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Cross-Racial Envy and Underinvestment in South Africa.

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Abstract

Trust games are employed to investigate the effect of heterogeneity in income and race on cooperation in South Africa. The amount of socio-economic information available to the subjects about their counterparts is varied. No significant behavioural differences are observed, when no such information is provided. However, when the information is available, it significantly affects individual trust behaviour. The low income subjects from both racial groups invest significantly less in partnerships with the high income subjects of the other racial group than in any other partnership. We attribute this behaviour to cross-racial envy, which on aggregate may lead to substantial underinvestment in the economy.

Keywords: Trust game, ethnic diversity, income inequality, cooperation.

JEL Classification: C91, J15.

1 Introduction

A recent hypothesis in the literature is that economic performance will be furthered by the absence of economic and ethnic divisions (see e.g. Easterly and Levine, 1997 and Alesina et al., 1999). Knack and Keefer (1997), for example, note that for countries like Norway, Finland, Sweden, Denmark and Canada, a high degree of homogeneity both in terms of income and ethnicity goes along with a high degree of economic performance.¹ The explanation behind this linkage is that

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¹Incidentally, based on the World Social Survey measurement, these five countries also have the highest level of trust. The close correlation between trust, social homogeneity and economic performance can also be derived

people with a greater set of similar characteristics are more likely to form partnerships and start to cooperate.²

In this paper, we examine the effect of economic and ethnic division in the case of the South African society. This society is extreme in its heterogeneity, with segmentation along both racial and income divides. In particular, before the break down of apartheid in 1994, the black population³ received less than 50% of the national income, but this share had risen to 75% in 1995⁴ (Stewart 2000). However, at the same time intra-racial income inequality had increased. Amongst black households the Gini index increased from 0.49 in 1970 to 0.59 in 2000, while among the whites it moved from 0.43 to 0.49 (Whiteford and van Seventer 2000).

Widening income gaps within ethnic groups can imply low intra-group trust levels, next to the low trust between groups. To study both aspects of the trust problem, we conducted trust game experiments in South Africa, in which the subjects were given information about their opponents' race and income characteristics. The trust game, originally developed by Berg, Dickhaut, and McCabe (1995), is a two-player game in which the first player, the sender, sends part of his initial endowment to the second player, the receiver. The experimenter triples the sent amount, and the receiver can then decide which part of his total endowment (the tripled transferred amount plus the initial endowment) to return to the sender. The game is called a trust game as the amount the sender transfers to the receiver gives an indication of the sender's trust in the willingness of the receiver to reciprocate. The trust game has emerged as one of the leading experimental instrument for the measurement of the level of cooperativeness in societies (see Glaeser et al. 2000; Camerer 2003)

We employ the trust game to assess the degree to which racial and income disparity may be degrading trust and, thus, hampering economic development in South Africa. More specifically, the questions that we raise include: Is the level of trust and cooperative attitude in the South African society generally (disregarding specific race and income disparities) different from what has been reported in the literature on other societies? In what ways does information on the race and the income characteristics of a trading partner determine the level of trust and reciprocity in the multiply segmented South African society? The answers to these questions are obviously vital to economic and social development, because trust and cooperation across racial and income boundaries will be necessary in order to reduce transaction costs and, thus, to enhance economic growth. from the experimental results by Glaeser et al. (2000) who find that when individuals are closer socially; trust and trustworthiness tend to be higher.

²However, as shown by Collier (2001), democracy may considerably soften the detrimental effects of ethnic diversity on economic growth.

³According to the 1996 census 77% of the 40,583,573 people in the country were black and 11% were white, while Indians (3%) and colored (9%) people made up smaller percentages.

⁴South Africa had a Gini Index of 0.58 in 1997, which made it the country with the highest inequality after Brazil with a Gini index of 0.63 (World Bank, 1997).

exchange and efficiency.

While several experimental studies have examined the effect of ethnicity on trust and trustworthiness, no study so far has attempted to disentangle the ethnicity effects from the income inequality effects. Gneezy and Fershtman (2001) studied Israeli partnerships in which the individuals were informed on their partner’s last name. Since last names in Israel are generally indicative of the pre-immigration ethnicity, the names may be used to discriminate between partners from different ethnical origins. In fact the study shows a systematic mistrust of “eastern” males resulting in a lower efficiency of the partnerships they were involved in. On first sight, this outcome seems to imply a clear case for ethnic discrimination. But, a closer look at the income distribution across the ethnic divide reveals that there may have been an effect of income inequality that confounded the results. Since individuals of “eastern” origin are much more likely to be in the lower income groups (see Gneezy and Fershtman 2001) and since the actual income level of the subjects was not controlled for, it remains unclear, whether the discrimination (i.e. the distrust) was towards the “eastern” males or towards “poor” males.

In a study with US subjects, Eckel and Wilson (2003) find that allowing individuals to observe their partner’s picture increases trust and trustworthiness. However, they also find that the pictures can lead to ethnic discrimination, because minority groups (in particular African-Americans) are less likely to be trusted than the majority groups (Caucasian). Again, there is no control for the income distribution effects, which happen to point in the same direction as in the Gneezy and Fershtman study: The ethnic group that is mistrusted happens to be the ethnic group with the lower average income.

In a study with South African subjects, Burns (2003) conducted dictator and trust games with high school students in the greater Cape Town area.⁵ To check the effect of race on the propensity to trust, subjects were shown pictures of their partners. In the dictator games, blacks are favoured by non-whites, but not by whites, who show no bias towards any race. In trust games, however, black students are trusted less by all groups, including their own group. Once again, this seems to be clear evidence for the prevalence of racial discrimination, but there is no control for possible confounding effects of income inequality. As in the other two studies, the group that is being mistrusted most also represents the poorest ethnic group, leaving the question open, whether racial or income discrimination has been detected here.

⁵Experimental studies on trust in (South) Africa using experiments are rare. Barr (2003) conducted experiments in Zimbabwe in order to detect which factors contribute to the feeling of shared social identities within communities. Carter and Casteillo (2003) examine the level of trust for South African communities in the province of KwaZulu-Natal, investigating the difference between rural or urban communities in the degree of intra-racial trust. In a closely connected study, Haddad and Maluccio (2003) conduct household-level research in KwaZulu-Natal. Their results suggest that both local trust (in neighbours and extended family) and income level are important for financial group participation, which is shown to be correlated with economic prosperity.

Our experimental design allows us to disentangle the two main division lines that exist in heterogeneous societies (i.e. the racial or ethnic and the income divides) by giving subjects information both on the income level and the race of their partner. Surprisingly, we find neither a purely racial nor a purely income-based discrimination effect. Instead, we discover a strong and significant intra-racial envy effect that – to our knowledge – has not been reported by any study so far. We find that the low income individuals of both races invest little in partnerships with a high income partner from the other race. This effect can be considered a robust discrimination effect, because behaviour in the baseline treatment without information, which we conducted with a randomised sub-sample of our subjects, neither exhibits significant differences within the subject pool, nor significant differences when compared to the behaviour observed in earlier experiments without information.

We proceed in the following fashion. Section 2 describes the experimental protocol. Section 3 contains the results on the effects of information. In particular it discusses whether discrimination, if it exists, is based on income or on race. Section 4 figures out the correlates of survey questions with experimental decisions and thereby analyzes the impact of social distance on the propensity to trust. The last section concludes.

2 Experimental Procedures

The subjects played the one-shot trust game. We applied the strategy method where each subject, given the information on his or her counterpart, had to decide how much to transfer both in the role of sender and the role of receiver.⁶ Subjects knew at the start of the experiment that they had to play both roles. The role that determined their payoff was decided by a random draw. Both sender and receiver were supposed to be endowed with 20 Rand. (At the time of the experiment the exchange rate was €1 = 7.8 Rand). As senders, subjects were asked to decide how much of their endowment they would like to transfer to a receiver. To decrease decision complexity and paperwork, the sender transfer was restricted to being zero or any even integer smaller or equal to 20. As receivers, subjects were asked to decide how much they would like to transfer back for each of the 11 possible amounts (0, 2, ..., 20) that they may have received from a sender. Additionally, each subject was asked to report both the amount expected as a return on the own transfer as a sender and the amount expected as an investment as a receiver.⁷

Our treatment variable was the information subjects received on the characteristics of their counterparts. Upon recruitment subjects were asked to state their race⁸ and to evaluate their family

⁶We applied the strategy method, as we had to recruit a large part of our subjects on the spot and did not know in advance whether a counterpart for each recruited subject could be found.

⁷The instructions to the subjects are contained in the appendix.

⁸In South Africa students are normally asked to indicate their race upon registering for a university or a school.

Table 1: Experimental Conditions and Number of Observations
in South Africa Trust Game.

Subjects	No	Information ¹⁾				
Characteristics	Information ¹⁾	BL	BH	WL	WH	Total
BL	15	15	15	15	20	80
BH	1	6	1	0	6	14
WL	4	4	7	7	10	32
WH	8	9	8	10	11	46
Total	28	34	30	32	47	172

¹⁾In the “No information” treatment subjects were not given information on race and income of their partner, and in the information treatment they knew the race and income of their partner, before they made experimental decisions.

income compared to average South African income. Based upon this information we categorized our subjects according to race (B=black; W=white) and income (L=low income; H=high income). In one treatment complete information (i.e. on race, and income position of the counterpart) was given to the subjects. In a second treatment no information was given regarding their counterpart. The experimental conditions, including the number of observations for all the distinguished subject types and treatments are summarized in Table 1.

A total of 172 subjects participated in the experiment, 94 black and 78 white. 112 considered their family income to be below average and 60 above. Obviously, the population distribution at the universities is not equivalent to the distribution of race and income in the general population of South Africa. But, note that this does not disturb the internal validity of our experimental investigation, because the socio-economic matching that we used in each partnership was pre-defined and known to the subjects. Hence, the population distribution played absolutely no role in the decision-making and the evaluation of the results.

The experimental sessions were conducted in October 2003, at the Potchefstroom University⁹ (predominantly white) and the Mafeking University (predominantly black). We conducted the experiment using pen and paper. A post-experimental questionnaire, containing some general questions and some standardized items on equity preferences, was solicited from each subject after the experiment (see Appendix B). After all sessions were completed, each subject’s decision form was linked to that of another subject, respecting the pre-determined matching that was recorded on the subject’s decision form.¹⁰ Next, the role of the subject in the partnership was determined

Hence, asking for this information does not have to generate suspicion with the subjects regarding the experimenters’ intentions. No single subject objected to providing the information on the race.

⁹Conducting the experiments was made possible by the hospitality of the Economics Department of Potchefstroom University; especially professor Wim Naudé’s support was indispensable.

¹⁰Note that the strategy method guarantees that each decision form can be considered an independent observation,

randomly and with equal probabilities. Finally, the subject’s payoff was calculated using the linked decision forms and the subjects were paid in cash.

3 Results

3.1 Outcomes without race and income information

In the original trust game of Berg et al. (1995) subjects were not provided with any socio-economic information on their counterparts. Nevertheless, it is clear that the subjects had some general notion of the cultural environment, in which their partnerships were. All subjects in that study were university students in the USA. Our subject pool is similar, because all our subjects are university students in South Africa. Clearly, a basic assessment of the general level of trust and trustworthiness exhibited by our subjects is necessary to ensure comparability of our results concerning the main treatment effects (i.e. the effect of socio-economic information on behaviour). Hence, we conducted the “no information” treatment, which provides us with such a general benchmark, because it elicits behaviour with the same amount of socio-economic information as was given in the original study. In other words, by comparing the results of our “no information” treatment to the results of Berg et al. (1995), we can examine in which way trust and trustworthiness in South African student communities differs from the US students behaviour, when behaviour in both cases is elicited in absence of socio-economic discrimination effects.

Table 2 presents summary statistics on the original study by Berg et al. (1995) and our two treatments. The table displays the number of independent observations, the initial endowment size, the observed proportion of senders transferring zero, the average investment ratio (i.e. the ration of the sent amount to the endowment), and the average return ratio (i.e. the ratio of the amount returned to the initial endowment plus received transfer). It is striking how close the values of the three observational variables are, when we compare our “no information” data to the original data. In fact, statistical tests confirm that there is no difference between the behaviour of US and South African subjects in the trust game.¹¹

Interestingly, this result also goes through, if we compare the behaviour of the subjects in each of the socio-economic groups of the “no information” treatment separately. Table 3 reports because no interaction has taken place, when subjects make their decisions. Furthermore the strategy method guarantees that we can match unbalanced groups without letting any subject play more than once and without deceiving subjects.

¹¹The Mann-Whitney test on the equality of medians of the amount sent between South African experiment and Berg et al is equal to $p = 0.83$. The proportion returned in our experiment was similar to Berg et al. and not surprisingly no significant difference appears. The Mann-Whitney test statistic equals 0.34.

Table 2: Comparison of Behavior of Subjects in Berg *et al.* (1995) and South Africa

	Berg <i>et al.</i>	South Africa ¹⁾	
	(1995)	No Information	With Information
Initial endowment Size	10.00 US \$	20.00 ZAF \$	20.00 ZAF \$
Independent Observations	32	28	144
Proportion of players who sent zero	0.06	0.04	0.09
Mean amount sent out of endowment	0.52	0.55	0.45
Mean return ratio	0.28	0.28	0.29

¹⁾In Berg *et al.* (1995), second players make responses only when senders invest more than zero while in South African experiment subjects continue to play as we used the strategy method.

the investment ratio (both actual and anticipated) as well as the return ratio (both actual and anticipated) for the sub-samples in the “no information” treatment.¹² Trusting and reciprocating behaviour in none of the sub-sample groups of the “no information” treatment is statistically different from the behaviour of the Berg et al. (1995) subjects. Furthermore, none of the across sub-sample comparisons (e.g. BL vs. WL, BL vs. WH etc.) reveals a significant difference in behaviour. Thus, despite the fact that the South African society is rather heterogeneous, it seems that the general level of trust and trustworthiness (as measured by the trust game) is similar to the level found in more homogenous societies (Camerer 2003) when discrimination based on the race or income information is not possible.

Table 3: Averages as a percentage of available amounts under No Information treatment

	BL	WL	WH
Amount sent (%)	56.00	60.00	56.25
Anticipated return (%)	30.93	33.25	33.25
Amount returned (%)	29.65	25.75	29.59
Anticipated amount sent (%)	62.00	70.00	61.25

3.2 Aggregate outcomes with race and income information

The last column of Table 2 displays the average aggregate outcomes in the “information” treatment, in which subjects were given socio-economic information on their counterparts. Despite the fact that there are a few more investors sending 0 and that the average aggregate investment is slightly lower in the “information” than in the “no information” treatment, we do neither observe strong and significant differences when comparing our treatments to one another, nor when comparing them to the results of Berg et al. (1995). Even a closer look at the relationship between the invested amount and the return ratio, does not reveal any behavioural differences on the aggregate

¹²The BH sub-sample is left out of this analysis, due to the very small number of observations we have.

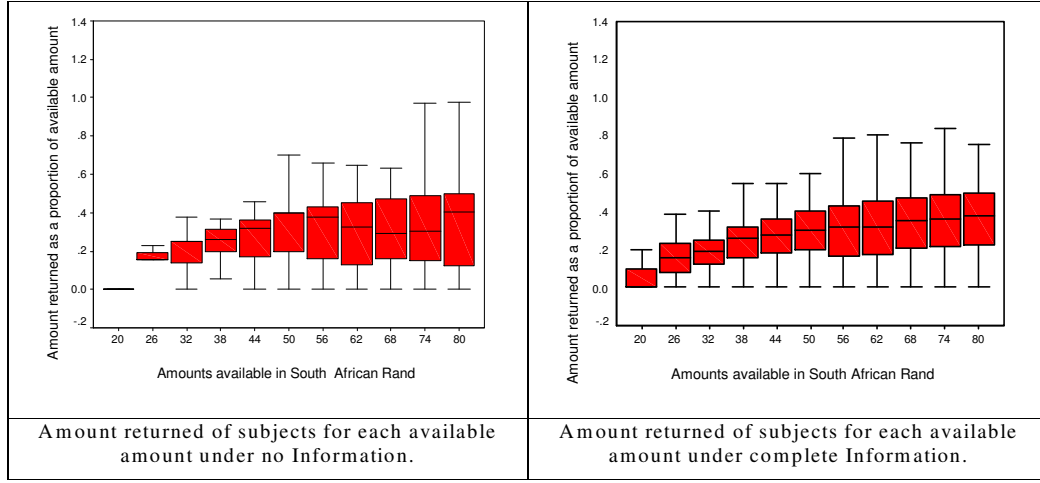


Figure 1: Aggregate return ratio at different investment levels.

level. As displayed by Figure 1, the way the average return ratio increases with the investment level seems to be very similar both with and without socio-economic information.

3.3 Group specific investment decisions with race and income information

While the effect of race and income information seems rather small in the aggregate, we can use our detailed data to analyse whether differences exist between the socio-economic groups.¹³ Figure 2 shows the average investment ratio exhibited by the subjects in each of the four socio-economic sub-samples (BL, BH, WL, and WH) of the “information” treatment when facing a receiver from their own or from each of the other groups. To facilitate the comparisons, the average investment ratios are shown as deviations from the average investment ratio in the “no information” treatment (i.e. 0.55). We use the behaviour in the “no information” treatment as a benchmark, because it cannot be biased by any deliberate discrimination that specifically targets the socio-economic group of the counterpart. Furthermore, since we have established that the behaviour in our “no information” treatment is indistinguishable from the trust game behaviour observed in completely different cultural settings, the “no information” benchmark seems to exhibit a certain degree of universality.

¹³Detailed information on the average amount sent, returned and the anticipations about return gifts and sent amount as a percentage of available amount is presented for all groups in Appendix B.

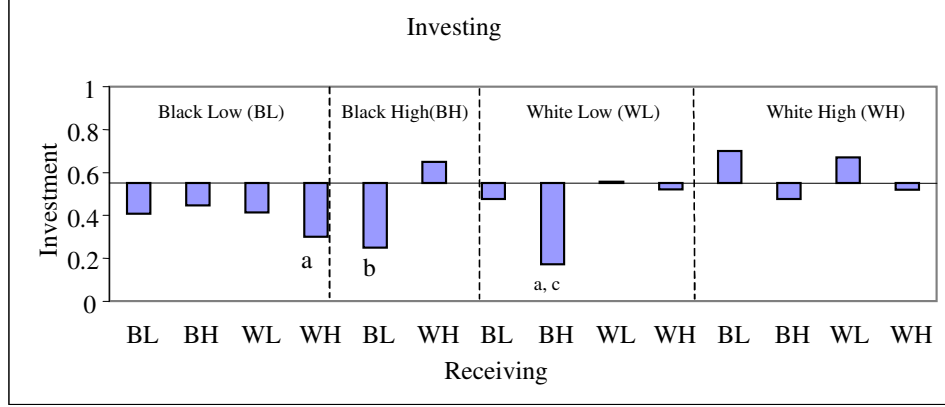


Figure 2: The bars represent the average investment ratio in each socio-economic group (sub-title on top) in partnerships with subjects of each socio-economic group (indicated on the X-axis). (a) Significantly lower investment ratio in partnerships with WH receivers than in the no information benchmark. (b) Significantly lower investment ratio in partnerships with BL than with WH. (c) Significantly lower investment ratio in partnerships with BH than with any other socio-economic group (WH, WL and BL).

The left most section of Figure 2 displays the average investment ratios chosen by BL-subjects in each of their four possible partnerships. Although all four averages lie below the benchmark of the “no information” treatment, only investment ratios in partnerships with WH-subject are on average significantly below the benchmark.¹⁴ The third section of Figure 2 shows that WL-subjects also tend to invest less when they have socio-economic information on their counterpart than when they do not. Exactly as in the case of the BL-subject, a cross-racial relationship specifies the only partnership, in which the WL-subjects’ investments are significantly lower than in the “no information” benchmark. The average investment ratio of the WL-subjects in informed partnerships with BH-subjects is just above 17%, which is not only dramatically and significantly less than the average 60% investment ratio of WL-subjects in the “no information” treatment, but also significantly less than any of their average investment ratio in partnerships with any of the other three groups (47.5%, 55.7%, and 52% for BL, WL, and WH, respectively).

The second and fourth sections of Figure 2 show that while WH-subjects on average do not differentiate their investments by socio-economic categories (i.e. there are no significant effects of the socio-economic information on investment behaviour), the BH-subjects do. The average investment of BH-subjects in partnerships with BL-subjects is significantly lower than their average investment in partnerships with WH-subjects. The average investment ratio of BH in BL-partnerships (25%)

¹⁴We compare the group’s decisions with the overall averages (benchmark case). It would not change our results, if comparison were made with group averages. Moreover, we do not find any statistically significant differences in the behaviour of the BL subjects when comparing locations, i.e. Potchefstroom to Mafikeng.

is also substantially below the BH average investment ratio in the “no information” benchmark (55%). The lack of statistical significance in this comparison is most probably due to the relatively small number of observations with BH-subjects.

The fact that subjects differentiate their investments according to the socio-economic characteristics of their counterpart can be based either on a preference for discrimination or on distrust. Distrust towards a certain other group may not be justified, i.e. that group may actually be trustworthy on average, but thought to be the contrary, perhaps due to wide-spread prejudices in the investor group. In this case, we do not observe a personal preference for discrimination, but a societal tendency. Finally, if the distrust is actually justified, because the average return by partners from the specific socio-economic group is below the return by others, then the low investment may be solely driven by economic incentives and completely free of a preference for discrimination.

Figure 3 shows that subjects in two of three cases, in which we observe extremely low investment ratios, BL in partnerships with WH and BH with BL, are mainly driven by a preference for discrimination. In both of these cases, the expected average return ratio of the group discriminated against is not lower than that of any other group. Hence, since subjects on average expect a similar return to their investment, there is no economic reason to invest significantly less in one project than in the other. In contrast, the extremely low investment case that we observed, WL in partnerships with BH, actually seems to be based on economic motives, since the WL-subjects on average expect significantly lower return ratios in partnerships with black counterparts than with white counterparts. While it seems clear that the WL-subjects keep investments to BL and BH-subjects low, because they distrust them, it is not obvious, whether this distrust is actually justified or whether it is a form of “second order” discrimination, because it is based on prejudices and false beliefs concerning the economic behaviour of a specific socio-economic group. As the analysis of the actual return behaviour in the next sub-section shows, the latter is the case, i.e. the low expectations that the WL-subjects have concerning the return behaviour of BL and BH-subjects turn out to be wrong. This obviously leaves the question open, why the WL-subjects have such a grossly wrong opinion on the behaviour of the BL and BH-subjects.

3.4 Group specific return decisions with race and income information

Figure 4 indicates the average return ratio chosen by the subjects of each socio-economic group in their partnerships with subjects of different socio-economic groups. None of the average return ratios is significantly different from the average return ratio observed in the “no information” treatment. Furthermore, there is only a single case in which the subjects of one group significantly differentiate their return responses on the basis of the socio-economic characteristics. BL subjects exhibit lower return ratios in partnerships with WH subjects than with WL subjects. This seems to correspond to the cross-racial envy effect that we also observe concerning the investment ratio

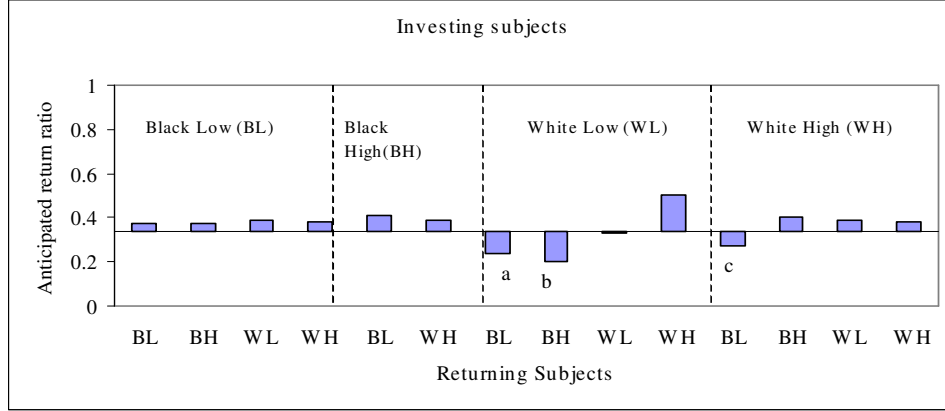


Figure 3: The bars represent the average return ratio expected in each socio-economic group (sub-title on top) in partnerships with subjects of each socio-economic group (indicated on the X-axis). (a) Significantly lower return ratio expected in partnerships with BL than with WH. (b) Significantly lower return ratio expected in partnerships with BH than with WH. (c) Significantly lower return ratio expected in partnerships with BL than with BH.

of the BL subjects. It seems that WH subjects are generally treated somewhat worse by the BL subjects. Note first, that this behaviour must be driven by some non-monetary motivation, because the BL subjects invest less in partnerships with WH subjects even though they do not expect lower returns. Note also, that the adverse treatment of WH subjects by BL subjects cannot be a purely racial differentiation effect, since we observe a (insignificantly) higher average return ratio of the BL subjects in partnerships with WL subjects than in any partnership with black subjects.

In Figure 5, the percentage of the endowments that the returning subjects anticipate to receive from the senders is represented, compared to the no information benchmark case. Most of the direction of the effects conforms to the above results, i.e. BH subjects anticipate to be sent more from WH subjects than from BL subjects, and WL subjects expect especially less from BH subjects than from subjects of their own group. As indicated in the figure, this last difference is statistically significant.

Figure 5 displays the average investment ratios that were expected in each type of partnership by the receiving subjects in each of the socio-economic groups. As in the previous figures, the average investment ratio expected in the “no information” treatment is used as a benchmark. In general, the expressed expectations are not significantly distinguishable from the benchmark. Nevertheless, two interesting observation can be made. First, in many cases where an above benchmark investment ratio was expected, the actual investment ratio was below zero and vice versa. In other words, the expectations are not always well aligned with the actual behaviour. Second, the only significant effects observed relate to the expectations of white subjects concerning

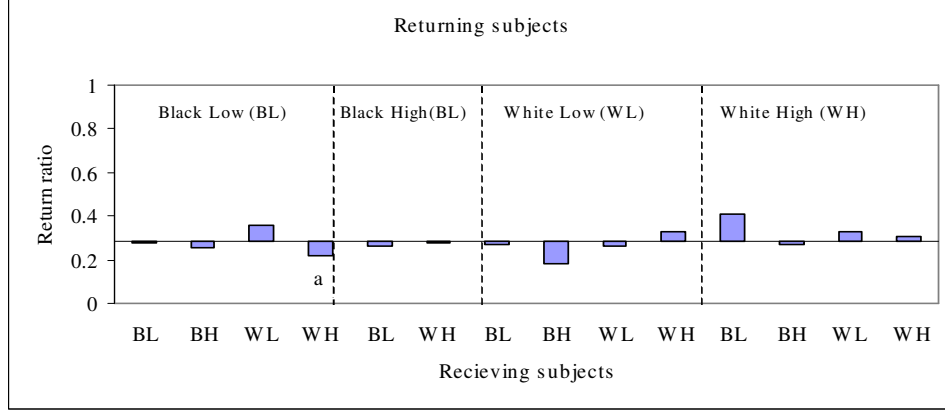


Figure 4: The bars represent the average return ratio in each socio-economic group (sub-title on top) in partnerships with subjects of each socio-economic group (indicated on the X-axis). (a) Significantly lower return ratio in partnerships with WH than with WL.

the investment ratios of BH and WL subjects. All white subjects expect too low investment ratios by BH subjects and too high investment ratios by the WL subjects, when compared to the actual investment behaviour.

3.5 Do we have discrimination based on race or income?

The above results demonstrate the complicated race-income relationship that apparently holds in the South African society. Trust, mistrust, discrimination, and cooperative attitudes cross racial and income lines in non-trivial ways. This seems to suggest that discrimination, if it exists, is not based purely on race or income, but rather on an adverse interaction between racial and income inequality. This claim is evaluated by analyzing whether pure racial or income effects of our treatment variables can be found in our data.

In order to assess the pure racial effects, we examine trust and trustworthiness within different race but the same income groups. To be more specific, we take as a benchmark homogeneous partners in the full information trust games, who are equal both in terms of income and in terms of race, i.e. the couples BLBL, WLWL, and WHWH, respectively. We compare each benchmark couple with a couple where the second subject differs from the first subject by his or her race, but not by income. If a change in race alone produces a significant effect on the first player's behavior, then apparently racial discrimination is causing this effect.

Keeping income fixed we find that subjects do not behave differently towards subjects from a different race: none of the produced differences are significantly different from zero. Keeping race fixed, one significant difference can be observed: the average expected amount WL subjects expect

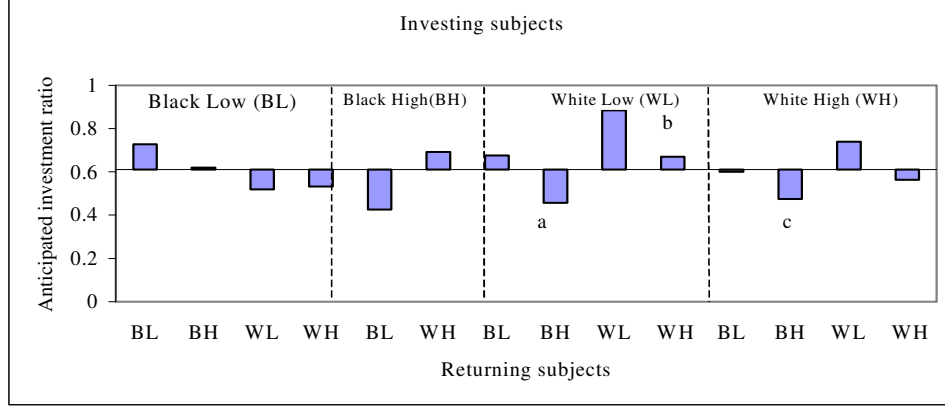


Figure 5: The bars represent the average investment ratio expected in each socio-economic group (sub-title on top) in partnerships with subjects of each socio-economic group (indicated on the X-axis). (a) Significantly lower investment ratio expected in partnerships with BH than with WL. (b) Significantly lower investment ratio expected in partnerships with WH than with WL. (c) Significantly lower investment ratio expected in partnerships with BH than with WL.

to receive from subjects out of their own group is higher than what they expect to get from WH subjects, i.e. 88.51% versus 67%.

Looking at the third part of table 4 that takes into account the interaction effects of race and income; we observe several behavioral differences. In accordance with the results above, we do find BL subjects to reciprocate more towards WL than WH, namely 35.92% and 21.63%, respectively. The Mann Whitney U-test indicates that this difference is significant at 5%.

Regarding the behavior of WL subjects, their mistrust against BH subjects is very clear from the table. They send more to all other groups. The ensuing differences are all statistically significant. Moreover, WL subjects expect to get less in return from BH subjects than from subjects of the two white groups. Regarding their attitude on BL subjects, on the other hand, such an unambiguous expectation of low returns on sent amount cannot be observed. Apparently, WL subjects have a biased opinion on BH subjects' behavior, but this bias is much less pronounced regarding BL subjects.

An intriguing significant relationship is given by the attitude of BH subjects towards BL subjects. BH subjects send a significantly higher percentage of their initial endowment to WH subjects than to BL subjects, i.e. 65% compared to 25%.¹⁵ BH subjects, moreover, expect the BL subjects to send them significantly less than WH subjects send them. In actual fact, BL subjects did not send less to BH subjects than to subjects from other groups. One might interpret this result as

¹⁵Due to the fact that we didn't have enough black high subjects, we only compared observed behaviour between two treatments as shown in Appendix B.

Table 4: Differences in the average amounts of subject's decisions with respective treatments

Pair	Amount sent	Anticipated return	Amount returned	Anticipated sent
Pure Racial Effect				
BLBL-BLWL	-0.65 (0.811)	-0.33 (0.890)	-7.96 (0.320)	20.85 (0.117)
WLWL-WLBL	8.21 (0.764)	9.00 (0.210)	-0.68 (0.930)	21.01 (0.221)
WHWH-WHBH	4.30 (0.996)	4.30 (0.919)	3.69 (0.599)	8.85 (0.249)
Pure Income Effect				
BLBL-BLBH	-4.00 (0.826)	0.50 (0.670)	2.75 (0.740)	10.85 (0.303)
WLWL-WLWH	3.71 (0.994)	-17.10 (0.181)	-6.58 (0.813)	21.51 (0.099)
WHWH-WHWL	-15.20 (0.298)	-0.57 (0.986)	1.96 (0.704)	17.65 (0.255)
Interaction of Racial and Income Effect				
BLWL-BLBH	-3.35 (0.962)	1.73 (0.510)	10.71 (0.110)	-10.00 (0.538)
BLWH-BLBH	-14.65 (0.218)	0.83 (0.550)	-3.58 (0.470)	-8.75 (0.563)
BLWH-BLBL	-10.65 (0.318)	0.33 (0.550)	-6.33 (0.470)	19.60 (0.122)
BLWH-BLWL	-11.30 (0.112)	-0.90 (0.710)	-14.29 (0.350)	1.25 (0.820)
BHWH-BHBL	40.00 (0.011)***	-2.17 (0.853)	0.85 (0.420)	26.65 (0.106)
WLBH-WLBL	-30.35 (0.012)***	-3.71 (0.494)	-8.24 (0.320)	-21.79 (0.300)
WLWH-WLBL	4.50 (0.84)	26.10 (0.051)**	5.90 (1.000)	-0.50 (1.000)
WLWL-WLBH	38.56 (0.001)***	12.71 (0.050)**	7.56 (0.380)	42.80 (0.027)**
WLWH-WLBH	34.85 (0.027)**	29.81 (0.005)***	14.14 (0.330)	21.29 (0.13)
WHWH-WHBL	-18.20 (0.200)	11.20 (0.181)	-10.27 (0.551)	-3.65 (0.832)
WHWL-WHBH	19.50 (0.262)	-1.20 (0.966)	5.70 (0.880)	26.50 (0.009)***
WHWL-WHBL	-3.00 (0.844)	11.69 (0.387)	-8.31 (0.365)	14.00 (0.447)
WHBH-WHBL	-22.50 (0.137)	12.89 (0.011)**	-13.96 (0.223)	-12.50 (0.355)

The entries give the difference in the average values (in terms of %) the amount sent, returned and expectations under complete information. The numbers in the brackets denote p-values of the Mann-Whitney U-test. *, ** and *** denote significant at 10%, 5% and 1% respectively.

implying that rising intra-group inequality has reduced trust within the races instead of between the races, as seen by the BH subjects tending to invest more in WH subjects than in BL subjects.¹⁶

Finally, for WH subjects, we do not find any statistically significant differences in their behavior towards subjects from other groups, but only in their expectations about reciprocity and trust. They expect to get more in return from BH than from BL subjects, and expect that WL subjects as senders will send them more than BH subjects. The latter expectation is not based on racial stereotypes, however, as WH subjects do not expect to be sent less by BL subjects than WL subjects.

3.6 Payoff Consequences

As noted in section 2, participants were endowed with $X = 20$ ZAF and can send any amount to the responder from his/her endowment. However, the choice set of the sender was restricted to even numbers $x_i \in \{0, 2, \dots, 18, 20\}$ and this is automatically tripled by the experimenter and added to the endowment of the responder. Unlike the sender, the responder can give back for each amount any amount between zero and $3x_i + 20$. Therefore, as a sender, the expected payoff of an individual is:

$$\pi_i^s = \frac{1}{n-1} \sum_{j=1, j \neq i}^n (X - x_i + z_j(x_i)), \quad (1)$$

where π_i^s = expected payoff a sender, n = number of players and z_j is amount returned, where $z_j \in \{0, \dots, 3x_i + 20\}$. The element of the vector of responses which corresponded to the actual investment of the sender was chosen to be played and determines the payoff of a sender. As a role of a responder, similarly, the expected payoff of a given player is:

$$\pi_i^r = \frac{1}{n-1} \sum_{j=1, j \neq i}^n (3x_j + X - z_i(x_j)) \quad (2)$$

where π_i^r is the expected payoff for players who are assigned randomly to be responders and x_j is amount sent by other players. Since in our experiment participants played both as a role of a sender and the role of receiver, the expected payoff any participant is:

$$\pi_i^p = \frac{1}{2(n-1)} \left\{ \sum_{j=1, j \neq i}^n (X - x_i + z_j(x_i)) + \sum_{j=1, j \neq i}^n (3x_j + X - z_i(x_j)) \right\} \quad (3)$$

where π_i^p is the expected payoff of a player regardless of his role. The observed action of subjects has resulted in payoff differences between different treatments. A comparison of average earnings for all groups between complete and incomplete information, which actually is the reflection of

¹⁶La Ferrara (2002) also finds that when inequality is higher, group composition is less likely to be formed on a mixed income group indicating that people tend to sort into homogeneous income groups.

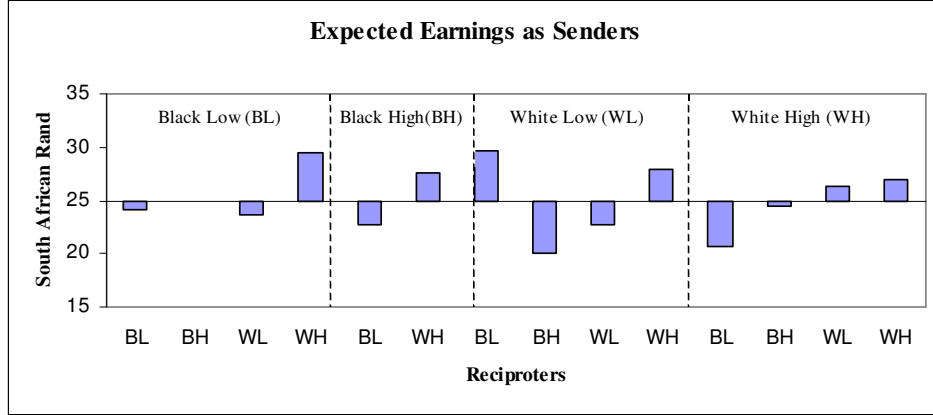


Figure 6:

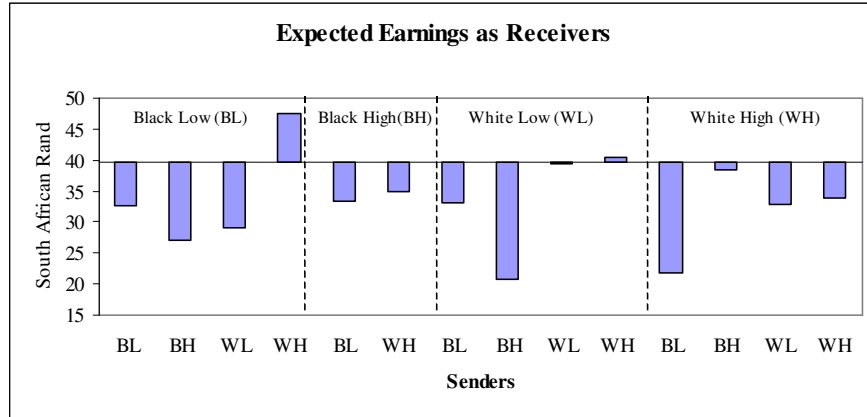


Figure 7:

the behavior responses of subjects discussed in the previous sections, is portrayed in the following figures.

The major results of the difference in expected payoffs with respective treatments can be summarized in the following way. Firstly, the payoff interaction of the racial pair of BL and WH yields a statistically significant payoff difference due to the fact that WH are generous towards BL subjects. BL on the contrary, tend to invest and return lower amount of South African Rand. As a result the BL subjects benefited a lot by being matched with WH subjects. On the contrary the expected payoff of WH subjects as sender and receivers is drastically lower when matched with BL subjects.

This is not only because individuals from high income groups are generous towards others that would result in earning differentials. But this is not because rich people tend to transfer a lot

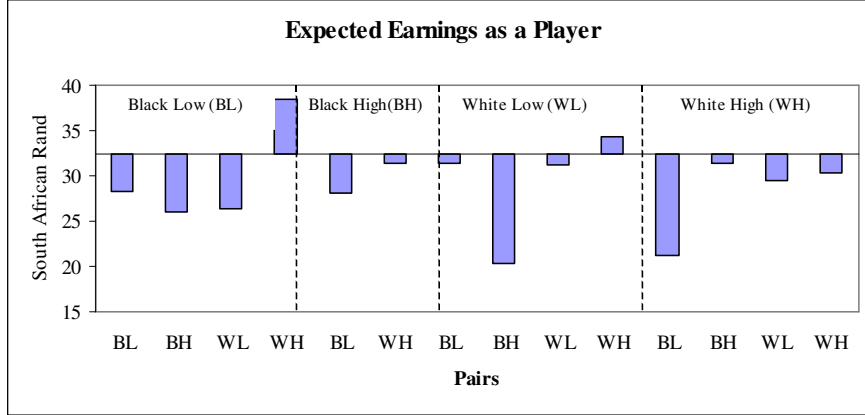


Figure 8:

towards low income groups. When WL subjects are matched with WH, no substantial payoff difference is observed. To the contrary WL (as a sender) will be better off if matched with their own type. Thus WL subject, as a sender is better off if matched with in their own group than, for example, with WH.

Secondly, the payoff interaction of the racial pair of BL and WL yields a statistically less significant income payoff for the BL subjects. This is because the BL subjects were generous towards the WL subjects. The expected payoff of BL subjects when matched with WL is less than when a BL is paired with his/her own type. Consequently WL subject, will gain more if matched with BL subjects. For a WL subject, as a sender he will earn 6.94 dollar more if matched with BL type than with his own type. Again this is a clear indication that there is no negative pure racial effect.

More so the payoff interaction of the racial pair of BL and BH results to a statistically significant expected payoff differences. When BH are paired with WH, the expected payoff BH as senders is significantly higher when matched with their own income group i.e. with WH than with BL. This means that since on average responders are conditionally cooperative i.e. give back out of available amount in non monotonic way, then BH subjects received a less amount on average from BL. In addition to this BH groups tend to reciprocate very little towards BL subjects. As a consequence, a BL individual is always better off to be matched with BL type than with BH type.

4 Determinants of Experimental Decisions

A secondary contribution of this paper is to explore the extent to which individual subjects' answers to a variety of survey questions explain the observed behavior. In all regressions, we include the

control variables i.e. gender (female and male), race (white and black) and income (low and high), match characteristics, parents education, attitudinal questions i.e. WVS questions, perception and economic position questions and, finally, we also include participants beliefs about the experiment i.e. about the amount they want to return, and what they expect from the senders.¹⁷ The dependent variable for the sender is the percentage of the amount sent out of the initial stake passed to the responder. For the responder, the dependent variable is the percentage of the amount that was passed back to the sender out of the total available amount. Details on variable definitions are included in Appendix C.

First we discuss the correlate of amount sent to other variables, often mentioned as a determinant of trust, and then we examine the determinants of amount returned.

4.1 Investment Ratio

The non-parametric results in section 3 suggest that social distance in terms of both racial and income differences do have a significant influence on the observed behavior of the amount sent. This section tries to replicate this findings with econometric analyses of the participant's decisions. We use the two-limit Tobit estimator, as the dependent variable is the proportion of the amount sent; thus, the dependent variable is a continuous variable but must lie between 0 and 1. More over, our data suggest that 9.02% and 18.75% of subjects, who participated on complete information treatment, sent zero and entire amounts respectively. This justifies the use of the double censored Tobit estimator that can be represented as follows:

$$s_i^* = x_i' \beta + \varepsilon_i \quad (4)$$

where s_i^* is a latent variable (unobserved for values smaller than 0 and greater than 1) representing the proportion of amount sent out of initial stake; x is a vector of independent variables, which also includes the participants beliefs affecting experimental trust; β is a vector of unknown parameters; and ε_i is a disturbance assumed to be independently and normally distributed with zero mean and constant variance and $i = 1, 2, \dots, N$ (N is the number of observations). Denoting s_i^* (the proportion of amount sent) as the observed dependent (censored) variable:

$$s_i = \left\{ \begin{array}{ll} 0 & \text{if } s_i^* \leq 0 \\ s_i^{*p} & \text{if } 0 \leq s_i^* \leq 1 \\ 1 & \text{if } s_i^* \geq 1 \end{array} \right\} \quad (5)$$

Using the two-limit Tobit, the propensity to trust is regressed on proxies for various factors hypothesized to influence the amount sent. The estimated results are presented in Table D1.

¹⁷Principal component analysis has been used to construct both trust and perception index. This method was also applied by GLSS(2000).

The regressions include the pairing characteristics of subjects, such as income or race similarity. In our regressions, we include a dummy variable that takes on a value of one if the sender was matched with different race and zero otherwise. The estimate of racial distance, captured by a variable `RACE_HETRO`, is not significant at any conventional levels. Unlike Gneezy and Freshman (2000) and Glaeser and et al. (2000), the amount sent in the South African experiment is not affected by the familiarity of the race of the subject with other participants. We also include a dummy variable that takes on a value of one if the subjects are matched with different income groups. We find that when individuals are matched with different income groups, amount transferred is higher. The coefficient of `INCOME_HETRO` is marginally significant at 10% in the last specifications as shown in regression [5]. The measure of social distance in both income and race has the expected negative sign but is not statistically significant, failing to replicate the non-parametric results. This is partly attributed to the fact that in our sample the WH subjects sent a higher amount towards BL subjects and this understates the negative effect of `SOCIAL_DISTANCE` variable on the propensity to trust. Results from non-parametric results suggest that the negative effect of race comes from the low inequality to high inequality group pairings. In order to take this in to account, we include an interactive term of income and social distance variable (`INCOME*SOC`) in regression [3]. As expected, the interactive term of `SOCIAL_DISTANCE` with `INCOME` is negative and significant at 1% suggesting that the amount sent tend to be low when low income subjects are paired with other privileged racial groups.

In regression [5], the model was also extended with the beliefs of senders in determining experimental trust decision. As one can see, the inclusion of this variables increases the fit of the model. The coefficient on expected trust is positive and significant (1%), suggesting that beliefs of senders about what their counterpart could have sent plays an essential role in determining amount sent. However, unlike models of reciprocity would predict c.f. Falk and Fischbacher (2000), we find that trustor decisions are not correlated with the expectations of being reciprocated. The coefficient on expected trustworthiness is negative and insignificant.

The rest individual characteristics that encompass the basic demographics and the attitudinal questions do not have any significant effect on predicting the amount sent. Variables like `GENDER`, `RACE`, `INCOME`, `EDUCATION`, `TRUST_INDEX`, `PERCEPTION_INDEX` and questions related to the existence of equal opportunity have no effect on experimental trust. The next sub-section attempts do figure out the determinants of trustworthiness behavior of subjects under complete information.

4.2 Return Ratio

We also examine the effect of individual characteristics on the amount returned by the responders. Responders were asked to play strategy method by which they decide how much they will give

back for each of the 11 possible amounts they could receive from the sender. It implies that we observe a set of amount returned for each individual i.e. $r_{it} \in [0, 1]$ where $t_\theta \in \{1, \dots, 11\}$ is the available options and $\theta \in \{20, 26, \dots, 80\}$ is available amount and r denotes the return ratio (amount returned out of available amount). In order to assess the determinants of fraction returned for each individuals i across set of possible amounts that responders have a panel data is used. We use two variants of estimation methods i.e. the pooled Tobit estimator and Random effects Tobit model. The pooled estimator can be used to obtain a consistent estimator of the estimates using the following model:

$$r_{it} = x'_{it}\beta + \alpha_1\theta_t + \alpha_2\theta_t^2 + v_{it}, \quad t = 1, 2, \dots, 11 \quad (6)$$

where (x_i) denotes background characteristics, β vector of coefficients to be estimated, α_1 and α_2 are the coefficients to be estimated. The squared term (θ^2) is included to take in to account the concavity of the observed relationship between amount available and the amount reciprocated. Moreover, $v_{it} \equiv \varepsilon_i + u_{it}$ are the composite errors. For each t , v_{it} is the sum of the unobserved individual effect and an idiosyncratic error. Pooled OLS estimation of this equation is consistent if $E(x_{it}v_{it}) = 0$. However, pooled estimator could be inconsistent if the composite errors are serially correlated due to the presence of unobserved effect in each case. Therefore, inference using pooled estimate requires the robust variance matrix that can be used by random effects estimator which additionally required that $E(v_{it} | x_{it}) = 0$.

Note that our exogenous variables (x_i) vary between individuals, but do not vary over time within a given individual (e.g., gender, race, parents income etc). The parameters of the individual specific variables (x_i) cannot be estimate in the fixed effects model (that is, we cannot distinguish between observed and unobserved heterogeneity i.e. they will be removed by transformation). The random effects model therefore has the added advantage of allowing us to estimate parameters of which we are interested. For the random effects model to be appropriate, however, the observed heterogeneity (x_i) must be independent of the unobserved heterogeneity (v_i) .

The variable r_{it} in equation (6) is a latent variable, which represents an unobservable fraction returned by an individual to return some non-zero amounts to a potential partner j from the available options t . As one can see from figure 1, there was no responder who send his entire available amount, however 11.4% of the total observations state that they could give nothing if they don't get anything from the sender. To analyze responders decisions of the return ratio (controlling for unobserved values smaller than zero), we construct the observable left-censored variable r_{it} in the estimation as:

$$r_{it} = \begin{cases} r_{it}^* & \text{if } r_{it}^* > 0 \\ 0 & \text{if } r_{it}^* \leq 0 \end{cases} \quad (7)$$

Equation (7) allows a positive probability for sending a zero amount. Alternatively, it suggests that all values of the dependent variable that takes a value of 0 and below are censored at 0. As a

result we have 183 left censored observations at $r_{it}^* \leq 0$.

Table D2 contains the results of regressions where the dependent variable is the return ratio. Column (1) of Table D2 pooled the data across the 11 available options while the column (2) reports estimates of random effects model. Since more than half of the total unexplained variance is due individual effects there is a random component. The estimated rho (ρ) which reflects the relative importance of the variance of individual effects in relation to the total variance is significantly different from zero. In order to take the relative importance of the variance of unobserved effect, we focus, our interpretation in Column 2 of Table D2 that estimates the regressions using random effects Tobit model.

The result of the Censored-Tobit estimate shows, similar to many experimental results, amount returned is positively correlated to the available amount subjects have to return. Thus, the subjects' return behaviour is significantly different from the prediction of completely-selfish subgame perfect equilibrium. This is observed from the Tobit estimates, where θ is positive and the squared term of the variable (θ^2) is negative and both are statistically significant at 1% level, indicating that the probability of reciprocating increases with an increase in the availability of money received though it increases at a decreasing rate. Thus, other things the same, a one unit increase in θ per an individual will raise the probability of trustworthiness by about 0.2%.

Subjects from low income families tend to reciprocate lower amount than otherwise. This effect is captured by the negative and statistically significant coefficient of "INCOME" variable. Assuming other things remaining constant, the probability that an individual from low income family reciprocates is lower by 1.2% than those individuals from high income families. The variable "INCOME-HETRO", which captures when individuals are paired with different income groups, is negative and significant. Examination of the effect of "RACE HETRO" variable on trustworthiness reveals that it has a positive and statistically significant (5%) effect in explaining the observed behavior. That's controlling for income differences, heterogeneity in race does not hamper the level of trustworthiness behavior in South Africa. Observe that the only negative effect of race arises when it is accompanied with income difference. The "SOCIAL DISTANCE" variable captures when subjects are matched not with their own group both in race and income.

We also include an interaction variable that captures the negative effect of income inequality on the propensity to reciprocate. This effect is entirely captured by the interaction variable INCOME*SOC. The inclusion of this variable significantly improves the fit of the model. The only exception is that the coefficient for "SOCIAL DISTANCE" changes its sign from negative to positive. In order to see the net effect of social distance, we take the discrete change of the *INCOME* variable with the propensity to trustworthiness. If we evaluate the results in Table D2 by differencing when a low income subject subject is matched with other racial groups and high income groups, we obtain that the probability of reciprocating reduces by 2.5%.

Questions about equal opportunity and economic position are taken from World Value Survey (WVS); the variables are categorical responses to the following questions: If someone has a high social or economic position, do you agree strongly [4], agree somewhat [3], disagree somewhat [2], disagree strongly [1] that indicates the person has special abilities or great accomplishments? Does everyone in this country have an opportunity to obtain an education corresponding to his or her abilities and talents? [1]Yes [0] No. The perception index which is an indicator variable whether inequality is generated fairly or not, is related positively to trustworthiness level in South Africa. Individuals who believe that economic position is based on ability rather than by unfair means in South Africa, returned a higher amount than otherwise. The variable “PERCEPTION INDEX” is positive and significant (5%).

Similar to Glaeser *et al.* (2000), we also find strong evidence between the WVS trust question and the ratio of money returned. We find a positive relationship between the level of trustworthiness and trust index suggesting that attitudinal trust questions can predict trustworthiness behavior (WVS Helpful, Fair and Trust). Moreover, we also find that expected trustworthiness variable is positively correlated with the fraction returned and is significant at (1%) level. The impact of this variable suggests that trustworthiness also is based on expectations about people’s trustworthiness.

5 Concluding remarks

We report the results of a series of experimental trust games conducted in South Africa focusing on the effects of racial and income inequality on cooperation in partnerships. We vary the amount of socio-economic information available to the subjects about their counterparts in order to assess the effect of inequality between the partners. In the control treatment, in which no such information is provided, we observe no significant differences in the behaviour across races and income groups. In fact, despite the extreme heterogeneity of the South African society, we find that the general level of trust and trustworthiness observed in the control treatment is very similar to what is observed in more homogenous societies.

When socio-economic information on their counterparts is provided to the subjects, individual trust behaviour is affected significantly. While we neither observe simple racial nor simple income-based discrimination, we do observe that the low income subjects from both racial groups invest significantly less in partnerships with the high income subjects of the other racial group than in any other partnership. Interestingly, the exceptionally low investment ratios, that are observed in these “maximal distance” partnerships, cannot be attributed to particularly low return expectations. Hence, it seems clear that the motivation for such behaviour is genuinely non-monetary and perhaps best described as “cross-racial envy.”

Interestingly, with the one exception of black high-income subjects in partnerships with low-

income subjects of their own race, we find no differentiating or discriminatory action by high-income subjects towards other groups. This outcome is especially surprising, not only because of the history of “white supremacy” in South Africa, but also because the relative cost of discrimination is lower for the high-income groups than for the low-income groups (i.e. the efficiency loss in a mixed partnership hurts the rich less than it hurts the poor). It remains an open issue, whether the political changes of the last decades have created a social consensus of non-discrimination amongst the high-income white South Africans or whether the norm of non-discrimination had evolved earlier and was then at the root of the political process. In either case, our finding indicates a fundamental support of the anti-apartheid norms by the high-income white subjects, even when they have to “put their money where their mouth is,” i.e. bear the financial risk and cost of their non-discriminatory actions.

Although the results of this study, like those of most other micro-economic studies, must only be cautiously generalised to the macro-economic level, we do believe to have found some evidence with macro-economic implications. On the one hand, it seems that substantial socio-economic gaps in an economy, i.e. great cultural diversity and considerable inequality, may interact to create inefficiencies due to distrust and discrimination. Hence, we find some support for the growing body of literature that indicates that closing the “gaps” may actually increase economic efficiency. On the other hand, however, our results also seem to indicate that the genesis of inequality affects the attitudes and the behaviour of the economic agents. Thus, we must conclude that socio-economic differences may affect behaviour in different ways, depending on the history of social interaction. The history of social interaction in South Africa, for example, may explain why high-income black subjects may have less scruples to discriminate against others than high-income white subjects.

Finally, since the provision of socio-economic information may exacerbate the inefficiency caused by distrust and discrimination, states with high degrees of social diversity and economic inequality may be well-advised to create institutions that mask all personal attributes of investors. This may be achieved by installing (trusted) government financing or (controlled) impersonal investment and venture capital corporations.

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Appendix A. Instructions

Welcome to our experiment, which is part of a research project of Tilburg University in co-operation with the North West University. In this experiment you can earn real money that will be paid to you privately in cash at the end of the experiment. Because participants take part in the experiment at different times and places, the experiment may not end today. After the session, we will inform you when and where you can pick up your payoff. How much money you will receive in the end depends on your decisions and the decisions of other participants of the experiment.

We will read these instructions together. After this you will have ample opportunity to ask questions. If you have a question by then, please raise your hand and we will help you.

Description

In this experiment, you will be randomly matched to another participant. Both of you start with an endowment of 20 Rand. Each of you will decide what amount of money to transfer to the other. You will decide one after the other. The first to decide is called player A, the second to decide is called player B. For now you do not know whether you are player A or B. You will be informed later.

If you are player A, you will decide how much of your initial endowment (20 Rand) you want to transfer to player B. The amount that you transfer to player B must be an even number that means a number from the set $\{0, 2, 4, 6, 8, 10, 12, 14, 16, 18, 20\}$. Your transfer to B will be tripled by the experimenter. For example, if you are player A and transfer 4 Rand to player B, the amount that B will actually receive is $3 * 4 = 12$ Rand. Note that you can decide not to transfer money to player B. If you do not, then nothing is tripled and each of you will have the original 20 Rand to take home.

If you are player B, you will receive the tripled amount of money that was transferred to you by player A. This tripled amount is added to your initial endowment of 20 Rand. For example, if you are player B and player A has transferred 4 Rand to you, then you will have total amount of $20 + 12 = 32$ Rand. Now, you can decide to transfer some part of your total earnings to A. Your transfer to A is not tripled. The remaining part of your total earnings (the amount that you did not transfer to A) is your payoff of the experiment. Note that you can decide not to transfer money to player A. If you do not, then you will have your total earnings to take home, while A will have the original endowment minus the transfer made to you.

Decision Form (with information on partner)

This is the decision form that you must fill out. You will make decisions both for the role as player A and as player B. A random draw will later determine whether you are actually player A or player B.

Upon registration, the participant to whom you are matched has provided the following information*):

Race ☐ black ☐ white ☐ other
Family Income ☐ below average ☐ above average

The corresponding information that you have provided is also given to the participant you are matched with.

Suppose you are player A

Please, fill in your decisions as player A on the blanks in the lines 1) and 2).

1) Your transfer to player B is _____ Rand

Remember that you may only choose an even number.

So, you may choose from: 0, 2, 4, 6, 8, 10, 12, 14, 16, 18, or 20.

2) You expect B to transfer to you _____ Rand

Suppose you are player B

The table below lists all possible amounts that player A may send to you. If you are randomly determined to be player B, only one of these amounts will actually count, namely the one that was chosen by the player A who is matched to you. But, since for now you do not know which amount will actually be chosen by player A, you must make a transfer decision for every possible amount.

<i>A</i> transfers	0	2	4	6	8	10	12	14	16	18	20
<i>A</i> retains	20	18	16	14	12	10	8	6	4	2	0
<i>B</i> receives	0	6	12	18	24	30	36	42	48	54	60
<i>B</i> has	20	26	32	38	44	50	56	62	68	74	80
<i>B</i> transfers											
<p style="text-align: center;">↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑</p> <p style="text-align: center;">Please, fill in a transfer to <i>A</i> in each of these empty cells.</p> <p style="text-align: center;">Make sure that the transfer you fill in is not greater than the amount in the cell immediately above it.</p>											

2) You expect A to transfer to you _____ Rand

Remember that A may only choose an even number.

So, A may choose from: 0, 2, 4, 6, 8, 10, 12, 14, 16, 18, or 20.

Appendix B

Table B1. Average amount sent, returned and expectations about reciprocity and trust (Figures are in %).

Sending Subjects	Receiving Subjects				
	No Info.	BL	BH	WL	WH
BL	56.00	64.05	44.65	41.30	30.00
BH	10.00	25.00	-	-	65.00
WL	60.00	47.50	17.15	55.71	52.00
WH	56.25	70.00	47.50	67.00	51.80
Anticipated return	Returning Subjects				
	No Info.	BL	BH	WL	WH
BL	30.93	37.57	37.07	38.80	37.90
BH	77.00	40.67	-	-	38.50
WL	33.25	24.00	20.29	33.00	50.10
WH	33.25	27.11	40.00	38.80	38.23
Returning subjects	Receiving Subjects				
	No Info.	BL	BH	WL	WH
BL	29.65	27.96	25.21	35.92	21.63
BH	9.00	26.58	-	-	27.43
WL	25.75	26.82	18.58	26.14	32.72
WH	29.50	41.03	27.07	32.72	30.76
Anticipated amt. sent	Sending Subjects				
	No Info.	BL	BH	WL	WH
BL	62.00	72.85	62.00	52.00	53.25
BH	10.00	42.50	-	-	69.15
WL	70.00	67.50	45.51	88.51	67.00
WH	61.25	60.00	47.50	74.00	56.35

Table B2. Differences in the average amounts of subject's decisions between complete and no information treatment.

Treatments	Amount sent	Anticipated return	Amount returned	Anticipated sent
Black Lows (BL)				
BLNI- BLBL	15.35 [0.222]	-6.64 [0.524]	1.69 [0.840]	-10.85 [0.521]
BLNI -BLBH	11.35 [0.354]	-6.14 [0.770]	4.44 [0.580]	0.00 [0.820]
BLNI- BLWL	14.70 [0.249]	-7.87 [0.410]	-6.27[0.320]	10.00 [0.410]
BLNI -BLWH	26.00 [0.018]**	-6.97 [0.490]	8.02 [0.250]	8.75 [0.360]
White Lows (WL)				
WLNI - WLWH	8.00 [0.796]	-16.85 [0.323]	-6.97 [0.730]	3.00 [0.970]
WLNI -WLWL	4.29 [0.000]***	0.25 [0.821]	-0.39 [1.000]	18.51 [0.194]
WLNI -WLBH	42.85 [0.006]***	12.96 [0.106]	7.17 [0.527]	24.29[0.260]
WLNI -WLBL	12.50 [0.800]	9.25 [0.486]	-1.07 [0.686]	2.50 [1.000]
White Highs (WH)				
WHNI-WHBL	13.75 [0.318]	6.14 [0.308]	-11.44 [0.475]	1.25 [0.943]
WHNI WHBH	8.75 [0.364]	6.75 [0.333]	2.52 [0.434]	13.75 [0.267]
WHNI-WHWL	-10.75 [0.641]	-5.55 [0.680]	-3.13 [0.759]	-12.75 [0.210]
WHNI-WHWH	4.41 [0.576]	-4.98 [0.477]	-1.17 [0.920]	4.90 [0.953]

The entries give the difference in the average values (in terms of percentages) of the amount sent, returned and expectations under no information. The numbers in the brackets represent Mann-Whitney U-test. *, ** and *** denote significant level at 10%, 5% and 1% respectively.

Table C1. Definition of variables and summary statistics

VARIABLES	Mean	StD	Definition of variables used
GENDER	0.473	0.450	Dummy 1 if Male
RACE	0.459	0.498	Dummy 1 if White
INCOME	0.646	0.479	Dummy 1 if family income is below average
EDUCATION	0.465	0.500	Dummy 1 if parents education is degree
PERCEPTION	2.850	0.869	Index of equality in economic positions
OPPORTUNITY	0.479	0.500	Dummy 1 if equality in opportunity
TRUST INDEX	0.706	0.707	Index of GSS fair, trust and help
INCOME-HETRO	0.534	0.500	Dummy 1 if match is different in income
RACE-HETRO	0.479	0.500	Dummy 1 if match is different in race
AMOUNT SENT	0.451	0.321	Amount sent out of available stake
RETURN RATIO	0.285	0.224	Amount returned out of available amount
Ex.Trustworthiness	0.367	0.207	Expected return out of available amount
Ex.Trust	0.606	0.311	Expected amount sent out of available amount
SOCIAL DISTANCE	0.250	0.433	Interaction term for INCOME-HETRO x RACE-HETRO
INCOME*SOC	0.187	0.390	Interaction term for INCOME x SOCIAL DISTANCE

Table D1. Double-Censored Tobit Estimates on the Amount Sent

	1	2	3	4	5
CONSTANT	0.547 (0.089)***	0.525 (0.111)***	0.493 (0.109)***	0.604 (0.181)***	0.198 (0.176)
GENDER	-0.062 (0.071)	-0.059 (0.071)	-0.069 (0.069)	-0.063 (0.074)	-0.049 (0.063)
INCOME	-0.161 (0.081)**	-0.144 (0.082)*	-0.062 (0.086)	-0.050 (0.091)	-0.124 (0.078)
RACE	0.120 (0.078)	0.127 (0.078)	0.096 (0.077)	0.082 (0.084)	0.046 (0.070)
INCOME-HETRO		0.056 (0.098)	0.057 (0.096)	0.081 (0.097)	0.141 (0.084)*
RACE-HETRO		0.034 (0.104)	0.034 (0.101)	0.035 (0.102)	0.137 (0.088)
SOCIAL DISTANCE		-0.161 (0.143)	0.179 (0.194)	0.171 (0.195)	0.055 (0.169)
INCOME*SOC			-0.462 (0.184)***	-0.487 (0.189)***	-0.372 (0.161)**
PERCEPTIONS				-0.047 (0.041)	-0.050 (0.036)
OPPORTUNITY				0.023 (0.074)	-0.010 (0.062)
EDUCATION				0.054 (0.084)	0.046 (0.071)
TRUST INDEX				-0.034 (0.051)	-0.034 (0.044)
Ex.Trustworthiness					-0.054 (0.161)
Ex. Trust					0.716 (0.106)***
$\hat{\sigma}$	0.412 (0.031)***	0.409 (0.031)***	0.398 (0.030)***	0.397 (0.030)***	0.331 (0.025)***
Observations	144	144	144	143	141
Log likelihood	-99.919	-98.988	-95.863	-94.656	-69.322
Wald Test (χ^2)	11.24	13.10	19.35	21.60	68.10

Numbers in parentheses beneath parameter estimates are the estimated standard errors.

*, ** and *** denote significant at 10%, 5% and 1% respectively.

Table D2. Single Censored Tobit Estimates of the RETURN RATIO

	Pooled Estimates (1)		Random Effects (2)	
	Coeff.	S. error	Coeff.	S. error
CONSTANT	-0.378	(0.057)***	-0.198	(0.041)***
θ	0.017	(0.002)***	0.015	(0.001)***
θ^2	-0.0001	(.00002)***	-0.0001	(.00001)***
GENDER	0.016	(0.013)	0.004	(0.012)
INCOME	-0.011	(0.016)	-0.066	(0.014)***
RACE	0.015	(0.014)	-0.020	(0.013)
INCOME-HETRO	-0.008	(0.017)	-0.035	(0.014)**
RACE-HETRO	0.042	(0.018)**	0.046	(0.016)**
SOCIAL-DISTANCE	0.105	(0.033)**	0.102	(0.026)**
INCOME*SOC	-0.203	(0.031)***	-0.178	(0.025)**
PERCEPTION INDEX	0.020	(0.007)***	0.010	(0.005)**
OPPORTUNITY	-0.017	(0.013)	-0.021	(0.013)
EDUCATION	-0.030	(0.014)***	-0.008	(0.012)
TRUST INDEX	0.032	(0.009)***	0.020	(0.008)***
Ex.Trustworthiness	0.167	(0.030)***	0.212	(0.023)***
Ex.Trust	0.043	(0.020)***	0.019	(0.008)
$\hat{\sigma}$	0.224	(0.004)***		
$\hat{\sigma}_\varepsilon$			0.174	(0.004)***
$\hat{\sigma}_u$			0.135	(0.003)***
Rho			0.624	(0.015)***
Observations		1550		1550
Log likelihood		-62.955		462.46
Wald Test (χ^2)		357.42		760.77

*, ** and *** denote significant at 10%, 5% and 1% respectively.