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**Working Paper**

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Working Papers in Economics and Statistics, No. 2009-05

**Provided in Cooperation with:**

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*Suggested Citation:* Netzer, Robert Jiro; Sutter, Matthias (2009) : Intercultural trust. An experiment in Austria and Japan, Working Papers in Economics and Statistics, No. 2009-05, University of Innsbruck, Department of Public Finance, Innsbruck

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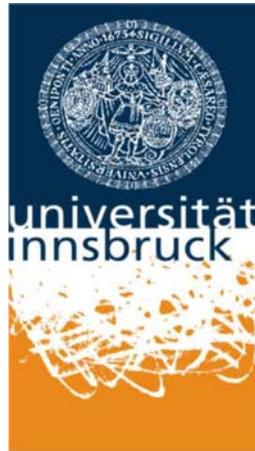
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in  
Economics and Statistics**

**Intercultural trust.  
An experiment in Austria and Japan**

Robert Jiro Netzer and Matthias Sutter

2009-05

# Intercultural trust. An experiment in Austria and Japan<sup>#</sup>

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**Abstract:** We show that the level of trust and reciprocity in an *intercultural* trust game experiment between Austrian and Japanese subjects differs from the results of an *intracultural* experiment run in the respective countries among compatriots. Austrian subjects show significantly higher levels of trust towards Japanese subjects than towards fellow countrymen. Japanese do not differentiate between Austrian or Japanese subjects. Japanese subjects are found to be less reciprocal than Austrian subjects. A post-experimental survey reveals differences in culture-specific dispositions between the two countries that can explain the country-specific differences.

**JEL classification:** C91, C71

**Keywords:** intercultural experiment, intracultural experiment, trust game, Austria, Japan

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<sup>#</sup> Financial support from the Center for Experimental Economics at the University of Innsbruck (sponsored by *Raiffeisen-Landesbank Tirol*), the Austrian Science Foundation (FWF project No. P16617) and the University of Innsbruck is gratefully acknowledged. We thank Akihiko Matsui from the University of Tokyo and his assistants for their support.

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# 1 Introduction

In times of rapidly increasing internationalization the question if and under which circumstances cultural differences lead to different economic behavior is of particular interest. Individuals from different countries often base their behavior on different norms and/or have different value orientations. *Cross-cultural* experiments (e.g. Roth et al., 1991; Buchan et al., 2002; Cason et al., 2002; Henrich et al., 2005; Buchan et al., 2006) try to investigate this phenomenon by comparing the results of similar experiments run in different countries among compatriots. Hence, cross-cultural experiments are, in fact, *intracultural* experiments run in different countries. Internationalization, however, leads to intercultural interactions where people do not only interact with fellow countrymen, but also with persons having a different cultural background. In contrast to cross-cultural studies, in which results of intracultural experiments run in different countries are compared, the main focus of *intercultural* studies is to examine situations in which subjects from different cultures interact with each other. In such situations decisions may be affected not only by different value systems or by culture specific behavioral patterns, but also by the perception and the reputation of another country's culture.<sup>1</sup>

The primary goal of this paper is to find out how intercultural interactions affect trust and reciprocity in economic situations. Trust and reciprocity are central elements of mutually beneficial interactions in many parts of our society: According to Arrow (1972) an element of trust is within every commercial transaction. Trust and reciprocity enhance cooperative behavior, decrease conflicts, help to reduce transaction costs, increase the set of enforceable contracts and therefore make transactions and markets more efficient (Fehr et al., 1997; Glaeser et al., 2000). Recently, Holm and Nystedt (2008) have also shown that

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<sup>1</sup> Hofstede (2001) argues that individuals possess different country- and culture-specific dispositions that, along with their perception of other cultures, affect their behavior in intercultural interactions.

trust is not only important in inter-individual relationships, but also when collective groups have to deal with each other.

In this paper we focus on inter-individual trust within and across two different cultures. We report data of an *intercultural* one-shot trust game between Austrian and Japanese university students. *Intracultural* control experiments in the respective countries allow us to distinguish between inter- and intra-cultural behavioral variations. Additionally we test for differences in culture-specific dispositions regarding trust and reciprocity among our subjects by conducting a post-experimental survey on demographics as well as trust- and reciprocity- attitudes.

One of the dimensions that differentiate the Austrian and the Japanese culture is individualism vs. collectivism. According to Hofstede (2001) Japan is characterized as a collectivist country whereas Austria's society is defined as being individualist, very closely related in culture to Germany and Switzerland. By conducting one intercultural treatment in which Austrian subjects were matched with subjects in Japan and two intracultural treatments which were played among subjects of the same country we test how trust and reciprocity manifest themselves towards strangers from a different continent.

Our results demonstrate that trusting behavior is significantly affected by country origin. Austrians show a significantly higher level of trust towards Japanese than towards Austrians. In the intercultural treatment Japanese subjects trust less than Austrian subjects. Regarding reciprocity we find a weakly significant country effect with Austrian subjects being more reciprocal than Japanese subjects. Our post-experimental survey indicates that general trust and reciprocity attitudes differ across the two countries, such that Austrians are more trusting and consider themselves as more trustworthy. These differences in self-assessment are perfectly in line with our experimental results.

The rest of the paper is structured as follows: Section 2 provides a brief overview of related literature on cross- and intercultural experiments. Section 3 describes our experimental design and procedure. The results of the experimental study and the post-experimental survey are presented in section 4. Section 5 concludes the paper.

## **2 Related literature on cross- and intercultural trust games**

Motivated by the intriguing findings of Knack and Keefer (1997)<sup>2</sup>, many experimental economists have used the trust game by Berg et al. (1995) to investigate trust and reciprocity in different countries.<sup>3</sup>

Nancy Buchan and Rachel Croson have run several cross-cultural trust game experiments in China, Japan, Korea and the U.S.. In Croson and Buchan (1999) they have reported a marked gender difference, with women showing higher levels of reciprocity than men, while the nationality has no influence on reciprocity. Buchan et al. (2002, 2006) have compared trust and reciprocity behavior in a trust game played among group members (using a minimal group paradigm) and strangers. They have found that trust increases as social distance decreases when moving from the strangers- to the group-condition. Generally speaking, their results imply that American and Chinese subjects

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<sup>2</sup> They have shown that the GDP-growth rate of countries is positively correlated with the fraction of inhabitants favoring the first alternative in the World-Value Survey question “Generally speaking, would you say that most people can be trusted or that you cannot be too careful in dealing with people?”.

<sup>3</sup> Roth et al. (1991) is generally considered as the pioneering experiment to investigate cross-cultural differences in economic decision-making. Running market experiments in Israel, Japan, the U.S. and Yugoslavia they have found that market behavior is basically the same in all four countries. Bilateral bargaining behavior has been different across these countries, though, with subjects in the U.S. and Yugoslavia making the highest offers in an experimental ultimatum game. A recent paper by Oosterbeek et al. (2004) provides a meta-analysis of international differences in bargaining behaviour (in particular in the ultimatum game). Public goods games have also often been used for cross-cultural studies, see, e.g., Brandts et al. (2004) or Kocher et al. (2008).

seem to be more trusting than Koreans and Japanese, while Chinese and Koreans show stronger reciprocity.

Several other authors have compared trust and reciprocity in cross-cultural studies by comparing behavior within different countries. Holm and Danielson (2004, 2005), for instance, have run trust game experiments in Sweden and Tanzania, finding no differences between both countries. Ashraf et al. (2006) have reported similar behavior in a trust game run in Russia, South Africa and the U.S.. Bohnet et al. (2008) have shown very similar levels of trust and reciprocity in six different countries around the globe, i.e. in Brazil, China, Oman, Switzerland, Turkey and the U.S..

It is important to stress that all studies mentioned so far have been cross-cultural studies, but no intercultural studies. This means that it was never the case that subjects from one country interacted with subjects from another country. Only a few recent studies have examined intercultural trust. Though running experiments only in Israel, Fershtman and Gneezy (2001) can be considered an intercultural trust game experiment, because they have investigated the cultural difference of Jews of Eastern and Western ethnic origin. Participants could identify the ethnic origin of their interaction partner by the first names written on the decision sheets. The results of Fershtman and Gneezy (2001) have indicated a rather large degree of mistrust towards male Jews of Eastern origin. Willinger et al. (2003) have investigated trust and reciprocity between French and German university students, finding that Germans show more trust in their French counterparts than vice versa. Willinger et al. (2003) have also run a control treatment where subjects only interacted with fellow countrymen, showing that both Germans and French do not differentiate between fellow countrymen and students from the other country (despite the fact that both countries had plenty of political conflicts in their history). Walkowitz et al. (2006) have run an intercultural trust game in Germany, Argentina and China. Levels of

trust and reciprocity have been found to be highest in Argentina and lowest in Germany, while the overall level of trust was highest in Argentina. Walkowitz et al. (2006) have used a within-subjects design to compare intercultural and intracultural trust and reciprocity. This might be the main reason why they have not found any discrimination in behavior towards members of different countries. They also have not linked their behavioral data to any questionnaire in an attempt to explain (possible) behavioral differences within and across countries.

Our experiment distinguishes itself from Walkowitz et al. (2006) by using a between-subjects design and an extensive questionnaire that accompanies our behavioral data. The between-subjects design is probably better suited to detect any differences between intra- and intercultural trust and reciprocity, because in a within-subjects design experimental participants may try to make consistent decisions across the different conditions.<sup>4</sup> Applying insights from a questionnaire may also help in explaining behavioral differences. In comparison to Willinger et al. (2003) we take two countries (Austria and Japan) that belong to different cultures with different societal norms, which is only marginally the case for the neighboring countries Germany and France as in the paper by Willinger et al. (2003). Fershtman and Gneezy (2001) have run their experiment within a single country and with citizens of this country, while our participants stem from two different countries far away from each other. In contrast to Willinger et al. (2003) and Fershtman and Gneezy (2001) we also try to exploit insights from a questionnaire to better understand possible behavioral differences that are due to cultural differences.

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<sup>4</sup> For instance, in a trust game experiment with children aged 8 to 17 years, Harbaugh et al. (2003) let each trustor make a trust decision for five different trustees, each from a different age group (aged 8, 11, 14, 17 years or an adult). Trustees had to indicate their conditional return for each of five possible decisions of the trustor. It turned out that decisions were not contingent on the different recipients, but that decision makers made consistent, i.e. statistically indistinguishable, decisions for all five conditions.

### 3 Experimental design and procedure

#### 3.1 *The trust game*

Our experimental design is based on the trust game by Berg et al. (1995). At the beginning of the experiment, two players called A and B receive an initial endowment ( $E$ ) of 10 tokens each. Player A, the trustor, decides how many tokens ( $x$ ) of her/his initial endowment to transfer to the trustee, player B. Any integer number of tokens between and including zero and ten tokens is feasible. Player A keeps the number of tokens that she/he does not send to player B. Player B receives the tripled amount sent by player A, i.e.  $3x$ . Player B decides how much to return ( $y$ ) to player A, with  $y \leq E+3x$ . We denote  $y/3x$  as the relative return. The absolute return  $y$  is not tripled for player A. Final payoffs are  $P_A(x,y)=E-x+y$  for player A, and  $P_B(x,y)=E+3x-y$  for player B.

The transfer  $x$  is a proxy for the trustor's trust in an anonymous interaction partner, because trust is the willingness to transfer a positive amount ( $x > 0$ ) to the other person in the hope that this person will reciprocate at her own cost. This situation captures a widespread definition of trust to be the deliberate willingness of a decision maker to making himself vulnerable to the actions of another party (Mayer et al., 1995). The relative return  $y/3x$  is typically considered as an indicator of a subject's trustworthiness or reciprocity.

Assuming rational and profit-maximizing agents yields a sub-game perfect equilibrium with zero transfers and zero returns as prediction. Such behavior would be the least efficient situation with respect to joint payoffs. Of course, a plethora of experimental trust games has shown that behavior is largely inconsistent with this prediction, since the average transfers are typically about one half of  $E$ , and the relative returns are around 30% (see Camerer, 2003, for an overview). Assuming social preferences and a concern for

efficiency (see, e.g., Fehr and Schmidt, 1999; Bolton and Ockenfels, 2000; Charness and Rabin, 2002) can account for the behavioral findings of positive transfers and relative returns that compensate the trustor for his transfer.<sup>5</sup> However, none of these models on social preferences addresses the issue of culture and intercultural trust, which we are going to focus on in our treatments.

### **3.2 Treatments**

We have set up an intercultural and an intracultural treatment. In the intercultural treatment one Austrian participant was matched with one Japanese participant, and vice versa. In the intracultural treatment Austrians were matched with Austrians only, and Japanese with Japanese only. The intracultural treatment provides a benchmark for the effects of intercultural interactions across countries.

*Insert Table 1 about here*

A total of 150 students from various fields of study participated voluntarily in the experiment: 76 students from the University of Innsbruck in Austria and 74 students of Tokyo University in Japan.<sup>6</sup> Overall, participants were on average 22.9 years old and earned 14.9 Euro. Table 1 reports the number of participants per country and treatment, the proportion of women, the average age and average earnings for each treatment. Each experimental session lasted about 70 minutes.

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<sup>5</sup> For a formal application of the Fehr and Schmidt (1999)-model of inequity aversion to behavior in a trust game see Kugler et al. (2007).

<sup>6</sup> The University of Innsbruck has approximately 28.000 students, and Tokyo University about 29.000 students.

### **3.3 Procedure**

At each university participants were randomly assigned a subject number and seated far away from each other in a big lecture room. In order to guarantee full anonymity and privacy partitions were set up at each place and subjects were informed that their decisions and their final payment would remain confidential. Subjects received written instructions which were read aloud by the instructor. Questions were answered in private.

The experiment consisted of two independent parts. Half of the subjects in each session started in the role of trustor in the first part and became trustees in the second part. The role assignment was reversed for the other half. In each part the trust game introduced above was played once. It is important to note that subjects were not informed about the details of part 2 before having finished part 1, and they did not get any feedback about decisions in part 1 before the end of the experiment after part 2. However, subjects were informed at the beginning that they would interact with different subjects in both parts of the experiment. Only one part was randomly selected for payment at the end of the experiment. This procedure was common knowledge from the beginning, thereby ensuring that participants considered both parts as equally likely to determine their final payoff. Before feedback on both parts was given subjects had to answer a questionnaire that elicited some demographic information and general attitudes towards trust and reciprocity (see Appendix A)., After that the part for payment was determined and participants received their final payment.

The experiment was always run with paper and pen. In order to collect more independent data, we applied the strategy method (Selten, 1967). Whereas trustors (players A) had to decide on a single transfer, trustees (players B) were asked to determine their return for each possible transfer a trustor could make.

In the intracultural treatments trustors and trustees were seated in one big lecture room and had to make their decisions simultaneously. Recall that after the first part roles were switched. The intercultural treatment consisted of an Austrian and a Japanese session. The Japanese intercultural session was conducted four hours before the Austrian intercultural session. Then the Japanese local experimenter sent the data in an Excel file to the Austrian local experimenter. The Austrian experimenter then used the Japanese data to determine the payoffs of Austrian subjects (contingent, of course, also on the decisions of Austrians) and sent back the Austrian data to Japan. Austrian subjects were paid immediately at the end of the experiment, like it is usual at the University of Innsbruck. The Japanese subjects received their payoffs via a bank transfer to their bank account, as it is customary at the University of Tokyo. The same procedure for payments (cash at the end in Austria; bank transfer in Japan) was also used in the intracultural sessions.

According to Roth et al. (1991) three main problems arising from multinational experiments can be identified: The experimenter effect, the language effect and the currency effect. Our experimental preparations accounted for these methodological problems in the following way. We paid great attention that sessions in the respective countries were conducted identically. A “chief” experimenter (i.e. the first author) was in charge of the overall planning and of instructing local experimenters who were responsible for conducting the experiments according to a precisely predetermined procedure. At each university experimental instructors were local male Ph.D. students who were experienced in conducting experiments. In order to control for language effects the instructions were drafted in English and then translated into German and Japanese, back translated and checked for possible disparities. We controlled for currency effects by choosing denominations that kept purchasing power equal across countries. Since our subject samples consisted of students only, we relied on typical student expenditures. In order to

make the intercultural treatment credible, we provided subjects with the names of the counterpart university, the country and the exact time of the respective counterpart session. Additionally, the names and email addresses of the responsible experimenters and the webpage of the labs in both countries were announced and written on the blackboard. Students were encouraged to email the responsible experimenters in case they had any questions on the experiment.

## **4 Experimental results**

### ***4.1 Data pooling***

Recall that participants made decisions both as trustors and trustees. The order of decision-making was balanced, and it turned out the order had no statistical influence on both transfer and returns (Mann Whitney U test as well as Kolmogorov Smirnov test;  $p > 0.1$  in any test and for each role). Therefore, we use the pooled data for the subsequent analysis.

### ***4.2 Trustor behavior***

Figure 1 shows the average transfers and the according standard deviations. We observe a marked difference between Austrians and Japanese in the intercultural treatment, where Austrians send almost the double amount of their Japanese counterparts (6.18 vs. 3.28), but no difference across nations in the intracultural treatment. Holding the trustors' nationality constant, we note that Austrians send about 1.8 tokens more to Japanese trustees than to their compatriots. The reverse is true for Japan, albeit to a lesser degree.

*Insert Figure 1 and Table 2 about here*

Table 2 considers the distribution of transfers by looking in particular at the relative frequency of extreme choices of full trust ( $x = 10$ ) or no trust at all ( $x = 0$ ). We observe a big and significant difference in the distribution of these choices in the intercultural treatment between Austrians and Japanese ( $\chi^2$ -test;  $p < 0.01$ ). 18 students out of 40 (45%) in Japan do not send any money, whereas only 2 students out of 40 (5%) send zero in Austria. Moreover, compared to students in Austria, the relative frequency of sending the full endowment is only half as high in Japan (12.5% vs. 25%). Comparing the intercultural with the intracultural data in Japan we do not find a significant difference in extreme decisions ( $\chi^2$ -test;  $p > 0.2$ ), which fits the pattern emerging from Figure 1. In contrast, Austrians condition their choices on the treatment. Selfish decisions ( $x = 0$ ) are more frequent and full trust less frequent towards compatriots than towards Japanese ( $\chi^2$ -test;  $p < 0.05$ ). The data thus suggest that Austrians trust Japanese more than Austrians.

In order to examine the determinants of trust in more detail, we present in Table 3 a Tobit regression. Using transfers of zero, respectively ten, tokens as the lower, respectively upper, boundary, we regress the transfer  $x$  on dummies for the country of origin (Austria = 1), origin of one's counterpart (intracultural treatment = 1; intercultural treatment = 0) and an interaction term for Austria and the intracultural treatment. We also include a dummy for gender (female = 1).

*Insert Table 3 about here*

We find that Austrians transfer significantly higher amounts than Japanese, but that there is also an interaction effect of nationality and treatment. The higher Austrian transfers in the intercultural treatment are fully offset in the intracultural treatment. This indicates

that the main behavioral differences between Austrians and Japanese occur in the intercultural treatment. It is important to note that there is no significant gender effect. Given that the proportion of women is different between both countries, the insignificant gender effect rules out the interpretation that the overall differences in transfers are simply driven by the unequal share of women in both subject pools.

### ***4.3 Trustee behavior***

Recall that trustees had to indicate for each possible transfer how many tokens they wanted to send back as their return. Figures 2 and 3 show the average absolute, respectively average relative, returns in each treatment and for each country. The average returns are higher in Austria than in Japan for each transfer, and both for absolute as well as relative levels. It is noteworthy that the relative returns are rather flat and not contingent on the magnitude of the transfer. The relative returns are always below 33% in Japan, which means that they are on average below the level that would be necessary to compensate the trustor for his transfer. Hence, showing trust towards a Japanese participant (by choosing  $x > 0$ ) does not pay on average. Figure 4 illustrates this finding in a straightforward way by plotting the difference between a trustee's absolute return and the amount sent by the trustor. Positive bars indicate that trust pays off on average for the trustor. Negative bars show that trust implies losing money (compared to the status quo at the beginning of the experiment). Except for transfer levels of zero, the Japanese bars are always negative, and the Austrian ones always positive.

*Insert Figures 2, 3 and 4 about here*

In Table 4 we present the results of an OLS regression where we regress absolute returns on the transfer and on dummies for the country of origin (Austria = 1), the origin of one's counterpart (intercultural treatment = 1) and gender. The results show a significant effect of the transfer on the absolute return. The coefficient is not significantly different from 1, meaning that for each additional token sent by the trustor the trustee returns one more unit of money. Hence, trustees are clearly reciprocal. Yet, for sharing the efficiency gains from trust equally, the coefficient for transfers should be 1.5. The estimated coefficient falls short of this benchmark clearly ( $p < 0.01$ ; F-test), indicating that trustees compensate the trustors on average for their investments (i.e., trust), but keep the remaining surplus. This shows a self-serving bias of trustees. We also find a weakly significant impact of nationality on returns. Japanese return approximately 1.2 tokens less than Austrians. We do not find any significant impact of the treatment or of gender.

*Insert Table 4 about here*

#### **4.4 Post-experimental questionnaire**

In order to control for demographic and cultural differences and to gain information on subjects' attitudes concerning trust and reciprocity we asked participants to fill in a post-experimental questionnaire after having made their decisions. This task was performed before participants received feedback about the trust game's actual outcomes. Hence, answers to the questionnaire cannot have been influenced by the decisions of subjects' interaction partners. The questions were partly taken from Yamagishi and Yamagishi (1994) and from Holm and Danielson (2004). The complete questionnaire can be found in the appendix. Table 5 reports the answers to a set of questions that we deem most interesting. Note that for all other questions on trust and reciprocity (see the

Appendix) we did not find any significant differences between Austrians and Japanese according to Kolmogorov Smirnov tests.

The post experimental questionnaire reveals that trust and reciprocity attitudes are highly country-specific and differ in many aspects between Austria and Japan. For instance, question Q30 – which was also used as the World Value Survey trust indicator – reveals that a majority of Japanese (61%) state that “you cannot be too careful in dealing with people” while a majority of Austrians (56%) believes that “most people can be trusted”. There are also significant cross-cultural differences in attitudes referring to trust in questions Q31, Q32, Q39, Q40, Q44 and Q53. For an intercultural experiment, question Q44 seems particularly noteworthy, as it shows that a majority of Austrians disagrees with the statement “These days you can’t count on strangers” (mean value of 2.75) whereas a majority of Japanese participants agrees (mean value of 3.97). The higher actual transfers  $x$  in the trust game correlate nicely with the self evaluation of trust attitudes in question Q53. Austrian subjects’ stated willingness to trust others is significantly higher than the one in Japan ( $p < 0.05$ ).

The answers to questions concerning reciprocity also reinforce our experimental findings of Japanese participants behaving less reciprocal than Austrians. Questions Q18, Q19, Q23 and Q54 show clearly that Japanese subjects consider themselves as less trustworthy than Austrians do. The answers to these questions fit nicely to Yamagishi’s (2003) statement that Japanese do not necessarily believe in the trustworthiness of other people in general (especially facing “outsiders”). Question Q19 even shows that Japanese participants expect others to consider them as trustworthy to a much lesser extent than this is true for Austrians (mean value 3.65 vs. 5.03).

*Insert Table 5 about here*

## 5 Conclusion

In this paper we have investigated trust and reciprocity in an intercultural trust experiment between Austrian and Japanese university students and have compared the intercultural setting to an intracultural control treatment in which Austrians and Japanese interacted with compatriots in their own countries. In a global environment where economic exchange involves interactions of members of different cultures, national diversity might have a considerable impact on the evolution as well as the efficiency of exchange behavior (for instance in international trade or in international negotiations). In order to study the impact of intercultural interactions on behavior, cross-cultural studies (who are confined to an international comparison of intracultural behavior) have to be complemented by intercultural studies.

Our results have shown that contingent on a country's culture and its value-system intercultural behavior may differ significantly from intracultural behavior. Austrian subjects have shown much higher levels of trust towards Japanese subjects than towards their Austrian compatriots. Japanese subjects have not differentiated between Austrian and Japanese trustees when determining their transfers in the trust game. Yet, the transfers of Japanese subjects in the intercultural treatment have been found to be significantly lower than those of Austrian subjects. The level of trustworthiness, i.e. reciprocity, has not been different between the inter- and the intracultural treatment, both in Austria and Japan, but Japanese subjects have had lower levels of reciprocity than Austrian subjects, irrespective of the counterpart's nationality. The post-experimental questionnaire – which was filled in before subjects got feedback about the decisions of their interaction partners – confirms the differences in trust and reciprocity found in the experiment. Austrians indicate in the questionnaire higher levels of trust and regard themselves also as more trustworthy, i.e.

reciprocal. Taken together, the experimental data and the questionnaire show important differences between Austria and Japan as far as trust and reciprocity are concerned.

Our experimental findings and the questionnaire results can be put into the context provided by Toshio Yamagishi's (Yamagishi and Yamagishi, 1994; Yamagishi, 2003) theory of Japanese behavior and the international perception of it. Yamagishi reports that people in Japan would expect trustworthiness and trust only within relationships in which mutual monitoring and control are possible.<sup>7</sup> This implies that Japanese are trusting and trustworthy only if society provides for an institutional setting in which a system of checks and balances lets one party trust the other. If socio-relational based security and institutionalized relations are not guaranteed – as in the case of an anonymized experiment – Yamagishi (2003) argues that Japanese may feel more insecure and more distrustful of strangers than people from individualist societies (such as Austria). Since the lack of checks and balances in an anonymous experiment applies to both the intercultural and the intracultural treatment, the argument of Yamagishi (2003) implies that Japanese experimental participants do not distinguish in their behavior between the inter- and the intracultural setting. This is what we have found in the experimental data. Yamagishi (2003) also argues that it is in general believed that the Japanese society is characterized by a high level of trust and trustworthiness. This may have been the driving force for the higher levels of trust shown by Austrian trustors towards Japanese trustees than towards Austrian trustees. The reciprocal behavior of trustees has also been less pronounced in Japan than in Austria, consistent with the self-assessment of experimental participants.

From a methodological perspective, one important finding of our paper is that behavior in intercultural relations need not be reflected in intracultural relations, but that there might be strong differences. It seems a worthwhile endeavor for future studies to

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<sup>7</sup> See Buchan et al. (2002) or Hagen and Choe (1998) for similar findings.

examine the robustness of this finding in other important areas of economic behavior – such as negotiations, bidding in auctions, or the private provision of public goods – since it seems reasonable that possible intercultural differences in economic behavior become more relevant with a further increase in international trade and international mobility worldwide.

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## Tables and Figures

*Table 1: Subject pool statistics*

Treatment	Number of subjects	Proportion of women (%)	Average age*	Average profit in Euro <sup>+</sup>
Austria intercultural <sup>†</sup>	40	37.5	23.1 (2.25)	13.4
Japan intercultural <sup>†</sup>	40	15.4	22.4 (1.55)	16.9
Austria intracultural	36	36.1	23.2 (2.53)	14.7
Japan intracultural	34	11.8	23.0 (2.47)	14.7

<sup>†</sup> The intercultural treatment matched one participant in Austria with one participant in Japan. In Japan intercultural one participant did not indicate his/her sex.

\* Standard deviation in parentheses.

+ 10 token = 0.8 Euro = 120 Yen; Show-up fee of 3.5 Euro / 500 Yen included.

*Table 2: Relative frequency of extreme transfers*

	Austria intercultural	Japan intercultural	Austria intracultural	Japan intracultural
$x = 0$	N = 2 (5%)	N = 18 (45%)	N = 8 (22.2%)	N = 11 (32.4%)
$X = 10$	N = 10 (25%)	N = 5 (12.5%)	N = 6 (16.7%)	N = 8 (23.5%)

*Table 3: Tobit Regression - Transfer*

<b>Tobit Regression</b>	
	<b>Transfer</b>
Austria	5.588*** [1.499]
Intracultural	2.474 [1.537]
Intracultural*Austria	-5.340** [2.123]
Female	-0.658 [1.216]
Constant	1.663 [1.093]
Observations	149
Left-censored	39
Uncensored	81
Right-censored	29
LR $\chi^2(4)$	14.24
p	0.0066

Robust standard errors in brackets; \* significant at 10%;

\*\* significant at 5%; \*\*\* significant at 1%

Table 4: OLS regression - Return

OLS	
	Return
Transfer	0.945 *** [0.066]
Japan	-1.229 * [0.667]
Intracultural	-0.312 [0.638]
Female	0.213 [0.738]
Constant	0.741 [0.522]
Observations	1629
F(4,148)	55.53
P	0.000
R <sup>2</sup>	0.30
Number of clusters (subjects)	149

Robust standard errors in brackets; \* significant at 10%;

\*\* significant at 5%; \*\*\* significant at 1%

Table 5: Post-experimental questionnaire

	Mean Austria	Mean Japan	<i>p</i> -level <sup>†</sup>
Q18: I am always trustworthy.*	5.17	3.61	1%
Q19: Most people think that I am always trustworthy.*	5.03	3.65	1%
Q23: In general, I treat other people the same way that they treat me.*	4.57	3.69	1%
Q27: Human nature is fundamentally cooperative.*	3.67	3.57	n.s.
Q29: Do you think most people would try to take advantage of you if they got a chance (0) <u>or</u> would be fair (1)?	0.56	0.50	n.s.
Q30: Generally speaking would you say that most people can be trusted (0) <u>or</u> that you cannot be too careful in dealing with people (1)?	0.44	0.61	5%
Q31: Do you think most people can be trusted? Generally no (0) <u>or</u> generally yes (1)	0.66	0.51	10%
Q32: Generally, a person with whom you have had a longer relationship is likely to help you when you need it.*	5.53	4.89	1%
Q35: Most people will respond in kind when they are trusted by others.*	4.69	4.97	n.s.
Q37: People are always interested only in their own welfare.*	3.64	3.14	n.s.
Q39: In this society one does not need to be constantly afraid of being cheated.*	3.85	3.24	1%
Q40: One can avoid falling into trouble by assuming that all people have a vicious streak.*	1.92	2.66	5%
Q44: These days you can't count on strangers.*	2.75	3.97	1%
Q53: On a scale from 1(always careful) to 6 (always trusting), how would you rate your willingness to trust others?	4.00	3.59	5%
Q54: How would you rate your trustworthiness from 1 (looking out for myself) to 6 (always trustworthy)?*	4.69	3.64	1%

<sup>†</sup> Probability value according to a Kolmogorov Smirnov test; for questions 29, 30 and 31 we used a  $\chi^2$ -test.

\* 6-point scale: strongly disagree (1) – strongly agree (6)

Figure 1: Average transfers (standard deviation in parentheses)

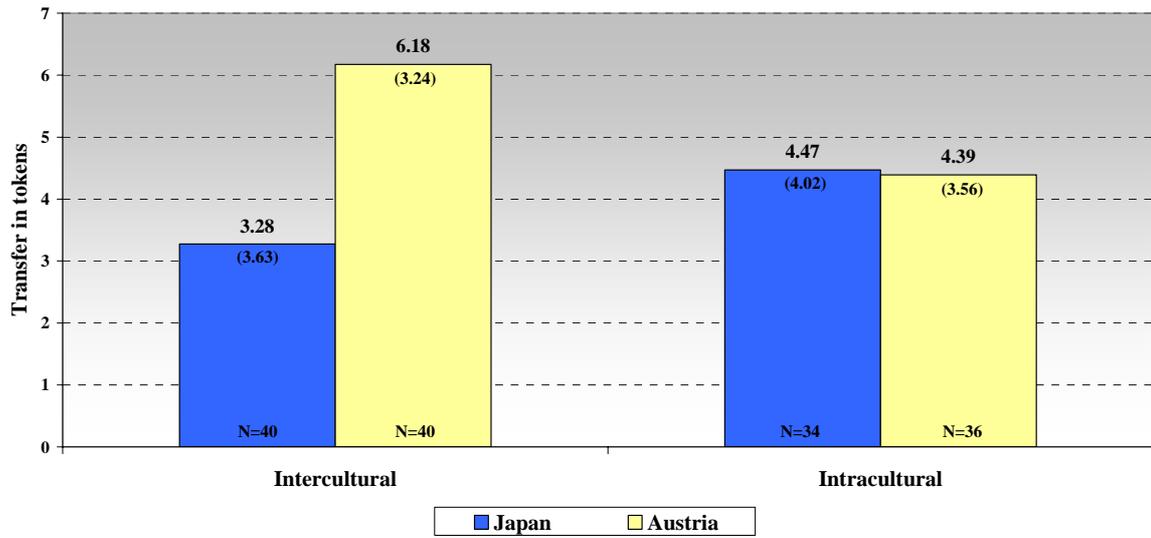


Figure 2: Average absolute returns depending on transfer

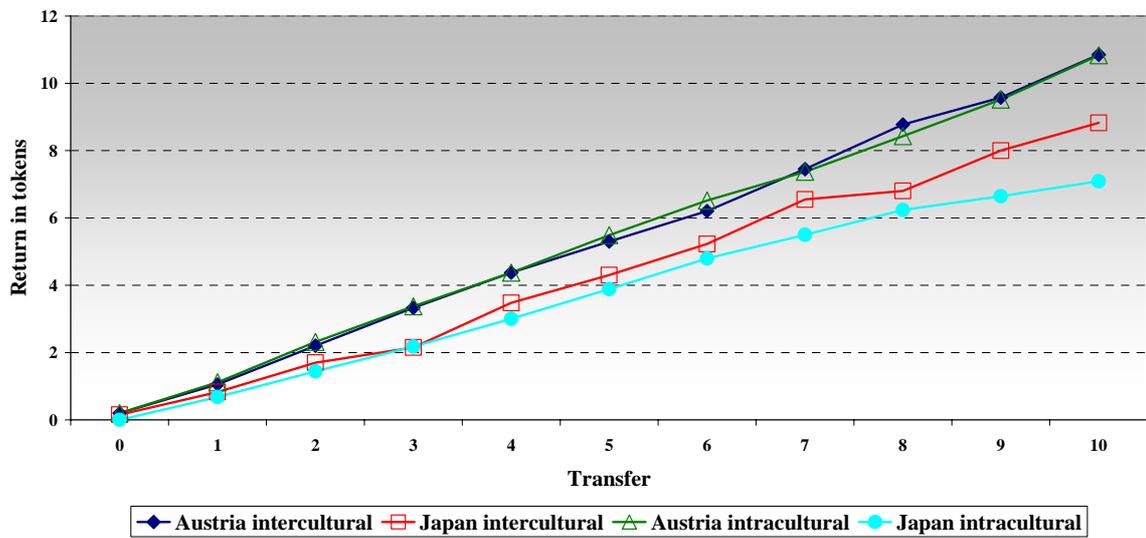


Figure 3: Average relative returns ( $y/3x$ )

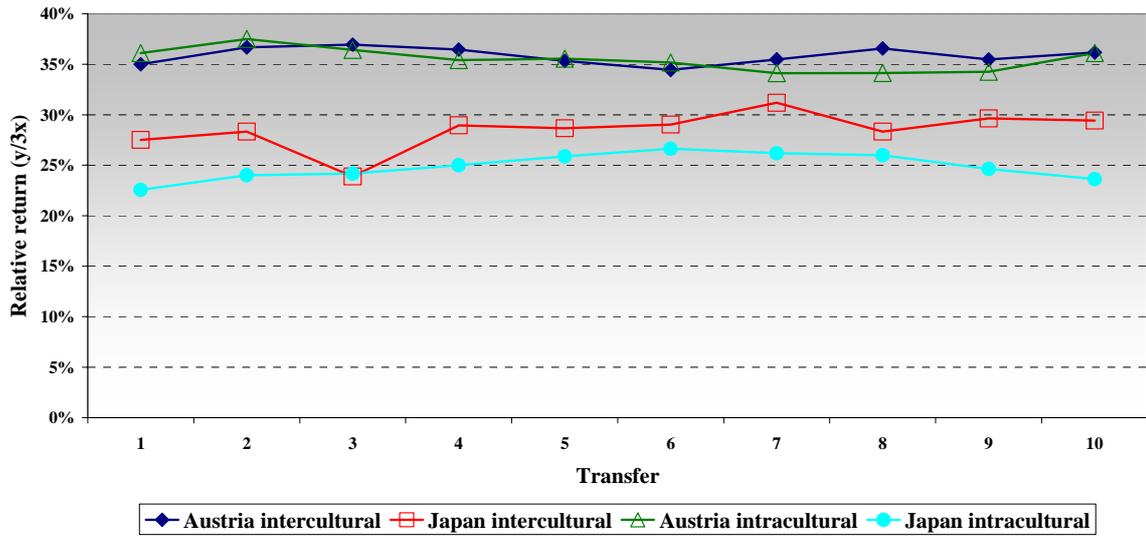
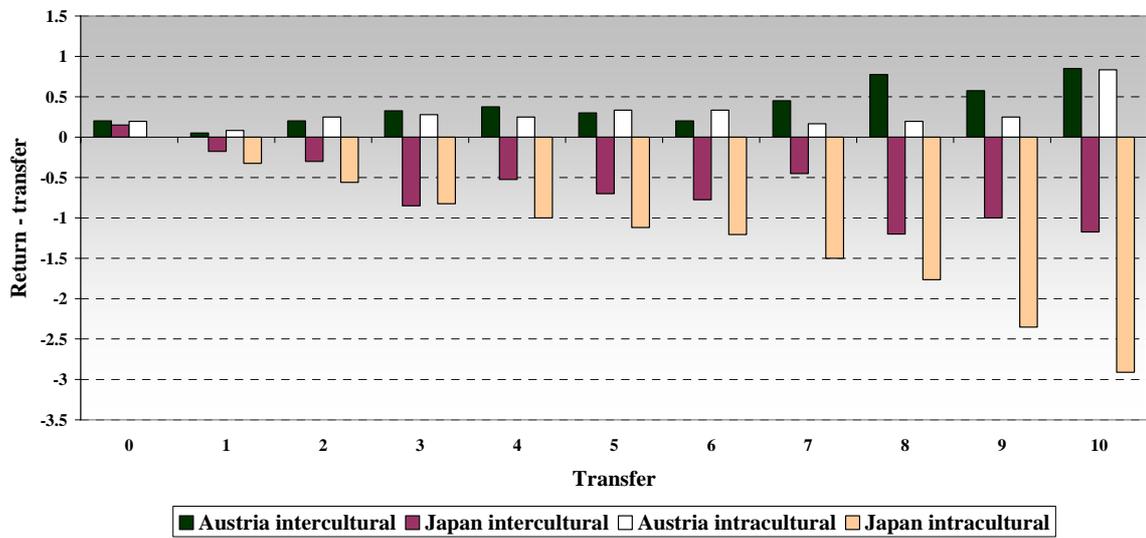


Figure 4: Average - return minus transfer



# **Appendix A – Experimental instructions for the intercultural treatment (*not intended for publication*)**

## **Experimental instructions**

*The instructions were read aloud at the beginning of each session. We used the same description of the experiment in all sessions. However, since we conducted experiments in Austria and Japan, instructions were translated from English into German and Japanese. In the following we present the English version of the instructions for the intercultural treatment in Japan.*

### **Experimental instructions *intercultural* Japan:**

You are about to participate in an experiment on decision-making. During this experiment we ask you and the other participants to make decisions and to fill out a questionnaire.

Please do not talk to anyone during the experiment. Communication between participants will lead to your exclusion from the experiment and the forfeit of all monetary earnings.

For identification purposes you have received an ID card with a number on it. The ID card is your identity during the course of this experiment. Your decisions in the experiment and the data from the questionnaire will be used for scientific purposes only.

Participants in this experiment are from 2 universities in different countries: The University of Tokyo in Japan and the University of Innsbruck in Austria (Europe). The experiment at the University of Innsbruck will be conducted on Wednesday Dec.14th at 10am which is 6pm Tokyo time.

No participants at any university, however, will see any decisions by the other participants before they make their own decisions.

The experiment consist of two parts that are independent from each other. You will receive the earnings from either part one or part two of the experiment. Which part is going to be taken for the calculation of your earnings, will be determined after the participants at the University of Innsbruck have made their decisions. An experimenter at the University of Innsbruck will then ask one participant to draw a card that will determine which part will be paid out to you. The research team will then calculate the earnings and pay all participants their earnings in their respective currency.

Your earnings in this experiment will be in “tokens”. After the experiment tokens will be converted into Yen (Euro) at an exchange rate of 1 token = 120 Yen (80 Euro Cent).

Additionally to the earnings of the experiment you will be paid a showup fee of 500 Yen. All your earnings will be transferred to your bank account after the experiment.

We will now read the instructions for part one together. If you have any questions, please raise your hand after we have finished reading the instructions. A member of the research team will then come to you and answer your questions privately (i.e., in a low voice).

### **Part One:**

In this game, there are two roles: **A** and **B**. Half of the persons sitting in this room are in the role of A and the other half in the role of B.

Please note that each person will be paired with a subject from the University of Innsbruck. More precisely, each Person A in this room will be *anonymously* paired with a Person B of the University of Innsbruck and each Person B in this room will be anonymously paired with a Person A of the University of Innsbruck.

During and after the game you will not be told with whom you have been paired and the other person will not be told that she/he has been paired with you.

At the beginning of the experiment, both A and B receive an initial endowment of 10 tokens. According to the exchange rate, the initial endowment of 10 tokens is worth 1200 Yen (8 Euro).

A has to decide how many tokens of her/his initial endowment to transfer to B.

Any *integer* number of tokens between and including 0 and 10 tokens is feasible.

A keeps the number of tokens that A does not send to B.

The amount of tokens that Person A sends to Person B will be tripled. That means that Person B receives, additionally to her/his initial endowment of 10 tokens, three times the amount of tokens A has sent.

B has to decide how much of this amount she/he would like to send back to A. Any *integer* number of tokens between and including 0 and the amount Person B owns at that time is feasible. Please note: The amount B sends back to A will not be tripled. That is to say, A will receive exactly the amount B sends back to him/her (in addition to what Person A has kept from his/her initial endowment).

**Procedure:**

A will have to write down how much she/he wants to send to B.

B will receive a form, in which she/he has to indicate how many tokens she/he wants to send back to A for each possible transfer from player A.

This will become clear to you when you check the following table:

A's initial endowment	A sends to B	A's current profit	Person B receives in addition to his/her endowment	Person B's current account	<b>B sends back the following amount</b>
10	0	10	0	10	
10	1	9	3	13	
10	2	8	6	16	
10	3	7	9	19	
10	4	6	12	22	
10	5	5	15	25	
10	6	4	18	28	
10	7	3	21	31	
10	8	2	24	34	
10	9	1	27	37	
10	10	0	30	40	

**Profits:**

**Person A:**

A will receive the amount kept for him-/herself out of his/her initial endowment, plus the amount that has been sent back by B.

**Person B:**

B will receive her/his initial endowment plus the tripled amount that A has sent minus the amount which he/she sends back to A.

-----

**Part 2**

Part 2 will basically be the same situation as part 1 but the players will change their roles now.

Those who have been player A in part 1 will be player B in part 2 and players B of part 1 will be player A now.

Again, you will be anonymously paired with a Person (A,B) from the University of Innsbruck, Austria.

**As a reminder:**

Everybody's initial endowment is 10 tokens á 120 Yen (80 Euro Cent).

A decides how many tokens he wants to send to B. Person B receives additionally to his/her initial endowment of 10 tokens the tripled amount A sends. Player B decides on how many of the tokens he owns at that time to send back to player A.

**Profits:**

A will receive the amount kept for him-/herself out of her/his initial endowment, plus the amount that has been sent back by B.

B will receive her/his initial endowment plus the tripled amount that A has sent minus the amount which he/she sends back to A.

After the participants of the University of Innsbruck have made all their decisions, an experimenter at the University of Innsbruck will ask one participant to draw a card that will determine if part 1 or part 2 will be paid out after the experiment.

## Appendix B – Post-experimental survey (*not intended for publication*)

### About Yourself:

Age: \_\_\_\_\_

Gender:  m  f

Major: \_\_\_\_\_

1.) About how many other participants in this room do you know? \_\_\_\_\_

2.) How many older brothers and sisters do you have? \_\_\_\_\_

3.) How many younger brothers and sisters do you have? \_\_\_\_\_

4.) Have you ever been to Europe/ Asia?  yes  no

5.) Have you ever been to Austria/ Japan?  yes  no

6.) How often have you been to a foreign country within the last 5 years? \_\_\_\_\_

7.) Have you ever lived in a foreign country (at least 6 months)?  yes  no

### The following questions concern your family:

8.) Did your parents graduate from high school?

Father:  yes  no; Mother:  yes  no

9.) Did your parents graduate from university?

Father:  yes  no; Mother:  yes  no

10.) For how many years are you living in Tokyo / Innsbruck? \_\_\_\_\_

11.) Where did you grow up? (If necessary, please check more than one answer with a cross.)

Tokyo / Innsbruck  cities designated by government ordinance  cities

district areas  foreign country

12.) Did your parents live together in the same household when you were 16?

yes  no

13.) Thinking about your family income, compared with other Japanese/ Austrian families in general, would you say your family income at the age of 16 was roughly

below average  average  above average

### Some more questions about yourself:

14.) Are you an *active* member of one of the following organizations?

political Club  voluntary organizations  religious organizations

student organizations  sports club  performance/art organization

others  no, of none

15.) How many hours during a normal week do you spend

- Working or studying alone: \_\_\_\_\_

- Working or studying with other people: \_\_\_\_\_

- On activities in clubs or organizations: \_\_\_\_\_

- Socializing with friends: \_\_\_\_\_

- (Part time) job: \_\_\_\_\_

16.) How much money do you donate yearly? \_\_\_\_\_ Yen / Euro.

17.) Which is the largest amount that you have lent out during the past year?  
\_\_\_\_\_ Yen / Euro.

**Please indicate your level of agreement on the following statements**

About yourself:

18.) I am always trustworthy  
completely wrong       completely correct

19.) Most people think that I am always trustworthy  
completely wrong       completely correct

20.) When somebody is mean to me, I sometimes go out of my way to be mean back to them.  
strongly disagree       strongly agree

21.) I don't mind giving money to others- even people I don't know- if they need the money more than I do.  
strongly disagree       strongly agree

22.) I wouldn't mind spending eight hours per week volunteering for a good cause.  
strongly disagree       strongly agree

23.) In general, I treat other people the same way that they treat me.  
strongly disagree       strongly agree

24.) I trust a person I know well more than one who I don't know.  
strongly disagree       strongly agree

25.) The people I trust are those with whom I have had long lasting relationships.  
strongly disagree       strongly agree

26.) I treat most people the same, whether or not they have been nice to me in the past.  
strongly disagree       strongly agree

**About other people:**

27.) Human nature is fundamentally cooperative.  
strongly disagree       strongly agree

**Circle only one response for each of the following questions.**

28.) Would you say that most of the time people...  
 try to be helpful                       are mostly just looking out for themselves.

29.) Do you think most people would try to  
 take advantage of you if they got a chance?                       be fair?

30.) Generally speaking, would you say...

that most people can be trusted?  you cannot be too careful in dealing with people?

31.) Do you think most people can be trusted?

Generally no  Generally yes

**Please indicate your level of agreement on the following statements**

32.) Generally, a person with whom you have had a longer relationship is likely to help you when you need it.

strongly disagree       strongly agree

33.) Most people are basically good& kind

strongly disagree       strongly agree

34.) Most people are trustful of others

strongly disagree       strongly agree

35.) Most people will respond in kind when they are trusted by others

strongly disagree       strongly agree

36.) No matter what they say, most people inwardly dislike putting themselves out to help others

strongly disagree       strongly agree

37.) People are always interested only in their own welfare

strongly disagree       strongly agree

38.) There are many hypocrites in this society

strongly disagree       strongly agree

39.) In this society one does not need to be constantly afraid of being cheated

strongly disagree       strongly agree

40.) One can avoid falling into trouble by assuming that all people have a vicious streak

strongly disagree       strongly agree

41.) People usually do not trust others as much as they say they do.

strongly disagree       strongly agree

42.) In this society, one has to be alert or someone is likely to take advantage of you

strongly disagree       strongly agree

43.) To make money, there are no right and wrong ways any more, only easy and hard ways.

strongly disagree       strongly agree

44.) These days you can't count on strangers.

strongly disagree       strongly agree

45.) These days, a person doesn't really know who he can count on.  
strongly disagree       strongly agree

46.) Most people don't really care what happens to the next fellow.  
strongly disagree       strongly agree

47.) People usually tell the truth, even when they know they would be better off lying.  
strongly disagree       strongly agree

48.) Most people are basically honest.  
strongly disagree       strongly agree

49.) Most people would tell a lie if they could gain by it.  
strongly disagree       strongly agree

50.) Most people would cheat on their taxes if they had a chance.  
strongly disagree       strongly agree

**About yourself:**

51.) How much do you tend to trust people, when you have a lot at stake?  
not at all       totally

52.) Regardless of the work I have to do, I prefer to work with people whose background I know well, than working with people whose background I don't know.  
strongly disagree       strongly agree

53.) On a scale from 1 (always careful) to 6 (always trusting), how would you rate your willingness to trust others?  
always careful       always trusting

54.) How would you rate your trustworthiness?  
looking out for myself       always trustworthy

55.) Please write down, if you have other thoughts or comments about the experiment, on your strategy, on your reasons for your decisions or on other matters:

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**Working Papers in Economics and Statistics**

2009-05

Robert Jiro Netzer and Matthias Sutter

Intercultural trust. An experiment in Austria and Japan

**Abstract**

We show that the level of trust and reciprocity in an intercultural trust game experiment between Austrian and Japanese subjects differs from the results of an intracultural experiment run in the respective countries among compatriots. Austrian subjects show significantly higher levels of trust towards Japanese subjects than towards fellow countrymen. Japanese do not differentiate between Austrian or Japanese subjects. Japanese subjects are found to be less reciprocal than Austrian subjects. A post-experimental survey reveals differences in culture-specific dispositions between the two countries that can explain the country-specific differences.

ISSN 1993-4378 (Print)

ISSN 1993-6885 (Online)