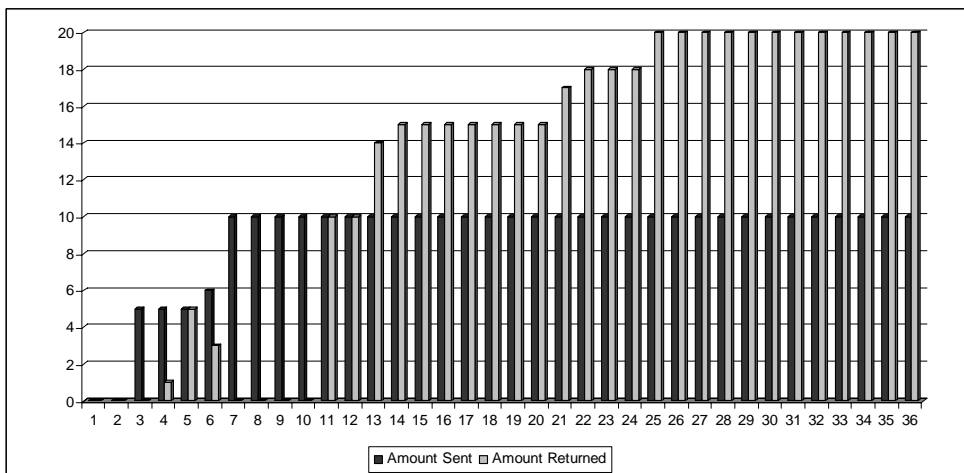

Figure 3: Deposit treatment decisions.
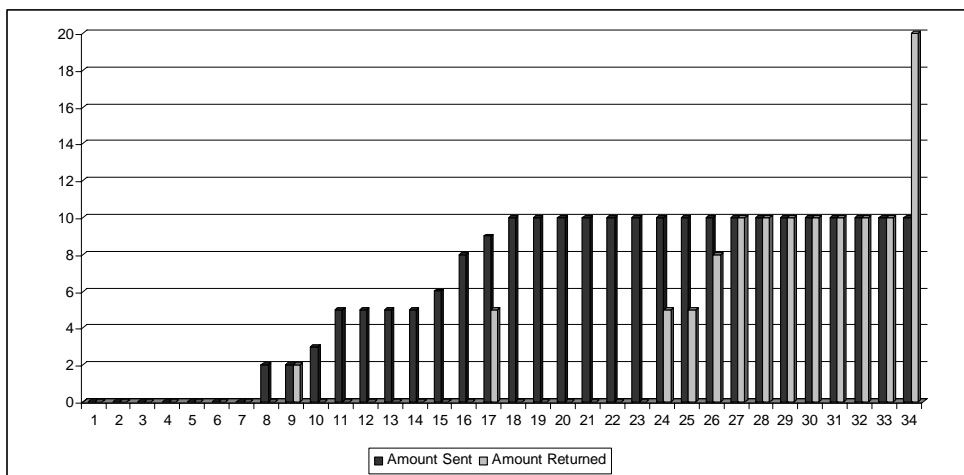
Figure 4: Interaction treatment decisions.
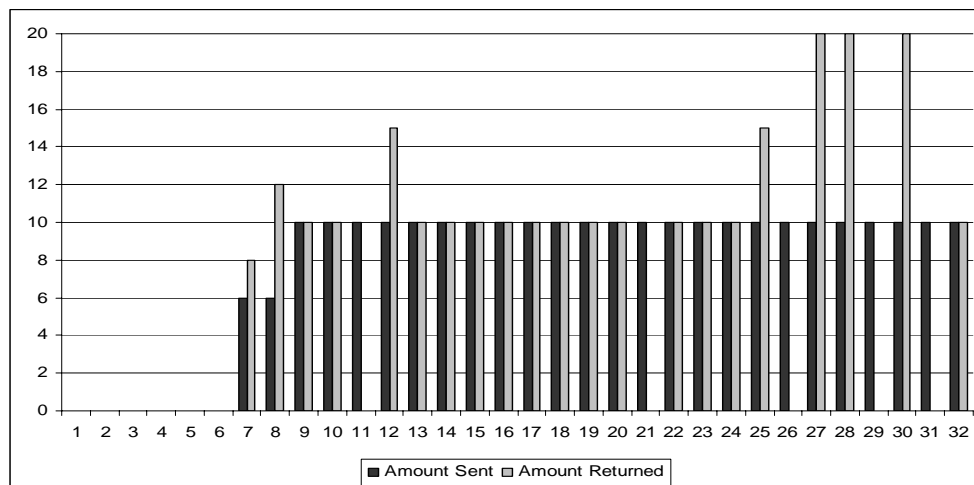
For a closer inspection of the data, we will first focus on the decisions of players A and compare the distributions of the amount sent in stage one across the four treatments. The summary information is presented in Table 2. Players A sent the lowest average amount of 5.55 in Baseline, slightly higher of 6.47 in Deposit, while in Interaction and Communication the average amounts were 7.88 and 8.92 respectively. Surprisingly, the treatment with the highest efficiency (as measured by actual realized payoffs for each pair of players over the maximum possible payoffs) was Communication, followed by Interaction and Deposit. The lowest level of efficiency was observed in Baseline. The median amount sent was again the lowest in Baseline at 5, while quite similar in the other three treatments: 9.5 in Deposit and 10 in both Interaction and Communication.

Table 2: Summary Statistics for Player A (Amount Sent)

	Baseline	Communication	Deposit	Interaction
Average	5.55 [4.07] {33}	8.92 [2.67] {36}	6.47 [4.17] {34}	7.88 [3.97] {32}
Median	5	10	9.5	10
Frequency of t=10	36%	83%	50%	75%
Avg if deposit given	-	-	7.31 [3.82] {26}	8.95 [3.15] {19}
Avg if no deposit	-	-	3.75 [4.33] {8}	6 [4.61] {13}
Avg if message sent	-	9.17 [2.22] {35}	-	8.20 [3.80] {30}
Avg if no message	-	0.00 [0] {1}	-	3.00 [4.24] {2}

Standard deviations in brackets. Number of subjects in braces.

Next we compare the effectiveness of inducing trusting behavior by the means of pecuniary and non-pecuniary mechanisms. In order to test which one influences the subjects' behavior to a larger degree, we compare the amounts sent by players A in Communication and Deposit treatments conditional on employing the available mechanism. Both mechanisms were used frequently: In Communication 35 out of 36 (97%) subjects chose to send a message; in Deposit 26 out of 34 (76%) subjects chose to give a deposit. While both mechanisms increase the average and median amounts sent by players A relative to the Baseline, the two-sided Mann-Whitney test presented in Table 3 detects that the amount sent in Communication treatment following a message was statistically significantly higher than the amount sent in the Deposit treatment following a deposit ($p = 0.013$).

Table 3: Mann-Whitney Test Results for Player A (Amount Sent)

Treatment	Comm.	Comm. (message sent)	Deposit	Deposit (deposit given)	Interaction	Interaction (message sent)*	Interaction (deposit given)**
Baseline	3.97 ($p < 0.001$)	4.25 ($p < 0.001$)	0.99 ($p = 0.323$)	1.71 ($p = 0.087$)	2.61 ($p = 0.009$)	2.93 ($p = 0.003$)	3.22 ($p = 0.001$)
Comm.	-	-	-2.97 ($p = 0.003$)	-	-0.96 ($p = 0.338$)	-	-
Comm. (message sent)	-	-	-	-2.49 ($p = 0.013$)	-	-0.77 ($p = 0.444$)	0.26 ($p = 0.792$)
Deposit	-	-	-	-	1.75 ($p = 0.081$)	-	-
Deposit (deposit given)	-	-	-	-	-	1.48 ($p = 0.139$)	2.06 ($p = 0.040$)

* 19/30 players A also received a deposit.
** All (19/19) players A also received a message.

Result 1: Non-pecuniary incentives influenced the trust of players A to a greater degree than pecuniary incentives.

While making the two treatments comparable in terms of incentives resulting from the use of communication and deposit, our design creates non-negligible differences in terms of potential income effects if player B sends a deposit. Therefore with our design, it is impossible to distinguish whether the larger amount sent by player A in comparison to Baseline was due to player A currently having $20 rather than $10 or whether it was the effect of deposit that was responsible for the observed increase. Servátka, Tucker, and Vadovič (2008b) address this issue directly and find that the "deposit effect" causes the increase in amounts sent while the larger amount available to player A had no significant effect on his decision.

Subsequently we focus our attention on the interaction of the two mechanisms; we test whether a combination of deposit and message from player B enhances the amount sent by player A in comparison to only a deposit or a message. Interestingly enough, all

players B except two who sent a deposit in Interaction treatment also wrote a message to player A suggesting that the verbal communication is at least as important as a monetary transfer. This is supported by another observation (which is perhaps less striking because of the obvious difference in costs) that more subjects decided to send a message (94%) than to send a deposit (59%).

According to the Mann-Whitney test reported in Table 3, the amount sent in Deposit after a deposit was given is statistically significantly lower than the amount sent in Interaction ($p = 0.040$) when both mechanisms were employed simultaneously.[14] The same test does not detect statistically significant difference between Communication and Interaction ($p = 0.792$), but it is worth noticing that the average amount sent is higher in the treatment where only communication is available, suggesting that the usage (not necessarily the inclusion) of pecuniary incentives undermines the incentives generated by the message in the studied environment.

Result 2: A combination of non-pecuniary and pecuniary incentives outperforms stand-alone pecuniary incentives in terms of inducing higher level of trust of players A. On the other hand, the same combination does not do better when compared to stand-alone non-pecuniary incentives.

Table 4: Summary Statistics for Player B (Amount Returned)

	Baseline	Comm.	Comm. (if message sent)	Deposit	Deposit (if deposit given)	Interaction	Interaction (if message sent)*	Interaction (if deposit given)**
Average returned	4.87	12.75	13.11	3.38	3.58	7.88	8.06	8.42
% of average 3S returned	31%	46%	48%	17%	16%	35%	33%	31%

* 19/30 players B also gave a deposit.
** All (19/19) players B also sent a message.

Finally, we discuss the effects of studied mechanisms on trustworthiness of players B. Table 4 presents a summary of subjects' behavior across the four treatments. However, because of different levels of income at the time the decision was made and

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[14] The Interaction (if a deposit given) category, presented in the last column of Table 3, conveys this information because all players B who gave a deposit in Interaction treatment also sent a message.

because of different incentives faced by players B such summary only draws a partial picture on their behavior. Thus, in order to fully assess the effect of communication and deposit, we estimate a Tobit relation between amounts sent, S_t, communication, C, given deposit (*D10* if given and *D0* if not), and amounts returned, R_t, in the four treatments:[15]

$$R_t = \alpha + \beta_1 D^C S_t + \beta_2 D^{D0} S_t + \beta_3 D^{D10} S_t + \beta_4 D^{CD0} S_t + \beta_5 D^{CD10} S_t + \gamma \cdot S_t + \varepsilon_t$$

where the bounds for the Tobit estimation were imposed by the experimental design:

$$R_t \in [0, 3S_t].^{16}$$

Table 5: Tobit Regression Estimates for Players B Behavior

R_t	Coefficient	St. Error	t	P>|t|
Communication	0.57	0.24	2.38	0.019
Deposit = 0	-0.20	0.55	-0.36	0.721
Deposit = 10	-0.53	0.27	-1.93	0.055
Interaction (Dep = 0)	0.32	0.35	0.91	0.367
Interaction (Dep = 10)	0.02	0.27	0.07	0.944
S_t	1.89	0.33	5.74	0.000
Constant	-10.06	2.3	-4.41	0.000

We report the results from the estimation in Table 5. The estimated coefficients are presented in the first column: $\hat{\beta}_1$ and γ are both positive and significant at 10% level, indicating that a message sent by players B and a higher amount sent by players A both increase the amount returned by players B. On the other hand, giving a deposit reduces

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[15] Because there was only one observation in Communication and two observations in Interaction where players B did not send a message, we did not create an additional variable representing available communication but no message sent.

[16] While our data is theoretically bound from above by $3S_t$, in the actual experiment it never happened in that a subject would return the full amount, thus the constraint was never binding. Because Stata, in which we estimated our Tobit regressions, does not allow specifying upper or lower limits using variables, we used 30 as the upper bound.

the amount returned by players B as most likely they are trying to make up for a decrease in their payoffs caused by giving a deposit. Not giving a deposit in either Deposit or Interaction treatment, and giving a deposit in Interaction treatment had no significant effect. Hence, the Tobit estimation supports the conclusion that communication increases trustworthiness, but deposit does not.

Result 3: Non-pecuniary incentives increased the trustworthiness of players B while pecuniary incentives did not.

5. Discussion

Relationships are often fragile and rely on trust from at least one of the parties. But there are ways of strengthening trust. One is with pecuniary mechanism that is based on monetary incentives such as deposit. The second is non-pecuniary and could be accomplished with a simple promise. This paper reports on an experiment that studies relative performance and mutual interaction of these two mechanisms that are qualitatively different, but comparable. Our data provide evidence that both deposit and communication mechanisms significantly enhance trust in comparison to the standard investment game. However, we find that deposit performs significantly worse than free form written messages. Furthermore, our results point to the fact that deposit can even be counterproductive when combined with the ability to make promises. It still remains an open question, however, whether the deposit is a negative signal towards one's partner, i.e., that the partner is not a trusting person, or a negative signal about one's own self, i.e., that he cannot be trusted.

Our results imply that the deposit undermined the trust generated by the message. This corroborates the findings of Gneezy (2004), Gneezy and Rustichini (2000a, 2000b), and Fehr and Schmidt (2008) who have both observed qualitatively similar behavior in different contexts. Thus, our paper could be viewed as a next step in establishing generality of these conclusions.

Our results are also in line with Brandts and Cooper (2006) who observe that cheap talk enhances coordination better than financial incentives. The presented experiment also complements earlier work by Andreoni (2005) who finds that offering a

satisfaction guarantee always increases trustworthiness of players B, even when honoring it is fully voluntary, but only elicits the trust of players A when it is legally enforced. On the other hand, our findings seem to be at odds with Bracht and Feltovich (2008) who find that chosen high escrow amount leads to more efficient outcomes. However, it is important to notice that there is no direct comparison to our study because escrow effectively eliminates the need for trust, which does not happen in our setting with deposit. Furthermore, we have implemented only one level of deposit, and hence it is plausible that a higher deposit would increase trust significantly.

Finally, as with most (if not all) experiments studying social phenomena in laboratory conditions, one has to cautious when interpreting the results as they may vary in different strategic and contextual environments (Levitt and List (2007). Therefore, we tried to nest our findings in the standard version of the investment game to clearly observe the directional changes. However, it is still possible that a different nature and level of scrutiny might influence the behavior in other settings.

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Appendix: Instructions
[All instructions were given to the subjects in hardcopy, presented on an overhead to the entire group, and read aloud by the experimenter.]

[This is the general instructions presented at the beginning of every session.]

You are a Player ____   ID#:____
GENERAL INSTRUCTIONS

This is an experiment studying decision-making. The instructions are simple and if you follow them carefully and make good decisions, you might earn a considerable amount of money which will be paid to you in cash at the end of the experiment. It is therefore very important that you read these instructions with care.

No Talking Allowed
It is prohibited to communicate with other participants during the experiment. Should you have any questions please ask us. If you violate this rule, we shall have to exclude you from the experiment and from all payments.

Anonymity
Each person will be randomly matched with another person in the experiment. No one will learn the identity of the person she/he is matched with. You will be matched with the same person for the entire experiment.

Types
Each two person group will consist of two types of participants (Player A and Player B) that are assigned randomly. Your assigned type will be listed at the top of each task instruction sheet.

The Game
You are randomly paired with another individual. One member of your pair will be a player A and the other one will be player B. Find your type in the upper right corner of this sheet. You will never be able to find out the identity of the player you are paired with.

Each player's final dollar payout will be determined according to the process below. The game is divided into stages in which players take turns making decisions. Both player A and player B begin the game with $10. We will refer to this initial $10 as each player's endowment.

Stage 1:
At the beginning to stage 1, player A has the opportunity to transfer all, any portion, or none of his/her $10 endowment to player B. The amount that is not transferred is player A's to keep. The amount that player A transfers triples when it reaches player B. For example, if A transfers $10 to B, B receives $30. If A transfers $5 to B, B receives $15. If A transfers $0 to B, B receives $0.

Stage 2:
Player B then has the opportunity to transfer all, any portion, or none of the tripled amount that was transferred to him/her from player A. The amount that is not transferred is player B's to keep, and the amount transferred is added to player A's final dollar payout.

[This is the Deposit instructions for the pre-game stage specific to player B. That is, only players B received these particular instructions (decision sheets), but a copy was placed on the overhead for all to see and read aloud by the experimenter.]

You are a Player B   ID#:____

Pre-Game Instructions

Player A is endowed with $10.   Player B is endowed with $10.

The Game to be played <u>NEXT</u>:
➢ Player A must decide how much, if any, of his/her $10 endowment he/she wants to transfer to player B.

➢ Each dollar that is not transferred is player A's to keep.

➢ Each dollar that is transferred to Player B is multiplied by 3 by the experimenter.

➢ Player B must then decide how much, if any, of this tripled amount they want to transfer back to player A and the remaining portion is theirs to keep.

Before we play this game, Player B has the opportunity to transfer his/her $10 endowment to player A and the opportunity to write a message to Player A.

If player A transfers the $10, then it is added to player B's earnings.
If player A does not transfer the $10, then it is added to player A's earnings.

Note: If the $10 endowment is transferred by player B,
➢ it **<u>DOES NOT</u>** increase the amount that player A has available to transfer in Stage 1.

➢ the $10 transferred **<u>IS NOT</u>** tripled.

➢ Player A is guaranteed to be at least as well off as the initial starting position ($10 endowment) regardless of both players' transfer decisions during the game.

Why did you transfer or not transfer your $10 endowment to player A?

_____

_____

_____

[These are the Interaction treatment instructions for the pre-game stage specific to player B. That is, only players B received these particular instructions (decision sheets), but a copy was placed on the overhead for all to see and read aloud by the experimenter. After the decisions were made by player B, the exact sheet was given to their counterpart player A to reveal their decision and message (if any).]
You are a Player B

Pre-Game Decision Sheet

You have the opportunity to write a message to player A. If you choose to write anything to your counterpart, please write the message on the space below:

_____

_____

_____

Please complete the statement below by circling one of the amounts:

I have decided to transfer the following to player A:

$0   or $10

[These are the Stage 1 instructions (decision sheets) specific to player A. That is, only players A received these particular instructions (decision sheets), but a copy was placed on the overhead for all to see and read aloud by the experimenter. Players B never saw the actual decision sheet of their counterpart. The information/decisions were transferred to Players' B decision sheets by the experimenter. Therefore, all handwriting was the same and no additional messages/information could be transferred.]

You are a Player A   ID#:____

The Game: Stage 1 Decision Sheet

Player B has transferred $____ to you before the start of the game.
This amount is yours to keep and will be added to your earnings.

Why do you believe Player B transferred or did not transfer their $10 endowment to you in the pre-game?

_____

_____

_____

The Game decision:
You must decide how much, if any, of your $10 endowment you want to transfer to player B.

Each dollar that is not transferred is yours to keep.

Each dollar that is transferred to Player B is multiplied by 3 by the experimenter.

Please complete the statements below. Your decisions must be non-negative integers, e.g. 0, 1, 2,…, 10.

I have decided to transfer $_____ to player B.

Therefore, I have decided to keep $_____ for myself.

[These are the Stage 1 instructions (decision sheets) specific to player B. That is, only players B received these particular instructions (decision sheets), but a copy was placed on the overhead for all to see and read aloud by the experimenter. Players A never saw the actual decision sheet of their counterpart. The information/decisions were transferred to Players' A decision sheets by the experimenter. Therefore, all handwriting was the same and no additional messages/information could be transferred.]

You are a Player B   ID#:____

The Game: Stage 2 Decision Sheet

Player A has transferred $_____ to you in Stage 1.
The experimenter has tripled this amount, and you have received $_____.

Why do you believe Player A transferred $____ to you in stage 1?

_____

_____

_____

You must decide how much, if any, of the $_____ you want to transfer to player A.

Each dollar that is not transferred is yours to keep.
Each dollar that is transferred is added to player A's earnings.

Please complete the statements below. Your decisions must be non-negative integers.

I have decided to transfer $_____ to player A.

Therefore, I have decided to keep $_____ for myself.

[This is a questionnaire provided to the subjects at the end of the experiment in order to collect general demographic data as well as ask for any general strategies that they may have used in making their decisions within the experiment.]

QUESTIONNAIRE
Thank you for participating in the experiment. While we calculate your earnings, please complete the following survey. All of your responses will remain anonymous and only linked to the decisions within the experiment via your ID#. Therefore, please answer as truthfully and completely as possible.

1. Were you a player A or player B?
2. Did you find the instructions clear and self-explanatory? If not, please specify.
3. What was your decision rule when making your choice(s)?

General Demographic Information
1. What is your age? _____

2. What is your sex? (Circle one number.)

    01   Male   02   Female

3. Which ethnic group(s) do you belong to? (Circle as many as you need, then write the country you are from if applicable.)
    01   NZ European/Pakeha _   04   Asian
    02   NZ Maori   _   Country: _____
    03   Pacific Islander   _   05   Other
          Country: _____   Country: _____
4. What is your major? (Circle one.)

    01   Accounting
    02   Economics
    03   Finance or Information Systems
    04   Education
    05   Engineering
    06   Law
    07   Biological Sciences
    08   Math, Computer Sciences, or Physical Sciences
    09   Social Sciences or History
    10   Humanities
    11   Psychology
    12   Other Fields
5. What is your class standing? (Circle one.)
    01   Undergraduate – first year   04   Honours
    02   Undergraduate – second year   05   Masters
    03   Undergraduate – third year   06   Doctoral

6. What is the **highest** level of education you expect to **complete**? (Circle one.)
    01   Bachelor's degree
    02   Honour's degree
    03   Master's degree
    04   Doctoral degree
7. What was the highest level of education that your **father** (or male guardian) **completed**? (Circle one.)
    01   Less than high school (Fifth Form Certificate or Sixth Form Certificate)
    02   High school (Bursary or UE)
    03   Vocational or trade school
    04   College or university
8. What was the highest level of education that your **mother** (or female guardian) **completed**? (Circle one.)
    01   Less than high school (Fifth Form Certificate or Sixth Form Certificate)
    02   High school (Bursary or UE)
    03   Vocational or trade school
    04   College or university
9. What is your citizenship status in New Zealand?
    01   NZ citizen
    02   Permanent Resident
    03   Refuge
    04   Other
10. Are you a foreign student on a Student Visa?
    01   Yes
    02   No
11. Are you currently …
    01   Single and never married?
    02   Married?
    03   Separated, divorced or widowed?
12. On a 9-point scale, what is your current GPA if you are doing a Bachelor's degree, or what was it when you did a Bachelor's degree? This GPA should refer to all of your coursework, not just the current year. Please pick one:
    01   Between 7.01 and 9.0 GPA (A- to A+ average)
    02   Between 5.01 and 7.0 GPA (B to A- average)
    03   Between 3.01 and 5.0 GPA (C+ to B average)
    04   Between 1.01 and 3.0 GPA (C- to C+ average)
    05   Between 0 and 1.0 GPA (D- to C- average)
    06   Have not taken courses for which grades are given
13. How many people live in your household? Include yourself, your spouse and any dependents. Do not include your parents or flatmates unless you claim them as dependents. _____

14. Please circle the category below that describes the total amount of INCOME earned in last year by the people in your household (as "household" is defined in question 13). [Consider all forms of income, including salaries, tips, interest and dividend payments, scholarship support, student loans, parental support, social security, alimony, and child support, and others.]
    01    $15,000 or under
    02    $15,001 - $25,000
    03    $25,001 - $35,000
    04    $35,001 - $50,000
    05    $50,001 - $65,000
    06    $65,001 - $80,000
    07    $80,001 - $100,000
    08   Over $100,000
15. Please circle the category below that describes the total amount of INCOME earned in last year by your parents. [Consider all forms of income, including salaries, tips, interest and dividend payments, social security, alimony, and child support, and others.]
    01    $15,000 or under
    02    $15,001 - $25,000
    03    $25,001 - $35,000
    04    $35,001 - $50,000
    05    $50,001 - $65,000
    06    $65,001 - $80,000
    07    $80,001 - $100,000
    08    $100,001 - $120,000
    09    $120,001 - $140,000
    10   Over $140,000
    11   Don't know
    12   Known only in foreign currency
          Write currency and amount here: _____
16. Do you work part-time, full-time, or neither? (Circle one.)

    01   Part-time
    02   Full-time
    03   Neither
17. Before taxes, what do you get paid? (Fill in only one.)

    01   _____ per hour before taxes
    02   _____ per week before taxes
    03   _____ per month before taxes
    04   _____ per year before taxes
18. Do you currently smoke cigarettes? (Circle one.)

    01   No
    02   Yes
    If yes, approximately how much do you smoke in one day? _____ packs.