



# Venice Summer Institute 2005

Workshop on “Economics and Psychology”

18 – 19 July 2005

Venice International University, San Servolo



V E N I C E  
I N T E R N A T I O N A L  
U N I V E R S I T Y

## **Social Preferences and Trust: Gender Matters**

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## **Social Preferences and Trust: Gender Matters<sup>^</sup>**

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### **Abstract**

This paper examines what motivates people to trust others. By trusting, principals make their agent better off but also expose themselves to the risk of being betrayed by their agent. In three experimental studies, we find that such concerns about the “other” do not matter for women: they perceive the decision of whether or not to trust basically as a risky choice and decide based on their expectations of trustworthiness. In contrast, men’s trust is also related to their social preferences: those who care about others’ well-being are more and those who fear betrayal are less likely to trust. In general, women behave more “rationally” than men in our trust games: they only care about own payoffs, base their decisions on relatively accurate expectations of trustworthiness and are hardly betrayal averse. Is “homo oeconomicus” female, after all?

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<sup>^</sup> This paper greatly benefited from discussions with Benedikt Herrmann and Stephan Meier. Financial support from the Women and Public Policy Program at the Kennedy School of Government and the Women’s Leadership Board is gratefully acknowledged.

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## **I. Introduction**

Trust pervades our lives and contributes to economic, political and organizational success. Generalized trust in others has been associated with economic growth (Knack and Keefer 1997, Zak and Knack 2001), stable democracy (Inglehart 1999), better functioning governments (LaPorta et al. 1997), social capital (Putnam 1993, 2000), a decrease in crime (Rosenfeld et al. 2001) and cooperation within and between organizations (Kramer and Tyler 1996, Ostrom and Walker 2003).

But why do people trust each other? And why might some demographic groups be more willing to trust than others? In this paper, we focus on what motivates men and women to trust others. We adopt a definition of trust proposed by a cross-disciplinary review as “a psychological state composing the intention to accept vulnerability based on positive expectations of the intentions or behavior of another” (Rousseau et al. 1998, p. 395). This definition combines the notion of trust as a belief, namely the expectation of trustworthiness (e.g., Rotter 1980, Hardin 2002) with the view that trust is a social motivation, namely the willingness to accept vulnerability (e.g., Kramer 1999, Mansbridge 1999). Mansbridge (1999) talks of “altruistic trust” and Kramer (1999, p. 573) argues that “trust needs to be conceptualized not only as a calculative orientation toward risk, but also a social orientation toward other people and toward society as a whole.”

This paper examines for men and women to what degree people perceive the decision of whether or not to trust another person as basically a decision under risk, based on their expectations of trustworthiness, and to what extent social preferences come into play. We distinguish between unconditional and conditional social preferences. A

person's (un-)willingness to assume vulnerability may be based on unconditional social preferences such as altruism (e.g., Batson 1991, Andreoni and Miller 2002) and inequity aversion (e.g., Loewenstein et al. 1989, Fehr and Schmidt 1999, Bolton and Ockenfels 2000) or due to internalized norms, i.e., the psychological benefits (costs) that an individual derives from being kind (unkind) to others (e.g., Andreoni 1990).<sup>1</sup>

Alternatively, willingness to be vulnerable may depend on the inferences a person makes about why an outcome came about or one's counterpart's intentions, a conditional social preference. The relevance of "causal attributions" has been noted by psychologists for a long time. Attribution theory models assert that people have a need to infer causes and to assign responsibility for why outcomes occur. Heider (1958) introduced the notion of causal inferences as critical cognitive processes and Buss (1978) and Kruglanski (1979) focused on the relevance of intentionality. In a seminal paper in economics, Rabin (1993) introduced intentions into game theory.

We use two approaches to measure the relevance of social preferences for trust. In Study 1, we examine what fractions of the variance in observed trust are due to social preferences, risk preferences and expectations of trustworthiness by measuring unconditional social preferences, attitudes to risk and expectations experimentally and then controlling for these three possible motivators of trust *econometrically*. Trust is measured by the amount sent in an anonymous, one-shot investment game (Berg et al. 1995), social preferences by the amount sent in a triple dictator game (Kahneman et al. 1986, Ashraf et al. 2004), risk preferences in a standard risky choice task (e.g., Eckel and Wilson 2004a) and expectations of trustworthiness by a simple question in an ex-post experimental questionnaire. If people perceived trust mainly as a decision under risk,

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<sup>1</sup> For summaries of the literature on social preferences, see Fehr and Schmidt (2002) and Meier (2004).

trust should be related to expectations of return and, possibly, their risk preferences.<sup>2</sup> If trust was mainly a social orientation, it should be related to social preferences.

In Study 2, we examine how robust our findings from Study 1 are with a different subject pool, executives instead of students, and in a different context, namely with pre-play communication instead of under anonymity. While cheap talk should not matter theoretically, a host of experimental evidence on prisoner's dilemma and public goods games suggests that it does (e.g., Bohnet and Frey 1999 and Camerer 2003 for a survey). The role of communication in the investment game has not been studied widely.

In Study 3, we use a different approach and control for risk preferences and expectations of trustworthiness by *experimental design*. We compare behavior in two different games to measure the relevance of conditional social preferences for trust. We use a binary-choice trust game (e.g., Camerer and Weigelt 1988) and an identical odds-and-payoffs binary-choice risky dictator game (Bohnet and Zeckhauser 2004). The only difference between the two games is that in the former, the agent of uncertainty is another person while in the latter, it is nature. We ask people how high the likelihood of receiving the "high payoff" resulting from trustworthiness (or a lucky draw in the risky dictator game) minimally has to be for them to be willing to take risk in these games. If people's willingness to take risk in the two games does not differ, they perceive trust as a decision under risk. If we find a difference in the willingness to take risk between the trust and the risky dictator game, this suggests that trust also has a social component.

Whether trust is mainly based on expectations of trustworthiness or social preferences has policy implications. If policy makers or managers wish to raise the level of trust in society or their organization, they need to know the determinants of trust. If

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<sup>2</sup> For the small amounts typically used in experiments, we expect risk neutrality (see, e.g., Rabin 2002).

trust is mainly a function of expected trustworthiness, they should focus on the level of trustworthiness and on beliefs about that level. In contrast, if trust basically is a social orientation, they should focus on fostering social preferences.

If they choose the wrong focus, policies may not only be ineffective but may even be counterproductive. Recent evidence suggests that arrangements increasing trustworthiness, such as contractual arrangements or penalties, may undermine the social motivation to trust (Bohnet et al. 2001, Fehr and Gächter 2003). Gambetta noted (1988: 219): “If other people’s actions were heavily constrained, the role of trust in governing our decisions would be proportionately smaller...” and Sitkin and Roth (1993: 376) observed that “legalistic remedies can erode the interpersonal foundations of a relationship they are intended to bolster because they replace reliance on an individual’s goodwill with objective, formal requirements.” The negative effect of extrinsic incentives on intrinsic motivation is known as “crowding-out” in economics and has been documented in a wide set of cases (e.g., Frey 1997, Frey and Oberholzer-Gee 1997, Frey and Jegen 2001).

Policy makers and managers should also be interested in the heterogeneity in motivation. If there are differences in the motivation to trust between demographic groups, group-specific policy interventions are asked for. A sizable number of earlier studies on trust examines demographic differences in behavior but does not analyze the underlying motivations. The evidence on gender and trust is mixed. Ashraf et al. (2004) survey the evidence. Why we find women more willing to trust than men in some of the cases but not in others is still an open question.

Our findings suggest a clear gender pattern in the motivation to trust: women perceive trust as a risky choice. They base their decision of whether or not to trust on

expectations of trustworthiness. When we hold expectations constant by design, women behave in a trust game like they behave in a risky dictator game. Men, in contrast, respond more strongly to the social component of trust. Their trust is related to both, their expectations of trustworthiness and their willingness to be vulnerable. Men are less likely to take risk in a trust game than in the risky dictator game. They care about how outcomes come to be and dislike being betrayed by another person more than losing in a lottery.

Our gender findings add to a recent stream of studies that examine the motivation to trust but do not focus on the gender heterogeneity in motivation (e.g., Dufwenberg and Gneezy 2000, Cox 2004). Recent work by Bohnet and Zeckhauser (2004) suggests the relevance of conditional social preferences for trust, Hong and Bohnet (2005) focus on the relationship between status and trust and Bohnet et al. (2005) find that the motivation to trust strongly differs between Islamic and Western countries. In addition to our gender findings and in contrast to earlier work, we combine various approaches to measuring the relationship between social preferences and trust, including different games, techniques and subject pools in different parts of the world. The possibility of examining the robustness of a finding under different conditions is one of the advantages of running experiments.

The paper is organized as follows: Part II introduces the experimental designs, Part III presents the results, Part IV compares our results with theories on gender and Part V concludes.

## II. Experimental Design

Study 1 examines behavior and motivations in the investment game with students in three countries, Russia, South Africa and the United States. It investigates whether trust behavior is (also) related to unconditional social preferences. Study 2 builds on the design of Study 1 but focuses on a different context and subject pool, namely executives. Study 3 focuses on a binary-choice trust game conducted in Kuwait and the United States. It examines whether a person's willingness to accept the vulnerability inherent in trust is related to how the vulnerability was produced, by another person or by nature. The three studies build on joint work with Nava Ashraf and Nikita Piankov (Ashraf et al. 2004), Yael Baytelman (Bohnet and Baytelman 2005), Benedikt Herrmann and Richard Zeckhauser (Bohnet et al. 2005) and Kessely Hong (Hong and Bohnet 2005).

### Study 1

In our investment game, a first mover, the principal, received an endowment  $S$ , of which she<sup>3</sup> could send any amount  $X$  to her agent. Any amount sent was tripled by the experimenter, such that the agent received  $3X$ . The agent could return any amount  $Y$  to her principal. Final payoffs were  $(S-X+Y)$  for the principal and  $(3X-Y)$  for the agent. In addition to indicating how much they wanted to send, we also asked principals to indicate what they expected to get back. In our experiments,  $S=100CU$  (currency units).

To examine the role of social motivation, a principal also played a triple dictator game. The only difference to the investment game was that the game ended after the principal's decision. Thus, final payoffs were  $(S-X)$  and  $(3X)$ . To measure a principal's risk preferences, principals also participated in a risky choice task. They had to indicate

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<sup>3</sup> For ease of understanding, we refer to the principal as "she" and the agent as "he."

for six risky choice tasks whether they preferred the gamble or the certain amount. They could choose to bet on a 50%-chance of winning 300CU or nothing or to accept a certain amount that varied between 40CU and 140CU in the six choice tasks. The more people prefer the sure thing to the gamble, the more risk averse they are. Finally, subjects were asked how much they expected to get back in the investment game.

Thus, the experiment consisted of four parts, the investment game (including the trustworthiness question), the triple dictator game, a risky choice task and a short questionnaire on demographic characteristics.<sup>4</sup> The order in which the games were played was varied. Half of the subjects played the investment game first, the other half the triple dictator game. The fact that subjects would participate in several tasks was common knowledge. In an introduction page, subjects were informed that the experiment consisted of four parts, that they would receive the instructions for each part separately, that they would remain anonymous during the experiment (i.e., identified by code numbers), that they would be paired randomly for each decision and that they would be paid according to a special procedure.

The endowment  $S$  was 100CU (currency units) in our experiments. Adjusted for purchasing power parity, this meant  $S = \$100$  in the United States,  $S = 1000$  Roubles in Russia and  $S = 400$  Rands in South Africa.<sup>5</sup> Subjects were paid randomly at the end of the whole experiment; they did not learn about any results during the experiment. More specifically, for the investment game and the triple dictator game a principal and an agent

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<sup>4</sup> Each part of the experiment was conducted like a “standard experiment”: The instructions for each part, consisting of one decision form, were distributed one at a time. After subjects had read the instructions, the experimenter read the instructions aloud and reminded subjects to include their identification number on the top of the decision form. Participants were then invited to ask questions in private (hardly any questions were asked). Subjects then had to write down their decision, fold the decision form and put it into a box, which was passed around. Completed decision forms remained in the box in front of the room until the end of the experiment. The same procedure was repeated for each part.

<sup>5</sup> We chose denominations such that the monetary incentives relative to subject income and living standards were approximately equal across countries. The experiments were conducted in 2001. The average lunch in the student cafeteria cost \$5 in Boston, 50 Roubles in Moscow and 20 Rands in South Africa.

per game were randomly selected and matched at the end of the experiment to be paid according to their choices in the corresponding game. For the risky choice task, one person was randomly paid according to his or her choice.<sup>6</sup>

The experiments were conducted with 359 college students: 118 students from universities in Moscow, Russia,<sup>7</sup> 129 students from universities in Capetown, South Africa, and 112 students from universities in Boston, United States. We ran four experimental sessions in each country, two with the risky dictator game first and two with the investment game first. The experimenters who ran experiments in Russia and in South Africa also ran one session in the United States. No experimenter effects could be found in the US.<sup>8</sup> The experiment took about one hour and thirty minutes. A show-up fee of 10CU was paid and subjects earned on average an additional 22CU.

## **Study 2**

We used basically the same protocol as in Study 1. Subjects also participated in both an investment and a triple dictator game for 100CU and we elicited expectations of trustworthiness after they had made their decisions. The main difference in design was that principals were allowed to talk to their agents for five minutes before deciding how much to trust them. In addition, we did not measure attitudes to risk, mainly to save time.

The experiments were run with 780 senior executives participating in executive programs at the Kennedy School of Government. 63 percent of our participants came

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<sup>6</sup> More specifically, the decision forms for each part were shuffled separately. A (blind-folded) experimental aide then picked one or two of the folded forms out, depending on the part of the experiment. Recent evidence supports the validity of the random-choice payments method. Laury (2002) found that subjects take (high) stakes at their stated value and do not scale-down to account for random payment.

<sup>7</sup> One of the experimenters fluent in both English and Russian translated the instructions into Russian. They were back-translated by an external translator not familiar with this research.

<sup>8</sup> In order to ensure equivalence of experimental procedures across countries, we followed Roth et al. (1991) on designs for multinational experiments and controlled for experimenter, currency and language effects to the best of our ability.

from the US, 25 percent from Europe and the rest from a variety of countries in Asia and Latin America. 70 percent were white and they ranged in age from 35 to 62 years, with the median age being 44. We ran the experiments in executive programs; thus, in contrast to our student subjects, these participants knew each other before they participated in the experiment. Finally, while we used the same random payment scheme as above, we did not pay any show-up fees.

### **Study 3**

Study 3 significantly differs from the previous two studies. We compared behavior in two different games, a binary-choice trust game and a binary-choice risky dictator game, in Kuwait and the United States. The only difference between the two games was that in the latter, it was not the second mover who decided whether to reward trust or not but nature. In the trust game (risky dictator game), the principal decided between a sure outcome and trust (a lottery). If she chose the sure thing, she and her agent both received (S,S). If she was willing to trust (gamble), both either ended up with a moderate payoff exceeding S (M, M), or the principal received a lower payoff than if she had not trusted (accepted the lottery) and the agent the highest possible payoff, (L,H). Thus, for the principal,  $M > S > L$  and the agent,  $H > M > S$ . In the trust game, the final outcomes after trust were determined by the agent. If he rewarded trust, both earned the moderate payoffs. If he betrayed trust, he received the highest and the principal the lowest possible outcome. In the risky dictator game, nature determined final payoffs. In our experiment,  $S=10CU$ ,  $M=15CU$ ,  $L=8CU$  and  $H=22CU$ . A risk neutral principal only caring about her own payoffs would be indifferent between the sure outcome and the gamble for  $p'=0.29$ .

In each decision situation, we elicited principals' *minimum acceptable probabilities (MAPs)* of earning M for which they would just prefer the gamble to the sure payoff S. We compared a principal's MAP with the likelihood of trustworthiness in a given session,  $p^*$ . We conducted the trust experiments first and then used the average  $p^*$  for the risky dictator games. In the latter, we informed principals that prior to the experiment we determined  $p^*$ , the probability of receiving M. If their MAP was higher than  $p^*$ , they earned M. However, they played the gamble with probability  $p^*$  if their MAP was lower than or equal to  $p^*$ . The higher one's MAP, the higher  $p^*$  must be for the person to be willing to gamble instead of choosing the sure outcome. Thus, the less one likes one or both outcomes of the lottery, the higher will be one's MAP. This mechanism is incentive compatible, since individuals cannot affect the probability they receive in the lottery.

If the MAPs in the trust game exceeded the MAPs in the risky dictator game, we took this as evidence for social preferences. Our expectation was that it is fundamentally different to trust another person than to rely on a random device that offers the same outcomes: people are averse to being betrayed. Note that the difference between the MAPs in the trust game and the risky dictator game produces a net effect, based not only on concerns about betrayal but also about trustworthiness. While a person may dislike experiencing betrayal, she may also enjoy experiencing trustworthiness. As we expected betrayal cost to outweigh trustworthiness benefits, Bohnet and Zeckhauser (2004) referred to this as betrayal aversion.

We ran the experiments with 282 students in the US and 158 students in Kuwait. Subjects were identified by code numbers, were anonymous to other players, and were randomly assigned to the role of principal or agent and randomly matched. The payoffs

were presented to subjects in a matrix form with neutral terminology. Payoffs were given in points, which were converted 1 point:0.25 Kuwaiti Dinar and 1 point:1 US dollar at the end of the experiment. Our goal was to keep incentives constant across countries. We used the hourly wage of a research assistant as guideline. Subjects earned a 10CU show up fee and received on average an additional 13CU for an experiment that took approximately 45-60 minutes.

### **III. Results**

We present the results of each study in turn.

#### **Study 1**

On average, women (N=83) sent 41CU and men (N=96) 47CU in the investment game. Both, women and men, who sent a positive amount, expected the agent to return 90 percent of the amount sent to them. Thus, on average, principals did not expect to make money in this game. While we want to focus on principals' behavior here, we also shortly summarize what agents did. On average, women returned 77 percent and men returned 82 percent out of the amount sent. We did not observe any significant gender differences in agent behavior or motivation. Thus, on average, our principals were slightly too optimistic about returns.

In the triple dictator game, women sent 22CU and men 26CU on average. In our risky choice task, women chose the safe option in 4 out of 6 cases; men in 3.5 out of 6 cases. None of these differences is significant.<sup>9</sup> In fact, Figure 1 illustrates for the investment game that there were basically no gender differences in the distribution of choices.

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<sup>9</sup> Unless noted otherwise, we use the non-parametric Mann-Whitney U test to examine differences in means. We report as significant if  $p < 0.05$ . There are no cross-country differences in trust or giving in the dictator game (see Ashraf et al. 2004).

Figure 1: Distribution of choices of men and women in the anonymous, one-shot investment game

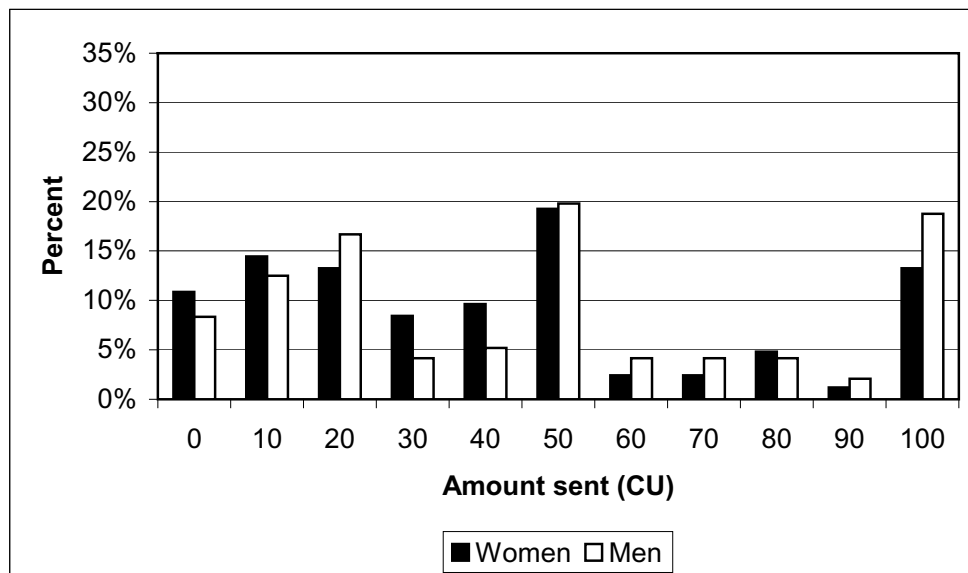


Figure 1 suggests considerable variation in behavior. We run regressions to examine what might account for this variation for women and men. Columns 1 and 4 in Table 1 show that expectations of trustworthiness, measured by the fraction expected back out of the amount the agent received,  $Y/3X$ , were strongly related to women's and men's trust. In Columns 2 and 5, we add the amount given in the triple dictator game to the regression. The amount women sent in the investment game was not related to the amount they gave in the triple dictator game. In contrast, for men, triple dictator game giving and amounts sent in the investment game were strongly correlated. For every CU given in the triple dictator game, men gave 0.65CU in the investment game. Adding triple dictator game giving hardly helps in accounting for the variance observed for women but almost doubled the R-squared for men.

In Columns 3 and 6, we include risk preferences and a number of controls, namely the order in which the games were played and the countries in which the

experiments took place (we included South Africa and Russia). Risk preferences were not significantly related to trust or to the country in which the experiments were conducted. In fact, we found were little cross-country variation in behavior and motivation. American subjects sent 42CU in the trust game and 20CU in the triple dictator game, Russian principals 49CU and 25CU and South African principals 43CU and 27CU, respectively. The inclusion of these variables affects our results only little. If anything, the gender differences in motivation increase, with expectations of trustworthiness affecting women's trust decisions significantly more than men's and triple dictator game giving affecting men's trust decisions significantly more than women's.

Table 1: Determinants of trust: Amount sent in the anonymous, one-shot investment game (OLS)<sup>10</sup>

	Women (1)	Women (2)	Women (3)	Men (1)	Men (2)	Men (3)
Expectations (Y/3X)	28.16 (4.61)**	26.83 (4.61)**	36.53 (4.44)**	26.66 (5.08)**	23.00 (4.51)**	17.87 (4.88)**
Amount sent in TDG		0.26 (0.18)	0.05 (0.16)		0.65 (0.13)**	0.69 (0.14)**
Risk aversion			0.96 (2.16)			-3.17 (2.04)
Order			Yes			Yes
Country			Yes			Yes
Constant	21.38 (5.05)**	15.91 (5.95)**	9.47 (10.72)	26.91 (5.58)**	12.45 (5.63)*	24.53 (10.83)*
Observations	73	73	65	86	85	73
R-squared	0.35	0.37	0.59	0.25	0.43	0.49

Standard errors in parentheses. \* significant at 5%; \*\* significant at 1%.

Study 1 provides first evidence that different motives matter for women's than men's trust. Women perceive the trust decision as a choice under risk, based on their

<sup>10</sup> The data is based on Ashraf et al. (2004).

expectations of trustworthiness. Expectations also matter for men but their trust is also related to how much principals care about others in the triple dictator game.

## **Study 2**

Women sent 62CU (N=170) and men 76CU (N=220) in the investment game with pre-play communication. Women expected to get back 1.24 times and men 1.42 times the amount sent in this version of the investment game. Thus, with communication, men sent more and expected back more than women. All principals expected to make money in this game. Female principals were slightly and male principals significantly too optimistic, with agents returning 1.1 times the amount sent on average. Women returned significantly less than men, namely 0.93 in comparison to 1.2 times the amount sent. In the triple dictator game, women sent 18CU (N=170) and men 32CU (N=220), again a significant difference. Thus, overall, men were more generous than women, whether they decided as principals, agents or dictators.

Both, trust and trustworthiness levels in Study 2 exceed the levels observed in Study 1. This may be due to cheap talk but it may also be due to the differences in subject pools. Bohnet and Baytelman (2005) ran the anonymous investment game with a smaller number of executives as well and found that women sent 49CU (N=69) and men 60CU (N=89) on average, suggesting that both men and women sent significantly more with than without communication. When we compare these results with Study 1, we find that executives sent slightly more than students (for a similar result, see Fehr and List 2004).

Table 2 presents the results of a regression analysis. In contrast to the earlier regressions, we use amounts expected back rather than proportions expected back to measure the impact of expectations. The results are robust to either specification. We use

both measures in this paper to demonstrate this. Note, however, that when we control for amounts expected back, this variable typically accounts for most of the variance in trust. Part of this is due to a mechanical correlation as principals can expect back more, the more they send. Even more surprisingly, we found that women's trust decisions were significantly more affected by their expectations of return but significantly less influenced by their unconditional social preferences than were men's, independent of which controls we included. In addition, European and American women tended to trust more than other women and white men tended to trust more than non-white male executives.

Table 2: Determinants of trust: Amount sent in the investment game with pre-play communication (OLS)

	Women (1)	Women (2)	Women (3)	Men (1)	Men (2)	Men (3)
Expectations (Y)	0.53 (0.02)**	0.53 (0.02)**	0.55 (0.02)**	0.38 (0.01)**	0.32 (0.01)**	0.36 (0.01)**
Amount sent in TDG		-0.04 (0.04)	0.02 (0.04)		0.17 (0.03)**	0.18 (0.03)**
Age			-1.81 (0.73)*			-1.03 (1.03)
White			1.66 (2.17)			9.33 (2.61)**
Europe			16.41 (4.79)**			0.31 (3.66)
USA			11.99 (4.28)**			-1.11 (3.13)
Constant		24.95 (1.82)**	14.20 (4.92)**		31.12 (1.74)**	28.50 (4.19)**
Observations	160	160	160	220	220	215
R-squared	0.76	0.76	0.78	0.62	0.68	0.69

Standard errors in parentheses. \* significant at 5%; \*\* significant at 1%.

Study 2 presents a similar picture as Study 1. Not only in an anonymous one-shot investment game with students but also in an investment game with pre-play

communication with executives, unconditional social preferences matter for men's but not for women trust. Women's trust is only based on their expectations of trustworthiness. This suggests that women perceive the investment game as an "investment decision" and decide based on their expectations of success while for men, additional social components come into play when confronted with the decision of how much to trust another person.

While indicative of gender differences in the motivation to trust, Studies 1 and 2 have a number of shortcomings. A priori, none of these should affect men and women differently—but we still want to note them here. First, Study 1 has in common with other papers examining the relationship between attitudes to risk and trust, that they seem hardly related (e.g., Eckel and Wilson 2004a). This is in stark contrast to a large theoretical literature crossing various disciplines, which expects there to be a strong relationship (e.g., Luhmann 1979, Ben-Ner and Putterman 2001, Cook and Cooper 2003). However, while they may indeed not be correlated, it may also be that we, as well as others, used a weak instrument to measure attitudes to risk (or trust, for that matter). Most notably, there is one important difference between a risky choice in a gamble and the decision of whether or not to trust, namely the presence of a second person in the trust game. While we control for principals' social preferences in the triple dictator game, risk-taking in the presence of an agent may still differ from risk-taking if final payoffs only affect oneself. To account for this more directly, we introduced the risky dictator game in Study 3.

Secondly, we elicited expectations of trustworthiness after principals decided how much to send their agent in the trust game. Our study has in common with other studies examining expectations that there is no right answer for how and when to elicit

expectations (e.g., Fehr et al. 2002, Eckel and Wilson 2004b). While many researchers provide incentives for accurate predictions, the evidence of whether such incentives matter is not conclusive. In both our studies, men's and women's predictions were slightly too optimistic.

As most others, we also chose to elicit expectations after the trust choice to have "clean" observational data. At the same time, what people reported they expected back may just be ex-post justifications for behavior. If women have more of a need for consistency than men, this could have contributed to the observed gender pattern. However, we do not know of any evidence suggesting gender differences in consistency preferences.

Study 3 tries to avoid these pitfalls and holds the riskiness of the decision task constant across games and controls for expectations by experimental design.

### **Study 3**

Table 3 shows that both men and women in Kuwait and the United States were more likely to take risk in the risky dictator game than in the trust game. However, the difference in MAPs between the trust game and the risky dictator game is about twice as large for men than for women in the two countries. In Kuwait, the difference is 0.28 for men and 0.13 for women and in the US, it is 0.19 for men and 0.08 for women. Comparing these gender differences, we find that men cared significantly more about how the outcome came to be than women, or put differently, men were more betrayal averse than women ( $p < 0.05$  in Kuwait and  $p = 0.08$  in the US).

Table 3: MAPs in the risky dictator and the trust game<sup>11</sup>

	Risky Dictator Game	Trust Game
American Women	0.44 [38]	0.52 [55]
American Men	0.32 [48]	0.51 [50]
Kuwaiti Women	0.40 [15]	0.53 [24]
Kuwaiti Men	0.46 [25]	0.74 [15]

A number of additional differences are noteworthy: American men were significantly less risk averse in the risky dictator game than American women or Kuwaitis. In fact, as  $p'$ , the probability of  $p$  that makes a risk neutral principal who only cares about her own payoffs indifferent between the sure outcome and the gamble was 0.29, American men were basically risk neutral while everyone else was significantly risk averse in this game. Kuwaiti men demanded significantly higher MAPs than Kuwaiti women and Americans in the trust game.

We conclude that women are more likely than men to perceive the trust decision as a risky choice. While both, men and women, experience some betrayal aversion when confronted with another person rather than nature, men are significantly more affected by it than are women. Study 3 provides rather strong evidence for gender differences in the relevance of social preferences for trust. In contrast to Studies 1 and 2, we focus on conditional social preferences here.

#### IV. Discussion

By trusting, principals make their agent better off but also expose themselves to the risk of being betrayed by their agent. Such concerns about the “other,” our findings

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<sup>11</sup> This data is based on Bohnet, Herrmann and Zeckhauser (2005) and Hong and Bohnet (2005).

suggest, mainly matter for men's trust decisions. In contrast, women perceive trust more like a gamble: they trust based on their expectations of trustworthiness. The net effect of these differences in motivation on trust is unclear. Unconditional social preferences such as altruism or warm-glow altruism should lead men to trust more than women. At the same time, men's more pronounced concerns about betrayal would induce them to trust less than women.

In addition, women and men may differ in their attitudes to risk. Generally, women have been found to be more risk averse than men—although most experiments examining attitudes to risk have been conducted in Western, developed countries (see Croson and Gneezy 2004 for a survey). In Study 3, we also find that American women are significantly more risk averse than men in this context. However, this gender difference does not apply to Kuwaitis. Thus, if women were in fact more risk averse, they would be less likely to trust than men. Finally, women and men may have different expectations of trustworthiness. Male executives were significantly more optimistic than female executives in Study 2 but we did not find any significant gender differences for the students of Study 1. In other tasks, Western men have generally been found to be more optimistic or “over-confident” than Western women (Croson and Gneezy 2004 for a survey). Accordingly, we might expect men to be more willing to trust.

Overall, it is unclear whether men or women should be more likely to trust, consistent with the mixed evidence we have got. Most studies do not suggest any gender differences in trust behavior (e.g., Croson and Buchan 1999, Ashraf et al. 2004, Fehr et al. 2002). Buchan, Croson and Solnick (2003) find men to be more trusting than women while Eckel and Wilson (2004b) report women to be more trusting than men when shown

a photo of their counterpart but less trusting when given only information about their counterpart's gender and preferences.

What seems obvious, based on our research, is that women's and men's trust is motivated differently. If social planners or managers want to increase trust, as numerous recent books such as "Restoring Trust in American Business," (Lorsch et al. 2005) suggest, they would have to focus on changing the levels of trustworthiness and expectations thereof for women but also highlight the intrinsic benefits from trusting for men. Books such as "The Cheating Culture" (Callahan 2004), which remind the reader that the recent corporate and religious violations of trust may not be exceptions but just represent the tip of the iceberg may destroy women's trust in others while socially oriented men may still derive some intrinsic benefits from trusting.

Finally, we may wonder why we see gender differences in the motivation to trust. While our experiments show that there are substantive differences, they do not shed any light on what the reasons might be. Thus, we only offer some preliminary thoughts here. In many ways, our results suggest that women behave more "rationally" in the trust game than men—they mainly focus on own and hardly care about others' payoffs, their expectations are more accurate and less optimistic than those of men and they care less about others' intentions than do men. That men experience larger costs from betrayal than women is a possible explanation of the puzzling finding in public goods games with punishment that men are more likely than women to punish free-riders in one-shot games or in the very last round of repeated games (e.g., Herrmann 2004, p. 66, Egas and Riedl 2005). While women seem to use punishment to "educate" free-riders, men seem to also use it to take revenge.

Is “homo oeconomicus” in fact female—in contrast to what feminist theories of economics have assumed so far? (e.g., Ferber and Nelson 1993) That women might be more rational than men is not new to the literature in anthropology and evolutionary biology (e.g., Blaffer Hrdy 1999). However, our social preference findings are not only consistent with a “nature” hypothesis but also with explanations based on “nurture.” Theories on status and power, for example, suggest that men, or more generally people belonging to higher status groups, are more likely to derive a paternalistic warm glow from trusting others. Such generosity is described as a means for high status benefactors to preserve their own status (e.g., Swim and Campbell 2003). At the same time, trusting implies ceding power over own outcome to the agent and accepting some degree of submission to another’s will. The more powerful, men, dislike being vulnerable more than the less powerful, women (e.g., Mainiero 1986, Lips 1991).

## **V. Conclusions**

Social preferences, conditional as well as unconditional, matter for men’s but hardly for women’s interpersonal trust. In this paper, we measure the relevance of social preferences for men’s and women’s trust in three studies. Study 1 focuses on a one-shot, anonymous investment game between students in three different countries, South Africa, Russia and the United States. It shows that independent of country of origin, our female subjects’ trust is accounted for by their expectations of trustworthiness. Male students, in contrast, trust more, the more optimistic they are about their counterpart’s trustworthiness but also the more they care about others (as measured in a triple dictator game).

Study 2 replicates the Study 1 design but allows people to talk to each other before playing the game. In addition, it uses a different subject pool, namely executives

from different parts of the world. Women are again not affected by their social preferences when they decide how much to trust another person—men are. Using a different design, Study 3 sheds further light on how people perceive the trust decision. It finds that women are more likely to perceive trust as a risky choice while men strongly differentiate between a gamble and a trust decision. When confronted with another person rather than nature, men are more betrayal averse than women.

Thus, women's behavior is more in line with the assumptions of traditional economic theory than is men's: their trust decisions are not affected by concerns about others' payoffs or intentions but they base their decisions on (relatively rational) expectations of returns and their risk preferences. Clearly, women do not conform to "homo oeconomicus" either as they expect positive returns from trusting. Interestingly, the neuroscientific evidence on betrayal aversion and more generally the dislike of unfair treatment is based on studies with men only. For example, Kosfeld et al. (2005) found that intranasal administration of oxytocin decreased men's betrayal aversion in the investment game, and Sanfey et al. (2003) found for men that unfairness in an ultimatum game triggered activity in an area of the brain well known for its involvement in negative emotions (the anterior insula). The physiological verdict on how women respond to these environments is still out.

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