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Master Thesis

Is the decision made by someone to trust equivalent to taking a risky bet? Evidence from a binary-choice trust game.

Name: Yuiun He

Student Number: 331679

Erasmus School of Economics

Erasmus University Rotterdam

Supervised by Zhihua Li

Abstract

Through experiments, we investigate whether the decision made by someone to trust is equivalent to taking a risky bet. It can be examined by comparing people's minimum acceptance risk probability (MAP) in trust game and risky dictator game. As a result, we find that experiment participants' mean MAP in trust game is significantly higher than their mean MAP in risky dictator game, no matter the stake size is small or large. That is to say people do not treat trust equivalent to a risky bet. We argue it is because people perceive certain social risk in trust. What's more, we observe that people behave in general more risk averse in large stake size scenario games than in small stake size scenario games. In addition, we find out that some human characteristics seem to be able to win more trust from others.

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1. Introduction

In today's society, people face the dilemma whether to trust each other. Take the famous Chinese milk scandal as an example: before this incident, more than 80 percent Chinese consumed and relied on domestic milk; while after the milk has been reported to be substandard or even hazardous to people, domestic milk industry encountered a big trust crisis. Up to now about 70 percent Chinese still refuse to buy domestic milk. The sharp drop of demand hit the Chinese milk industry severely, and the milk scandal incident influenced the export of relative products in a way. It can be seen that 'trust' played an important role in this example. So what is trust? It's hard to give a universal answer that covers each discipline's point of view. In Psychology, trust is seen as a gradually formed stable personality trait through individuals' acquired social learning (Rotter, 1967). People trust when they believe the person who is trusted will do what is expected. In Sociology, trust is seen as an embedded attribution to relationships between individuals and institutions. Trust is reliance and confidence. The core of trust is altruism (Zuker, 1986). In Economics, trust is expressed in a more calculative way. Williamson (1993) explains trust as human beings' rational calculation which aims to maximize individual benefits. Despite there are controversies over the definition of trust, many scholars have tended to reach a consensus that trust is related to risk. In other words, there are always risks involved in trust relations. Williamson（1993）describes trust as a subclass of risk. From his point of view, trust requires people to bear the risk which depends on the performance of another actor. Mayer (1995) refers trust to be a

risk-taking behavior, because trust makes trustor vulnerable. When one party (trustor) chooses to trust another party (trustee), trustor abandons the control over trustee's action. Trustee's action is uncertain, thus the uncertainty brings risk to the trustor once the trustee does not behave as expected. Moreover, Das and Teng (2004) present a mirror-image relationship between trust and risk. They argue that low trust always implies high perceived risk. However, even risk can be defined in many different ways. In Economics, risk is about the probability of experiencing a loss or undesirable outcome. Knights (1921) defines risk as measurable uncertainty, it can be denoted through probability. The probability of risk has objectivity. That is to say, risk can be naturally taken as probabilistic risk. Different to this traditional economic view of risk, some scholars put forward a novel opinion. Slovic (1987) argues that in real situations people do not take risk merely as nature risk or probabilistic risk. Certain social, cultural and psychological factors may all be incorporated into people's risk measurement. Towards this kind of social embedded risk, we call it social risk.

Sztompka (1999) mentions that trust is a bet about the future contingent actions of others. That is to say, people who decide to trust confront a risky situation where the outcome is uncertain, which is very similar to taking a risky bet. In a risky bet or simply say a gambling, people also need to face uncertain risk and outcome. Hence intuitively, it seems reasonable to equate trust with a risky bet. From the perspective of probabilistic risk view, the risk involved in trust or gambling should be anyway

probabilistic to people. No matter the counterpart is nature or a person. If trust and gambling have same possible outcomes or payoffs, people should perceive similar risk from these two cases. Trust can therefore be equated with taking a risky a bet. However, according to social risk opinion, due to the fact that trust behavior involves social relations, people may perceive additional social risk from trust. Therefore, trust should not be treated as gambling. A previous research paper Bohnet and Zeckhauser (2004) has already proved trust is different from a risky bet by putting forward a concept named 'Betrayal Aversion'. They find that most people are betrayal averse when the counterpart is a person instead of a random device like computer. People's decision to trust requires additional risk premium to compensate possible betrayal costs result from trustee's betrayal. In fact, the term 'betrayal aversion' can be deemed as a kind of social risk.

Nevertheless, the empirical works with respect to whether trust should be treated as a risky bet are still very limited. The discussion over probabilistic risk concept and social risk concept can be hardly found either. Therefore in this paper we are inspired to investigate again whether people's decision to trust is equivalent to taking a risky bet. In other words, whether the risk people perceived from trust is similar to the one they perceived from an equivalent risky bet. Through this paper, we aim to introduce a novel risk concept named the social risk, and show how social risk differs from probabilistic risk. Moreover, we are interested to study which personal characteristics may influence people's risk evaluation of trust.

In society, trust is a very important component of social capital. The presence of trust enables public policy to be implemented more smoothly and effectively. Society needs trust to brace its long term development. As for every human being, trust simplifies the cooperate relation between people. It contributes to reduce social complexity (Luhmann, 1979). We believe it will be very meaningful if everyone who lives in the society can gain more knowledge on trust and in turn utilize the knowledge to together facilitate social and individual efficiency for the long term development.

2. Literature Review

2.1 Risk

2.1.1 Risk construction

According to Adam and van Loon (2000), risk is not a thing out there for people to observe, it needs to be constructed. Bradbury (1989) summarizes two recognized concepts of risk. One concept conceives risk as a physically given attribute or an objective fact, which is derived from nature. We call it probabilistic risk. The alternative conceives risk as a socially contributed attribute or a social process which depends on human's subjective assessment and experience. We call it social risk. Social risk highlights the social attribute of risk.

Through the ages, when risk is mentioned in the field of economics, it conventionally

means probabilistic risk. Knights (1921) proposes a profoundly influential idea supports that risk only relates to objective probabilities. He states that the probability of a proposition should be intrinsic and it should be independent from any subjective factors. Keynes (1921) confirms this idea. He argues that risk is made up by two elements, probability and severity. Probability implies randomness, probabilistic risk is wholly objective. However, not every scholar supports this point of view. In the paper Finetti (1970), the author mentions " to objectify probability is an illusory attempt to exteriorize or materialize our true probabilistic beliefs". In accordance with the later developed prospect theory, Kahneman and Tversky (1979) argue in reality people take subjective value of probability. Slovic (1987) proposes that people's perception of risk can be very complex, so the role of their emotions and cognitive progress towards risk should be involved in risk assessment. The concept of social risk makes more sense in the real world. Bradburry (1989) therefore suggests instead of solely identify the objective probabilistic risk, it's better to integrate the probabilistic risk assessment together with the social risk evaluation.

In accordance with above arguments, it can be seen that although both trust and gambling contains uncertain risk, their risk construction seems different from each other. To gambling, it's a game which its situation is relatively pure. The risk is fully determined by nature or say by some random devices that pick outcome stochastically. There are no social factors involved. The risk of gambling belongs to objective probabilistic risk. However in the case of trust, the counterpart a trustor

confronts changes to a person instead of nature. The uncertainty of trust is caused by the possibility of trustee's exit, betrayal and defection (Gambetta, 1988). Because trust itself represents a social relation, the risk of trust should be constructed socially. It is social risk. Considering two different risk constructions respectively to gambling and trust, it is reasonable for us to presume that people's decision to trust is different from taking a risky bet.

2.1.2 Risk attitudes

According to Hillson and Webster (2007), risk attitude is defined as "the chosen response of an individual or group to uncertainty that matters, driven by perception." That is to say, risk attitude is a person's chosen response to the risk he perceived. Risk attitude is a critical element to understanding humans' decision-making in risky situations. Humans' risk attitudes to a particular situation vary from gender to gender, age to age, wealth to wealth and also nation to nation (Dohmen et al, 2005). Basically, risk attitude can be classified into three categories: risk averse, risk neutral and risk seeking. Table 1 summarizes the definitions of these three risk attitudes from Kahneman and Tversky (1979). For those people who are risk averse, they tend to perform in a conservative and reliable way while making decisions, and they should be very sensitive to risk. Conversely, for those people who are risk seeking, they will tend to be risk loving, and do not fear to bear the losses from risk. In our paper, if individuals treat trust equivalent to gambling, then if same condition holds their risk attitudes should be indifferent in both cases. But if individuals treat trust and

gambling differently and perceive different risk from these two cases, their risk attitudes towards trust and gambling may differ as well.

Table 1 Definition of three risk attitudes

Attitude	Definition
Risk averse	Expect value of prospect for sure is preferred to prospect
Risk neutral	Indifferent between expect value for sure and prospect
Risk seeking	Prospect is preferred to expected value of prospect for sure

2.2Trust

2.2.1 Determinants of trust

There's no doubt that trust decisions are always accompanied with risk. The word 'risk' has been frequently used in the definitions of trust. Sabel (1993) believes trust is to take risk with the trustee. Currall and Judge (1995) define trust as individual's behavioral reliance on another person under a condition of risk. The risk of trust is considered to be mainly derived from trustee. Although trustees' actions are uncertain to the trustors to some extent, they still choose to trust as there are certain factors which can influence trustor's trustworthiness assessment to the trustee. Flores and Solomon (1998) mentions that one's trustworthiness inspires trust. Nickel and Vaesen (2012) also confirms the determination of trust depends on a qualitative evaluation on trustee. From the social risk perspective, trustee's trustworthiness should affect trustor's risk assessment of trust. Especially when the trustee appears to be a totally stranger to the trustor, the trustor will rely on trustee's personal characteristics to

judge his trustworthiness (Croson and Buchan, 1999). Bohnet and Croson (2004) sum up several personal characteristics which can influence trustworthiness: gender, age, ethnicity and social distance.

Many scholars also point out people with certain demographic characteristics simply prone to trust others easier. First important character relates to gender. It seems that women are more likely to trust others than men (Croson & Buchan, 1999; Eckel & Grossman, 1998; Bohnet & Zeckauser, 2004). Croson and Buchan (1999) find women are in general more altruistic than men. The second important character relates to race. Black people seem to have lower level of trust on others than Whites (Smith, 1997; Uslaner, 2002). Moreover, variables like income, education level also matters (Frank et al, 1993; Snijder, 2001). In addition, the stake size matters too. People tend to be more risk averse to larger stakes, and it implies lower trust (Stenman et al, 2005).

2.2.2 Measurement of trust

Trust can be measured in a number of ways. Date back to early stage, the form of scale was usually used by scholars to measure trust. In the paper of Wrightsman (1964), a so called 'Trustworthiness Subscale of the Philosophies of Human Nature Scale' is designed for the measurement. The scale consists of 14 items and focus on measure humans' universal recognition to trustworthiness. Through this scale, Wrightsman found that female owns more positive outlook to trust than male. Couch

(1994) prior designed a trust inventory scale to measure together global trust and relational trust. Global trust refers to humans' generalized trust to good and evil of human nature. Relational trust refers to humans' specific trust level under specific circumstances. Jones and Burdette (1994) designs an interpersonal betrayal scale to measure trust, this scale contrasts in previous scales as it measures trust indirectly from the perspective of betrayal. It measures individuals' betrayal tendency to other people includes strangers, friends and families.

Until 1980s, along with the development of game theory, more and more scholars began to use the form of game to measure trust, and it is called the trust game. Trust game is evolved from Prisoner's Dilemma. It measures trust level through observing the occurrence frequency of cooperation in the game between 2 players. Nowadays, trust game has been revised to various models. The most classic model is designed by Berg et al. (1995) and it can be viewed as an extension form of the dictator game. Firstly, the game starts with a dictator who decides whether to split his initial endowment (money) between himself and another partner A. If he decides to split, then A receives the split amount times three in total. In this case, A will then decide whether to give a portion of money back to the dictator to honor his trust. Another familiar trust game model is introduced by Dasgupta (1988) and Kreps (1990), it is called the binary-choice trust game. The game includes two players with two subgames, they make choice sequentially. That is to say, both players are decision makers. Considering given payoffs under each choice, player 1 initially choose

whether to trust, and then it's player 2's turn to choose whether to honor the trust. In order to study whether the decision made by someone to trust is equivalent to taking a risky bet, it is better to construct a decision making situation for our observation in the first place. Compare to trust scale, trust game is more appropriate for us to construct such a situation. Hence in this paper we will use trust game to conduct related research observations.

3. Experiment Design

3.1 Introduction of Experiment Models

In our research, we aim to investigate whether the decision made by someone to trust is equivalent to taking a risky bet, or simply say gambling. The basic method is conducting experiments to compare people's risk attitude and tolerable risk level between trust and gambling. If it can be proved that most experiment participants hold similar risk attitudes and tolerable risk levels in both trust and gambling cases, we can then conclude that trust is equivalent to gambling. In order to make the experiment results comparable, we need to make sure that similar decision making propositions or experiment models are constructed for these two cases in the experiments. In the case of trust experiments, we pick the binary-choice trust game (see fig 1) as our trust experiment model, other than the classic trust game model. There are two reasons: firstly, it can simplify our data collecting process. In the binary-choice trust game, payoffs under each choice could be set by us, thus the

payoffs stay constant for every participant in the game. In this paper, it is not our research point to elicit participants' trust level by observing their different given amounts of money. We emphasize to observe after knowing the possible payoffs under each choice, how the existence of player 2 as another decision maker influences player 1's decision to trust. Secondly, the binary-choice trust game model can be revised and further adapted to gambling experiments. The only thing we need to change is to replace player 2 by nature and remove player 2's relevant payoffs. We call it the gambling experiment model (see fig 2). In this way, we ensure that all other conditions in the trust case could stay similar with the gambling case. Since the experiment model for trust is in general similar to the experiment model for gambling, the observation data under two cases can be preliminarily comparable. Figure 1 demonstrates a binary-choice trust game model paradigm. Figure 2 demonstrates a gambling model paradigm.

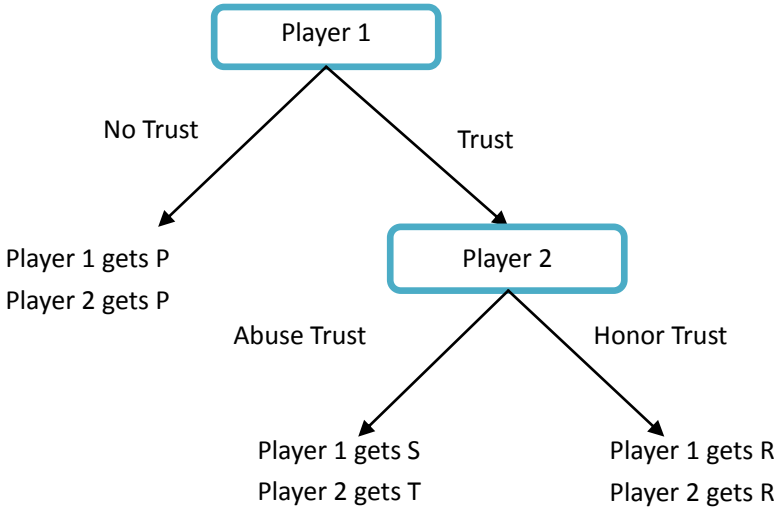
In addition to gambling and trust game model, another experiment model named the risky dictator game model is added in our research. Figure 3 demonstrates a risky dictator game model paradigm. Although the gambling model already looks similar to the trust game model, they do have one difference that can hardly be ignored. In gambling there's only one player, so possible payoffs just go to that player. But in the trust game, another player is involved and possible payoffs go to two players. This difference may exert influence to the results of our experiments. Therefore, we need to add a risky dictator game model to help balance the difference. The risky dictator

game could reproduce a player 2 apart from a trust situation (Bohnet & Zeckhauser, 2004). Actually, the risky dictator game is a revised gambling game. It's a different form of gambling and it's fully comparable to trust game. In the risky dictator game, Player 1 (decision maker)'s payoff is decided by nature, just like gambling. The only difference is Player 1's choice of quit or play affects another player (player 2)'s payoffs as well. But player 2 is only a recipient, he makes no decision. Therefore, in experiment we actually have two gambling games: normal gambling and risky dictator game.

In all three paradigms, the possible payoffs for player 1 stay the same. However, compare with gambling and risky dictator game, player 2 in the trust game is a decision maker as well as player 1. He has right to decide which outcomes should happen: good or bad. The probability of good or bad outcome in Gambling and risky dictator game is decided by nature, but the probability of good or bad outcome in trust game is decided by another person, in this case player 2. From the perspective of probabilistic risk, the risk under all three cases for player 1 should stay similar. Because firstly player 1's possible payoffs are the same in all three games. Secondly, the probabilities of good or bad outcome are all uncertain to player 1 in three games too. It doesn't matter who made the decision, nature or player 2. The probability should be anyway stochastic. If player 1 cares only about his own payoff, his decision under all three games should stay the same as well. Yet, from the perspective of social risk, the situation under trust game is bit different for player 1.

In trust game, player 1's possible payoffs are determined by player 2. The risk player 1 needs to bear is not stochastic anymore. It may be influenced by certain social factors. For instance: betrayal, compare mindset with player 2's payoffs. It's social risk. Snijders and Keren (1998) doesn't mention the social risk concept in their paper, however they do noticed a fact that player 2's possible payoffs may influence player 1's trust decision. They name it temptation and calculate it by take the ratio (T-R)/(R-S).

Figure 1 Binary Choice Trust Game



Note: derived from Snijders and Keren (1998)

Figure 2 Gambling

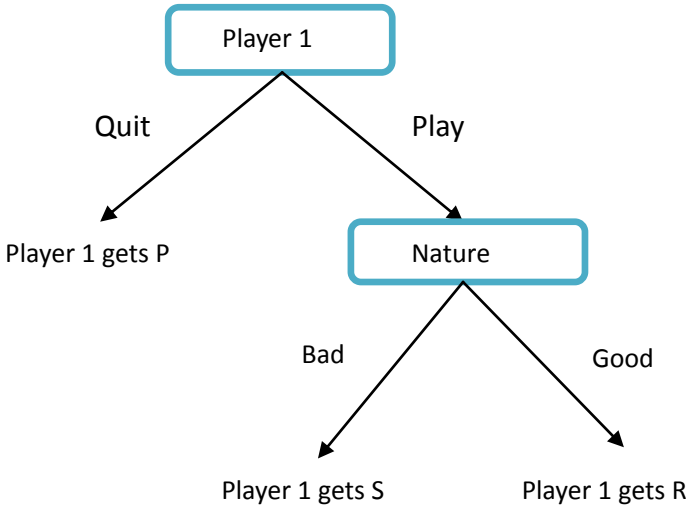
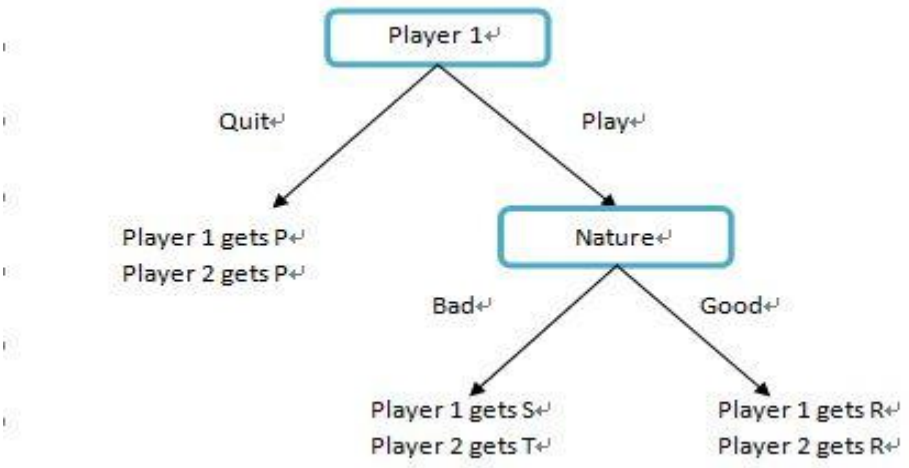


Figure 3 Risky Dictator Game



3.2 Experiment Form

Because of time and money limitation, we conduct experiments by using questionnaires. The questionnaire contains three parts: Scenario 1, Scenario 2, and two Appendixes. Under each scenario, there includes three games: a gambling game, a trust game and a risky dictator game. In scenario I, the possible payoffs are in small

amounts. In scenario II, the possible payoffs are 5 times larger than scenario 1's. We want to test besides small stake size, how larger stake size influence people's decision to trust and gambling. In two appendixes, we ask experiment participants' backgrounds including their age, ethic group, education level and so on. In addition, we ask which people looks trustworthy to them. We expect to investigate for different groups of people, how their trust groups different from each other.

The experiment participants are deemed as game players in the experiments. Each of them needs to play 6 games in total. In the case of gambling, they are the only player in the game. In the case of risky dictator game or trust game, they need to imagine as if there was another player S in the game. Player S is a totally stranger to them. In the questionnaire, each game's content and rule is described particularly. Players are required to read game description carefully. Next, they are given two options: to play the game or quit. Of course, different options correspond to different payoffs. If player quits the game, he gets a participation fee for sure. If player plays the game, he then has the possibility to win either a higher amount of money or a lower amount of money, according to a good outcome happened or a bad one. Table 2 summarizes the possible payoffs for all 6 games. In each game description, we tell players who decides the game outcome. In the case of gambling and risky dictator game, it's a computer who picks the outcome between a good one and a bad one. In the case of trust game, it's Player S who makes the decision. In order to show clearly how each game is played and also its possible game payoffs, we provide players a game

diagram for each. Finally, we ask every player to write down their MAPs for play the game. In other words, we ask players how large the probability of a good outcome happens should at least be for them to play the game rather than receive a payoff for sure. MAP stands for minimum acceptance probabilities. It can elicit people's risk acceptance level and their risk attitudes (Bohnet and Zeckerhauser, 2004). Hence, MAP is a very important indicator in our analysis. Assume the possible payoffs for players stay identical in risky dictator game and trust game, if players treat trust equivalent to a risky bet, their MAPs in all these games should be the same, or at least similar.

Table 2 Possible Payoffs summary

	Players' choice	Probability	Players' payoff	Payoff to another player S
Small Stake Size (Scenario 1)	Gambling			
	Play	P	20	
		1-P	5	
	Quit	1	10	
	Risky dictator game			
	Play	P	20	20
		1-P	5	35
	Quit	1	10	
	Trust game			
	Play	P	20	20
		1-P	5	35
	Quit	1	10	

	Players' choice	Probability	Players' payoff	Payoff to another player S
Large Stake Size (Scenario 2)	Gambling			
	Play	P	100	
		1-P	25	
	Quit	1	50	
	Risky dictator game			
	Play	P	100	100
		1-P	25	175
	Quit	1	50	
	Trust game			
	Play	P	100	100
		1-P	25	175
	Quit	1	50	

4. Results

We sent 80 questionnaires in total, either in the C-hall of Erasmus University or through Email. Among the 80 questionnaires, 30 of them have incomplete information. Eventually, we collected 50 valid questionnaires as our research data. In order to compare participants' MAPs between games, we conduct the analysis of mean, median and mode. Table 3 and 4 respectively show the results, one is for scenario 1 with the small stake size, and the other is for scenario 2 with the larger

stake size. Next, we sort those experiment participants by gender and ethic group, and compare their MAPs between two trust games. With respect to the ethic group, we only compare Caucasian group with Asian group. The reason is that these two groups are in the majority of 50 participants. Finally, we summarize based on our data what kinds of people may looks more trustworthy or win more trust. Following are the results.

Result 1 $MAP_G = MAP_{RD}$ in both scenarios

According to table 3 and 4, players' mean MAP of gambling almost equals to their mean MAP of risky dictator game, no matter the stake size is small or large. In order to be prudent towards this result, we use the Mann-Whitney U test to check whether the mean MAPs in these two games have any significant difference. In the small stake size scenario, the mean rank of gambling is 50.32 and the mean rank of risky dictator game is 50.68. The difference between gambling and risky dictator game is not significant at a 5% significance level (0.95>0.05). Same to the larger stake size scenario, the difference between gambling and risky dictator game is not statistically significant (0.59>0.05). Therefore we can conclude that compare to the normal form gambling, even though risky dictator game includes another player S and his payoffs, it doesn't affect people significantly. As long as the probabilities of outcome is decided by nature, people treat these two gambling similarly.

Results 2 $MAP_T > MAP_{RD}$ in both scenarios

It can be seen directly that there are big differences in mean MAPs between trust game and risky dictator game, no matter in small or larger stake size. Again, we use the Mann-Whitney U test to check whether the mean MAPs in these two games are indeed significantly different. In the small stake size scenario, the mean rank of trust game is 63.29 and the mean rank of risky dictator game is 37.71. The difference between trust game and risky dictator game is significantly different at a 5% significance level (0.00>0.05). In the large size scenario, the mean rank of trust game is 67.49 and the mean rank of risky dictator game is 33.51. The difference between trust game and risky dictator game is statistically significant (0.00>0.05). We have mentioned earlier that the risky dictator game can be considered as a revised gambling game. Compare to the normal form gambling, it's a kind of gambling which also benefits another player, though this player is and only is a recipient. Now we find players' mean MAPs in trust game are apparently higher than in risky dictator game in both scenarios. Thus, it can be concluded that the decision made by someone to trust is not equivalent to gambling.

According to expected value theory, as long as the probability of a good outcome is larger than 0.34, players should play all those 6 games. However, as is shown in table 3 and 4, players' mean MAPs are all higher than 0.34. Players are in general risk averse. Especially in trust game, players' mean MAPs are much higher than 0.34 and also higher than their mean MAPs in risky dictator game and gambling in both scenarios. Players seem to behave more risk averse in trust games.

Result 3 Mean MAP_s under large stake size scenario > Mean MAP_s under small stake size scenario

Comparison of table 3 and 4 shows that players' mean MAP_s in gambling, risky dictator game and trust game under large stake size scenario are higher than their mean MAP_s under small stake size scenario. Mann-Whitney U test again verifies this result. Players tend to be more risk averse with higher stakes. The MAP value that appears most often in trust game with large stakes is 0.8, while with small stakes the value is 0.55. Larger stakes seem to induce players to behave more cautious than small stakes in the trust game.

Table 3 MAPs in three games with small stake size

	Gambling	Risky Dictator Game	Trust Game
Mean	0.44	0.45	0.6
Median	0.4	0.4	0.6
Mode	0.4	0.4	0.55
N	50	50	50

Table 4 MAPs in three games with larger stake size

	Gambling	Risky Dictator Game	Trust Game
Mean	0.57	0.55	0.75
Median	0.56	0.56	0.78
Mode	0.5	0.55	0.8
N	50	50	50

Result 4 Females' mean MAP_s > Males' mean MAP_s in both scenarios

Asians' mean MAP_s > Caucasians' mean MAP_s in both scenarios

Table 5 illustrates players' mean MAP_s to trust game, which are sorted by their gender and ethic group. The results show that female players' mean MAP_s to play the trust game are larger than male players' in both small stake scenario and larger stake scenario. In addition, Asian players' mean MAP_s to play the trust game are larger than Caucasian players' in both scenarios. These two differences are statistically significant at a 5% significance level. That is to say, female players act more risk averse than male players in the trust game. On the other hand, Asian players tend to be more risk averse in the trust game than Caucasian players. The result is in line with Bohnet and Zeckerhauser (2004)'s research conclusion.

Result 5 Players' preferences towards trustworthy counterparts

In the questionnaire appendix, we ask players to choose their preferred trustworthy counterparts. There are in total 6 characters, we summarized the majorities' preferences for each character in Table 6. According to table 6, females and Caucasians seems to be more trustworthy to the experiment participants. In addition, people with higher education level and wealth level looks more trustworthy as well. Other than those, it is worth to mention the study specialty character. Among the 50 experiment participants, 13 of them pick people who study engineering as a trustworthy character. Except for engineering, 9 participants pick mathematics. It seems that the science based study is a trustworthy character to our participants.

However, it's surprising to find that nobody pick the economics study as a trustworthy character.

Table 5 MAPs sorted by gender and ethic group in trust game

	Small stake size	Larger stake size
Male		
Mean	0.52	0.72
N	22	22
Female		
Mean	0.66	0.8
N	28	28
Caucasian		
Mean	0.56	0.73
N	24	24
Asian		
Mean	0.62	0.76
N	17	17

Table 6 Players' preferred trustworthy characteristics

Character	N
Age	
Between 35-60	37
Gender	
Female	29
Ethic group	
Caucasian	35
Education level	
Undergraduate and above	21
Study specialty	
engineering	13
Wealth level	
4	31

5. Conclusion

Stephen Covey once said: “Trust is the glue of life”. It is not only a kind of public ‘social capital’, but also one of individual’s important intangible assets. In a society with high level of trust, the possible organization costs and transaction costs can be relatively decreased. People can expect more unhindered social lives and more prosperous economy. Therefore, it’s very meaningful to understand trust and its relative issues. Trust relations involve risk, thus many people tend to equate trust to a risky bet. However, based on the social risk concept, we argue that the risk constructions between trust and a risky bet are different. A risky bet contains solely probabilistic risk, but trust as a social behavior contains social risk. Hence, in this paper we investigate whether the decision made by someone to trust is equivalent to taking a risky bet. We are also interested in finding which human characteristics may have influence on trust.

In conclusion, the results show that the MAPs between trust game and two gambling games are significantly different. People actually do not treat trust as same as a risky bet. In addition, we found that male or Caucasian are relatively easier to trust strangers than female or Asian. What’s more, the experiment results show that female or Caucasian looks more trustworthy to people. Same to people with high education level and high wealth level, they receive more trust from people. However, it’s surprising to find that people whose study special is economics at school become a distrust indicator in our research.

6. Limitation

There are few limitations in our research. First and the foremost, our sample population is small. We only collected 50 valid data during the experiments, thus the experiment results may not be widely representative. In fact, the larger the database is, the more reliable the results should be. Secondly, our sample population is not very diversified. The experiments are conducted mainly at university or among friends and relatives, thus the sample population diversity is limited. And it blocks some of our research conclusions. For example, because only 9 of 50 experiment participants are Latinos or Africans, it's hard for us to draw a conclusion on their trust tendency in this paper. In order to deepen the research on different demographic groups' trust levels, more balanced and diversified sample population is required. Last but not the least, use questionnaire as a research instrument in our research has weak points. Because of time and money limitation, we use questionnaire to collect research data. However, results derived from questionnaire may be biased. Questionnaire requires people to read and answer questions, so participants may feel restricted and frustrated. Actually, the best experiment method for our research is to let everything go real. It's better to create real gambling, risky dictator game and trust game situations for players and invite them to actually play those games, to feel the win and loss. In such way, we can expect more powerful and reliable results.

Questionnaire

Scenario 1

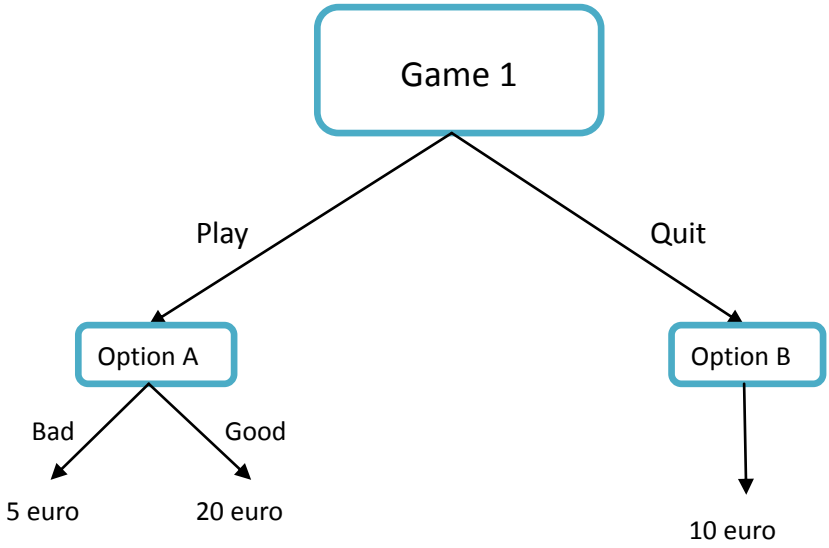
Game I

Suppose now you are being invited to play a game. The game is played by one single player and in this case it's you. It consists of two possible outcomes: a good outcome and a bad outcome. These two outcomes are exclusive to each other which means only one of them will happen. Different outcomes bring you different payoffs. If Good outcome happens, you earn a reward of 20 euro. If Bad outcome happens you earn 5 euro. However you do not know which outcome will happen to you. The occurrence of the two possible outcomes is randomly determined by a computer.

Before the game really starts, you can freely choose either to play it or quit.

Option A: You would like to play the game. Thus your payoff will be either 20 euro or 5 euro. Your exactly payoff is determined by a computer.

Option B: You prefer not to play this game. You can quit immediately and earn 10 euro participation fee



The probability of a Good outcome under option A is P in this game. Please indicate how large should the P at least be for you to pick option A over option B (Example: if the probability of a good outcome is 0.1 in this game, you are willing to pick option A).

P =

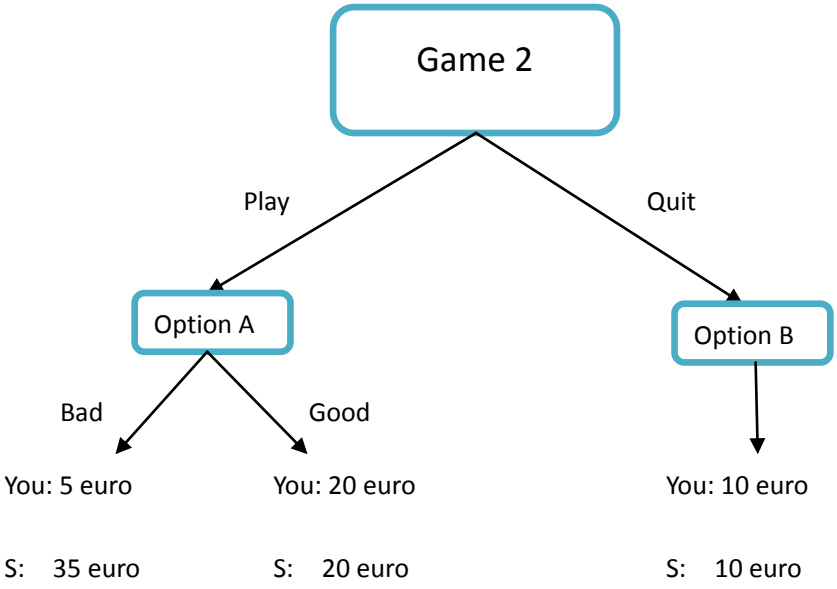
Game II

Suppose now you are being invited to play a game. The game is played by two players: you and another player S. The player S is a totally stranger to you. This game consists of two possible outcomes: a good outcome and a bad outcome. These two outcomes are exclusive to each other which means only one of them will happen. Different outcomes bring you and player S different payoffs. If Good outcome happens, you and player S both earn a reward of 20 euro. If Bad outcome happens, you earn 5 euro and player S earns 35 euro. However both you and player S do not know which outcome will happen. The occurrence of the two possible outcomes is randomly determined by a computer.

Before the game really starts, you play the role of dictator, which means you are the only player who has right to decide whether to play the game or not. Player S is merely a recipient and can do nothing but follow your decision.

Option A: You would like to play the game. Thus your payoff will be either 20 euro or 5 euro. Player S's payoff will be either 20 euro or 35 euro. Both of yours exactly payoffs are determined by a computer.

Option B: You prefer not to play this game. You can quit immediately and earn 10 euro participation fee. Player S has to follow your decision and quit this game as well. He can also receive 10 euro as participation fee.



The probability of a Good outcome under option A is P in this game. Please indicate how large should the P at least be for you to pick option A over option B (Example: if the probability of a good outcome is 0.1 in this game, you are willing to pick option A).

P =

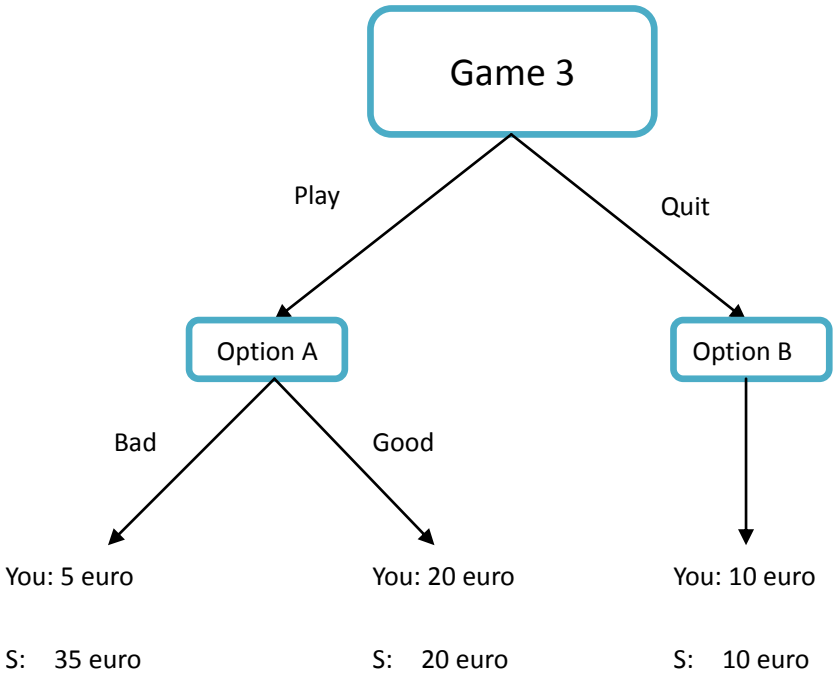
Game III

Suppose now you are being invited to play a game. The game is played by two players: you and another player S. The player S is a totally stranger to you. This game consists of two possible outcomes: a good outcome and a bad outcome. These two outcomes are exclusive to each other which means only one of them will happen. Different outcomes bring you and player S different payoffs. If Good outcome happens, you and player S both earn a reward of 20 euro. If Bad outcome happens, you earn 5 euro and player S earns 35 euro. In this game, player S can choose his preferred outcome. In other words, the occurrence of the two possible outcomes is determined by player S.

Before the game really starts, you play the role of dictator, which means you are the only player who has right to decide whether to play the game or not. Player S is merely a recipient and can do nothing but follow your decision.

Option A: You would like to play the game. Thus your payoff will be either 20 euro or 5 euro. Player S's payoff will be either 20 euro or 35 euro. Both of yours exactly payoffs are determined by player S.

Option B: You prefer not to play this game. You can quit immediately and earn 10 euro participation fee. Player S has to follow your decision and quit this game as well. He can also receive 10 euro as participation fee.



The probability that player S would choose 'Good outcome' under option A is P. Please indicate how large should the P at least be for you to pick option A over option B (Example: if the probability of a good outcome is 0.1 in this game, you are willing to pick option A).

P =

Scenario 2

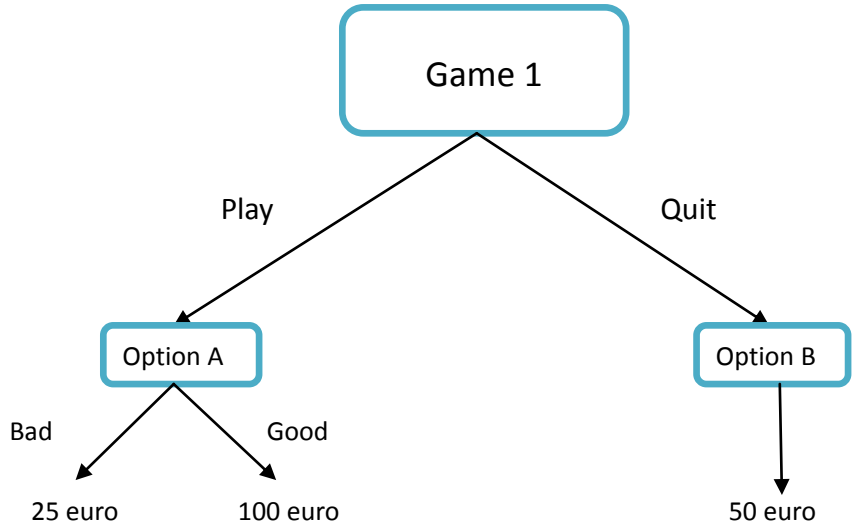
Game I

Suppose now you are being invited to play a game. The game is played by one single player and in this case it's you. It consists of two possible outcomes: a good outcome and a bad outcome. These two outcomes are exclusive to each other which means only one of them will happen. Different outcomes bring you different payoffs. If Good outcome happens, you earn a reward of 100 euro. If Bad outcome happens you earn 25 euro. However you do not know which outcome will happen to you. The occurrence of the two possible outcomes is randomly determined by a computer.

Before the game really starts, you can freely choose either to play it or quit.

Option A: You would like to play the game. Thus your payoff will be either 100 euro or 25 euro. Your exactly payoff is determined by a computer.

Option B: You prefer not to play this game. You can quit immediately and earn 50 euro participation fee.



The probability of a Good outcome under option A is P in this game. Please indicate how large should the P at least be for you to pick option A over option B (Example: if the probability of a good outcome is 0.1 in this game, you are willing to pick option A).

P =

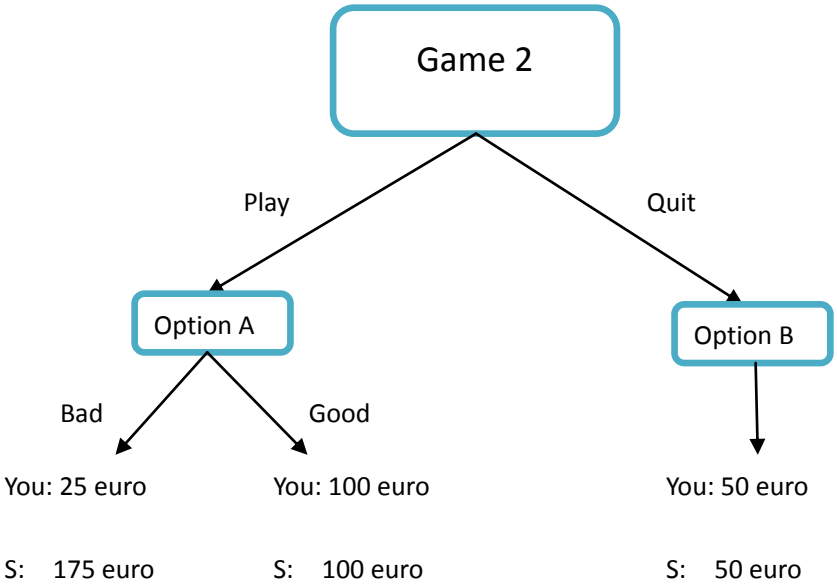
Game II

Suppose now you are being invited to play a game. The game is played by two players: you and another player S. The player S is a totally stranger to you. This game consists of two possible outcomes: a good outcome and a bad outcome. These two outcomes are exclusive to each other which means only one of them will happen. Different outcomes bring you and player S different payoffs. If Good outcome happens, you and player S both earn a reward of 100 euro. If Bad outcome happens, you earn 25 euro and player S earns 175 euro. However both you and player S do not know which outcome will happen. The occurrence of the two possible outcomes is randomly determined by a computer.

Before the game really starts, you play the role of dictator, which means you are the only player who has right to decide whether to play the game or not. Player S is merely a recipient and can do nothing but follow your decision.

Option A: You would like to play the game. Thus your payoff will be either 100 euro or 25 euro. Player S's payoff will be either 100 euro or 175 euro. Both of yours exactly payoffs are determined by a computer.

Option B: You prefer not to play this game. You can quit immediately and earn 50 euro participation fee. Player S has to follow your decision and quit this game as well. He can also receive 50 euro as participation fee.



The probability of a Good outcome under option A is P in this game. Please indicate how large should the P at least be for you to pick option A over option B (Example: if the probability of a good outcome is 0.1 in this game, you are willing to pick option A).

P =

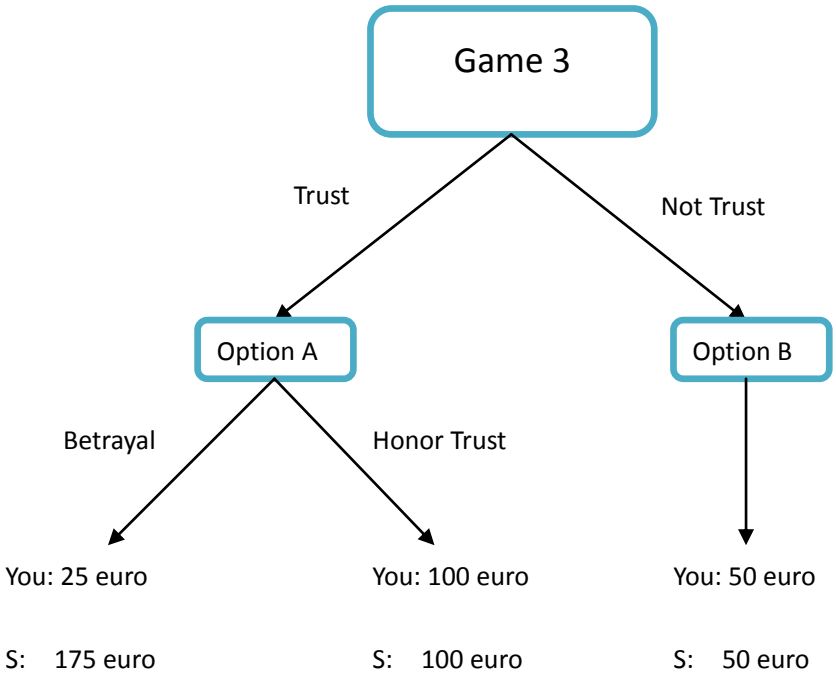
Game III

Suppose now you are being invited to play a game. The game is played by two players: you and another player S. The player S is a totally stranger to you. This game consists of two possible outcomes: a good outcome and a bad outcome. These two outcomes are exclusive to each other which means only one of them will happen. Different outcomes bring you and player S different payoffs. If Good outcome happens, you and player S both earn a reward of 100 euro. If Bad outcome happens, you earn 25 euro and player S earns 175 euro. In this game, player S can choose his preferred outcome. In other words, the occurrence of the two possible outcomes is determined by player S.

Before the game really starts, you play the role of dictator, which means you are the only player who has right to decide whether to play the game or not. Player S is merely a recipient and can do nothing but follow your decision.

Option A: You would like to play the game. Thus your payoff will be either 100 euro or 25 euro. Player S's payoff will be either 100 euro or 175 euro. Both of yours exactly payoffs are determined by player S.

Option B: You prefer not to play this game. You can quit immediately and earn 50 euro participation fee. Player S has to follow your decision and quit this game as well. He can also receive 50 euro as participation fee.



The probability that player S would choose 'Good outcome' under option A is P. Please indicate how large should the P at least be for you to pick option A over option B (Example: if the probability of a good outcome is 0.1 in this game, you are willing to pick option A).

P =

Appendix 1 Trustworthy characteristics

Given following personal characteristic options, please indicate which of them would increase your trust on strangers? Or, which of them would increase your possibility to choose option A under game III.

Age:
□younger than 35 □between 35 to 60 □older than 60

Gender:
□Male □Female

Ethnic group:

□African □Asian □Caucasian □Latino

Education level:

□senior high school □undergraduate and above □graduate and above

□PhD and above

Study specialty

□economics □business management □ law □mathematics
□medical science □ psychology □art □ engineering

Wealth level on a scale from 1 to 5:

1--------2--------3--------4--------5
Poor----------Rich

Appendix 2 Personal Information

Please fill in your personal information below.

What is your age? _____

What is your gender?

□Male □Female

Which ethnic group do you belong to?

□African □Asian □Caucasian □Latino

What is your education level?

□vocational school □undergraduate □graduate □PhD

What is your study specialty?

□economics □business management □ law □mathematics
□medical science □ psychology □art □engineering

Please indicate your wealth level on a scale from 1 to 5:

1--------2--------3--------4--------5
Poor----------Rich

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