Market Integration and pro-social behaviour in rural Liberia

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January 21, 2017

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Abstract

Cross-country evidence suggests that people exposed to market transactions are more fair and trusting than others, as repeated interaction could induce reputation effects. Other evidence suggests that market integration is related with more rational behaviour. Hence, whether market integration leads to stronger social norms is ambiguous. We study the effect of market integration on pro-social behaviour in rural Liberia. We measure altruism using a standard dictator game and preference for fairness using the ultimatum game, wherein people are paired with a fellow community member and a stranger (trader from regional market). Market integration is measured at the community level as the share of consumption bought from the market with respect to total consumption. We find a robust negative relation between market integration and offers to community members in the ultimatum game, and a somewhat stronger negative effect for offers to traders. We do not find that market integration may alter preferences for altruim. Our findings suggest that involvement in formal arrangements like markets may make people more self-interested and rational, and crowd out incentives for adhering to pro-social norms and behaviour.

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1   Introduction

Experimental economic research has demonstrated that people often respond differently than standard economic theory would predict. Economists have been concerned with identifying factors that can explain these 'deviations' from rational choice, using economic experiments. Interestingly, decisions made in experimental settings are generally robustly similar across (developed) cultures and changes in the experimental method employed. Yet, there is tentative evidence of demographic variables like gender, age, attractiveness and education (see e.g. Camerer and Fehr cited in Henrich et al., 2004) to play a role. Cross-country evidence for example suggests that people appear more fair and trusting when more exposed to market transactions (e.g., Henrich et al., 2010) and is even suggested to be conducive to income growth (e.g., Knack and Keefer, 1997).[1] Montesquieu (1749), cited in Ensminger (2004), states that "wherever there is commerce manners are gentle". The argument is that repeated interaction (or at least, a fair chance thereof) induces reputation effects: people want to signal that they are fair and trustworthy to secure potential future transactions. Evidence from other, within-country studies, however, does not necessarily support this hypothesis. List and Millimet (2008) and Cecchi and Bulte (2013) find that market integration makes people more rational. The expanding role of the market in people's life may increase awareness of efficiency gains. Rents may be allocated differently in accordance with different levels of rationality, affecting the distribution of wealth. It is however unclear how it may

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[1] Henrich et al. (2010) present two explanations for why pro-social behaviour seems evolutionary stable. First, pro-social behaviour might be a remains of behaviour in ancient, small-scale societies, where people used to be closely depending on one-another. Second, pro-social behaviour could have been transmitted to more complex, modern societies, through the development of informal institutions. Two important examples of such institutions mentioned by the authors are markets and religion. Markets facilitate transactions between strangers, and reduce transaction costs, whereas religion breeds morality and guards social norms. Hence, according to this theory, both higher levels of market integration and membership of a world religion should increase fairness norms.

affect well-being. Lamba and Mace (2013) find no effect of market contact on fairness norms at all. Siziba and Bulte (2012) find that higher levels of market integration do *not* promote generalized trust although their results are not robust across countries, nor is it clear whether they will sustain in the long run. By contrast, Fischer (2008) finds that greater nation-wide market competition is associated with higher levels of reported trust on the individual level. Yet, causal relationships between market integration and pro-social behaviour are difficult to study: individuals with pro-social preferences are probably more likely to involve in market activities than others (Tu and Bulte, 2010). The observed correlation may then be spurious.

The effect of market integration on social norms thus remains somewhat contested, and may differ depending on the specific context.. This paper contributes to the increasing scholarship on development and its interaction with (pro)-social behaviour and sheds light on whether the development of formal institutions like markets, complement or rather substitute for informal institutions. A better understanding of the distribution of fairness norms within rural communities and the conditions under which market integration promotes or decreases fairness may help predict whether the introduction of e.g. market reforms require additional or different interventions to be successful and to what extent there may be unintended positive or negative consequences of such an approach. This may help policymakers in providing a more comprehensive tailor-made "package" of development programs.

Our study is methodologically akin to the work by Henrich et al. (2010) [JH], yet we complement the cross-cultural evidence on this issue by zooming in on two rural provinces in Liberia, in order to find out whether similar results hold across different communities within a similar geographic and cultural area but different levels of market integration. Being able to use models that include village controls to

estimate the role of village-level predictors) we mitigate the problem of potential confounding (unobserved) factors that are (almost) inherent to cross-country work. Also, studies like JH that focus on investigating the role of evolutionary mechanisms for pro-social behaviour are, by construct, attending to particular long-term selection processes underlying patterns in cross-country data, and are less concerned about within-country (and possibly short-term, say within a generation) selection effects (omitted variables) that could explain an observed correlation between levels of fairness and for example market integration. The emphasis of this paper is hence quite different. We study whether inter-village variation in development, proxied in our case by community level market integration, can causally explain differences in fairness using fixed effects and instrumental variables. Moreover, our study sheds light on the development of in- and out-group preferences by introducing a population of real 'strangers'. Where 'strangers' in the set-up of JH and many others are in fact peer-community members, we introduce actual strangers from the market in the centrally located province capital Kakata. We generate this more realistic setting to find out whether fairness norms develop differently towards peer community members (in-group) than towards out-group members (in our case traders from a provincial market—women who are very much integrated into the market, selling or buying larger quantities of goods. The fact that we use traders from Kakata serves two goals. It first allows us to credibly mimic "strangers" and hence exclude potential reputation effects. Also, albeit the sample is small, having a group of people that is unambiguously "integrated in the market" facilitates a comparison between this population and the sample of villagers that move along an arguably more "noisy" proxy gradient of market-integration. Yet, the drawback of choosing market traders instead of 'random' strangers is that we potentially confound social preferences for strangers with social preferences for "business people from the city" to which

community members may act "more rational" as they would anticipate traders to be rational and hence accept lower offers. Survey responses to the question on how much community members trust 'strangers' will be used in additional future analyses of the paper to separate preferences for strangers from preferences for traders. We also that that this potential confounder would only affect a subset of our estimates (mean *offers* to traders in the DG and UG). In addition to the community level market integration variable based on caloric values, we use a number of different alternative indicators for market integration to flesh out the robustness of our results.

Our main findings are as follows: we find a *negative* relation between market integration and offers to traders (peer community members) in the UG, with – and without controlling for UG offers made to community members (traders). There seems to be no robust effect for offers in the DG, irrespective of whether the receiver is a trader or community member, although the sign of the coefficient is consistently negative. The negative impact on peer community members suggest tentative support for the idea that formal institutions (partially) "substitute" for informal institutions making people less dependent on informal social contracts. The significant negative effect on traders may suggest the presence of in-versus out-group preferences, or, people from villages with higher levels of market integration are better able to predict traders' behaviour through real life experience in market transactions and hence are more confident that sticking, or stay close to the economic rational outcome pays off. Results from alternative proxies for market integration (selling or buying at the market, access to main road, and market share for rice) are less robust, but point in the same direction as before: people that come from villages that are better integrated into markets seem to demonstrate lower levels of fairness norms. The remainder of the paper is organized as follows: section 2 describes the experimental set-up and

procedure. Section 3 provides descriptive statistic and section 4 describes the econometric models. Section 5 presents the results and section 6 concludes.

2 Experimental design and procedure

2.1 Experimental design

This study is part of a RCT carried out in cooperation with an international NGO between 2010 and 2012, for which a total of 72 communities and about 1,600 household representatives have been randomly selected. We conducted two experiments: a dictator game (DG) and an ultimatum game (UG) in 36 randomly selected communities in Margibi and Montserrado provinces. In each community, 10-20 randomly selected household representatives (household head or spouse) were invited to participate in the experiments.

The DG is a one-shot game wherein 'senders' allocate any amount between 0 and 100 LD[2] to a 'receiver', who is randomly matched with the sender, and keep the remainder. Receivers get nothing apart from the share the sender might allocate to them. As senders and receivers will never know the identity of their partner, the economic rational strategy for senders would be to allocate nothing to the receiver, and keep the full 100 LD. Any positive amount allocated to the receiver indicates that fairness norms play a role. Senders play the DG twice; once with an anonymous community member, and once with a professional trader from the province capital Kakata. The UG is a one-shot game as well, wherein 'senders' again offer any amount between 0 and 100 LD to a 'receiver', who is randomly matched with the sender, and keep the remainder. Receivers get nothing apart from the share the sender might offer them. In contrast to the DG, receivers are now asked to accept or reject any possible amount of money offered to them (in increments of 10 LD). If the

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[2] At the time of the research activities, 100 LD = 1.43 USD.

receiver accepts the offer, he will receive the amount offered and the sender will keep the remainder. If the receiver rejects the offer, both the sender and the receiver will receive 0 LD. The economically rational strategy for receivers would be to accept any positive amount offered by the sender, and knowing this, the optimal strategy by the sender would be to allocate the lowest possible non-zero amount to the receiver (which is, in our case, 10 LD). Rejecting a non-zero offer is a form of costly punishment, driven by fairness norms. Senders play the UG twice; once with an anonymous community member, and once with a professional trader from the province capital (Kakata).
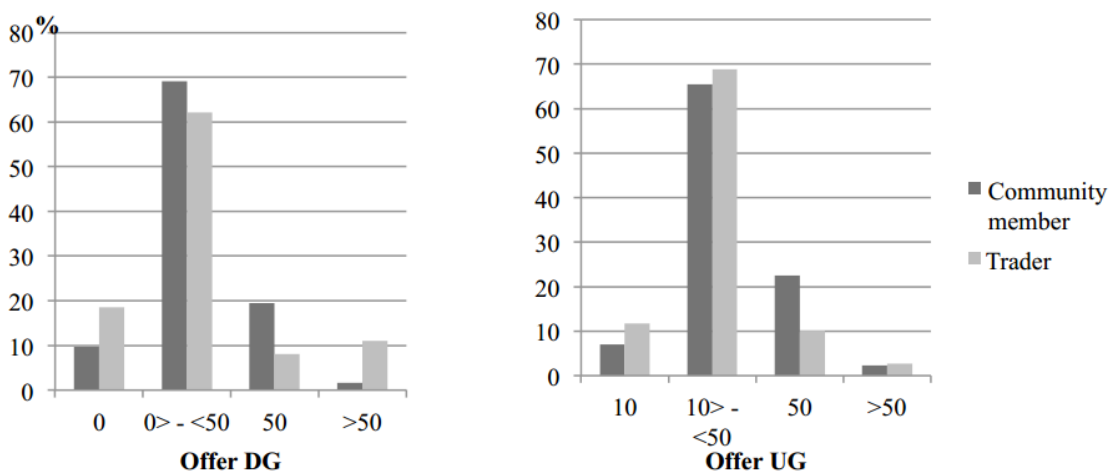
2.2   Procedure

Upon arriving in the community, participants were collected in the palava hut (the public meeting place) where they received an ID code to guarantee anonymity and were informed about the activities they would be part of. Participants were informed that they would receive a sitting fee of 70 LD (about 1 USD). Participants received a brief introduction to the DG and the UG and were informed that the activities would be explained to them individually in greater detail by the experimenter, after they completed their household questionnaire. Each participant was invited to draw a lottery slip indicating 'S' or 'R' to determine their role during the game (sender or receiver); participants kept their role during both games. In total, there were 294 senders and 290 receivers (in case of an odd number of participants in the community, one individual would be matched twice).

After completing the household questionnaire, participants were invited to join the experimenter. They first drew another lottery ticket indicating 'C' or 'T' from a bag to determine whether they would play with a community member of with an anonymous trader first, then received individual explanation of the games, and finally made their decisions (see the appendix for detailed scripts and decision forms).

8

3 Ultimatum and dictator game

3.1 self interest maximizers, fairness norms, inequality aversion and extreme altruism

Figure 1 (below) and Table 1a present summary statistics of offers in the DG and UG. Remember that we expect offers of 0 and 10 LD for the DG and UG respectively, if senders would maximize their economic returns. Higher offers indicate that fairness norms play a role.

In the DG, 10 percent of our respondents maximize their self-interest in relation to fellow community members, and 18 percent in relation to professional traders: they keep their full endowment and share nothing. In the UG, 7 percent of the respondents maximize their self-interest in relation to fellow community members, and 12 percent in relation to professional traders: they share the lowest possible non-zero amount of 10 LD. Hence, self-interest maximizing plays a larger role for decision making in relation to professional traders than in relation to fellow community members.

The majority of the respondents share an amount between the bare minimum (0 or 10 LD) and half of their endowment (50 LD). In the DG, 69 percent of the respondents shared an amount between 0 and 50 LD with a community member, and 62 percent

shared such amount with a trader. The median offer is 20 LD, both for community members and for traders (on average 27 and 20 LD). In the UG, 65 percent of the respondents shared an amount between 10 and 50 LD with a community member, and 69 percent with a trader. As expected, average offers are higher in the UG than in the DG: the median offer is 40 LD for community members and 30 LD for traders (on average 35 and 28 LD).

Pure inequality aversion is strongest with respect to fellow community members: in the DG, 19 percent of the respondents share exactly half of their endowment with a community member, and in the UG this amounts 22 percent (compared to 8 and 10 percent of respondents who share half of their endowment with a trader).

Finally, a minority of the respondents share more than 50 percent of their endowment, which seems irrational both in economic terms and in terms of fairness norms. In the DG, 2 percent of the respondents behave 'extremely altruistic' towards fellow community members, and 11 percent towards traders (compared to 2 and 3 percent in the UG).

3.2   Acceptance rates

Table 1b reports acceptance rates by community members and professional traders. In the UG, an equal split of the endowment (50-50 LD) was accepted by 97% of the community members and by 100% of the traders. Rejection rates for non-zero offers are significantly larger for traders than for community members, whereas rejection rates for zero offers and offers from 40 LD are equal for community members and traders. There seems to be a trend, however, of increasing rejection rates by community members for unequal splits *in favour* of receivers: an offer of 100 LD is

rejected by 34% of the community members and by 10% of the traders (p-value t-test = 0.11).

3.3   Linking our results to experimental outcomes from across the world

Based on a large number of results from ultimatum games from across the world, Fehr and Schmidt (2006) observe three general patterns. First, in the UG, the majority of senders offer 40 to 50 percent of their endowment. In our sample, this is true with respect to fellow community members (the modal offer to community members is 40 LD), but offers to traders are lower (the modal offer is 30 LD). Second, offers lower than 20 percent of the endowment, are rejected with probability 0.4 to 0.6. Our findings match this observation: 35 percent of the community members reject an offer of 10 LD, and 67 percent reject a zero offer (average rejection rate of 51 percent for offers lower than 20 LD). Rejection rates of traders are slightly higher: 60 percent of the traders reject an offer of 10 LD, and 70 percent reject a zero offer (average rejection rate of 65 percent for offers lower than 20 LD). Third, the probability of rejection decreases as the size of the offer increases. We find the same, up to a 'fair' offer of 50 percent of the endowment. Beyond that point, rejection rates by fellow community members (but not by traders) increase again.

With respect to the dictator game, Fehr and Schmidt (2006) note that typical senders assign on average between 10 and 25 percent of their endowment to receivers, with modal allocations at zero and 50 percent. The latter is not true for our sample: the modal allocation is 20 percent, both to community members and to traders, but the averages do match earlier experimental results – although allocations to community members are higher than expected (27 LD for community members and 20 LD for traders).

11

As highlighted by Fehr and Schmidt (2006), we observe that offers in the UG are generally higher than offers in the DG, due to fear for rejection. However, fairness norms do play a role as well, as in the DG, where the possibility of rejection is removed—the vast majority of the senders do allocate a non-zero amount to a receiver. In addition, fairness norms, irrespective of market integration, seem to play a larger role with respect to (anonymous) fellow community members, than with respect to (anonymous) professional traders.

4 Regression design and data

4.1 Regression design

To probe the correlation between market integration and fairness norms, we estimate the following models:

$$Y_{ij} = \alpha + \beta_1 MI_{ij} + \beta_2 X_{ij} + \beta_3 C_j + \varepsilon_{ij} \qquad (1)$$

where fairness norms Y_{ij} of individual i in community j are explained by our community measure of market integration (MI) and a vector of controls (X_{ij}) on the individual level (status, age and education of respondent) and on the household level (consumption, assets, household size). In equation (1) we add a vector of community controls (community size, accessibility, NGO assistance, religion, ethnicity, and size of plantations owned) and ε_{ij} denotes the error term, clustered at the community level. Using community level measures of market integration instead of individual measures serves two purposes. First, we expect our community level measure to be less prone to concerns of reversed causality as an individual's preference for pro-social behaviour is unlikely to affect a community's level of market integration. Second, market integration in measured using self-reported consumption expenditures

of goods bought at the market. Yet household survey modules of consumption are notorious for being noisy. Using village level means instead will reduce that noise.

4.2   Explaining and control variables

Table 2 summarizes our variables for market integration and the set of individual, household and community level controls. We define market integration as the share of consumption items bought on the market with respect to total consumption by the household in the course of two weeks, in terms of caloric value (total consumption includes bought items, items produced or collected by the household, and gifts). Included consumption items are: rice, cassava, bulgur wheat, white flour, corn, beans, eggs, and oil. As a robustness check, we also define market integration as the share of bought consumption items with respect to total consumption, in terms of monetary value. Included consumption items are: rice, cassava, corn, beans, eggs, fish, chicken, oil, and charcoal. The two definitions of market integration (MI) are different in two respects. First, in the MI-kcal definition, consumption items with a high nutritious value get a high weight, whereas in the MI-USD definition, consumption items with a high monetary value get a high weight. Second (and related), MI-kcal includes only staple foods (and eggs), whereas MI-USD also includes luxury consumption items (fish and chicken) and charcoal. These three items are widely consumed, but cannot be converted into nutritious value, based on our available data. This leads to different levels of market integration for some households (although both variables are highly correlated; $\rho=0.89$). In general, market integration is high: 79 percent of household consumption in terms of caloric value is bought on the market (82 percent in terms of monetary value). 4 percent of the households consume from non-market sources only, whereas 57 percent of the households derive all consumption from the market (3 and 50 percent in terms of monetary value).

With respect to our individual-level controls, 61% of the respondents are the household head (the others are the spouse). The average respondent is 43 years old, and had less than 3 years of education. With respect to our household-level controls, households spend on average 41 thousand L$ on consumption in two weeks, they own on average 8 different assets, and household size ranges between 1 and 15 members (3.7 members on average). Over 30% of the households were attacked during the civil war.

The average community is home to 31 households and owns 145 acres of plantation (mostly rubber; sizes vary between 0 and 1000). The vast majority of community members is protestant, and more than half belongs to the Kpelle; the major ethnic group in the region.[3] 53 percent of the communities are located along an (all-season) main road, and 54 percent of the community has had some form of NGO assistance in previous years.

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[3] The religion and ethnicity variables are measured on a 7-point scale, where 0 equals 'nothing' and 6 equals 'all'.

5   Results

Table 3 reports OLS regression results for effects of market integration (kcal) on pro-social norms. Columns are presented in sets of two. Every first column tabulates results for parsimonious regressions, and every second column includes household and community controls. There is no effect of market integration on DG offers, be it to peer community members or traders. Yet, we find a robust *negative* association between market integration based on caloric value and offers to peer community members and traders in the UG. The latter result is robust to controlling for UG offers to community members.

<<Insert Table 3 about here>>

Controls that explain variation in the DG/UG models are consumption (columns 2 and 3), household size (columns 4 and 6), having main road (columns 4 and 6) NGO assistance (columns 4 and 6), share of protestant community members (column 12) and share of the Kpelle ethnic group. Individuals spending more on consumption are assigning a larger share of their endowment to community members than individuals who spend less on consumption. Offers to traders are less strongly affected by consumption and the coefficient has the opposite sign in the UG offer to traders model. Also household size is positively correlated to DG offers to traders. The presence of a main road has ambiguous effects; positive for UG offers to community members but negative for UG offers to traders. In communities that had NGO assistance, DG offers are higher than in communities without any NGO assistance. In communities with a large protestant population, offers to traders are higher, but not robustly so.   Finally, in communities with a large share of members belonging to the Kpelle tribe, UG offers to peer-community members and traders tend to be lower (perhaps because fear of rejection is lower as well as the Kpelle is the

15

dominant ethnic group in this region of Liberia) though again results do not seem to be robust across the different specifications.

We also use a series of other proxies for market integration, serving as robustness checks (results not shown, but available upon request). These are: selling or buying on the market (binary variables) and share of rice consumption bought on the market. Results are less robust, but point in the same direction as before: people more integrated in markets seem to act more rational in a strategic game set-up.

6   Discussion and conclusion

This study presents empirical evidence on the correlation between market integration and pro-social behaviour measured in a standard dictator and ultimatum experimental games among a sample of rural households in Liberia. While evolutionary theory would predict a positive relation between market integration on the one hand and various types of pro-social behaviour like altruism, fairness norms and trust on the other, we do not find support for this hypothesis in our setting. If anything, market integration seems to have a negative rather than positive impact on fairness norms. Moreover, while our measure of market integration does not necessarily makes people behave more or less altruistic as arguably measured by the DG, it does seem to affect people's expectation and anticipation of the *other,* especially if they know that the *other* is unambiguously integrated in the market (traders). That is, market integration seems to make people realize that the receiving party's best response would be to act rational and accept the lowest non-zero amount offered. Anticipating this, they then offer significantly less to both their peer community members and traders then those with less market experience. Also, the negative impact for suggest some form of substitution effect being present where the emergence of formal institutions reduces the salience of informal social contracts and

make people less dependent on their fellow community members. Our results contrast cross-cultural evidence supporting the idea of a positive impact of market integration on various forms of pro-social behaviour. The findings however fit with more recent evidence emerging from other within-country studies that reach a different conclusion varying from zero to strong negative impacts of market integration on pro-social behaviour. What explains our results? Liberian villagers appear to be relatively well integrated into markets deriving approximately 80 percent of their consumption from the market. The sample of villages are located in a region where people are historically more often involved in tapping rubber than growing food crops for their own consumption. Perhaps those with long-term experience in market exchange simply become economically more *efficient,* in line with what standard economic theory would predict. Lower dependence on fellow community members therefore increases self-interested behaviour. Note that this does not preclude a potential signalling or reputation effect, as this seems to be the major channel through which market integration would de facto *increase* pro-social behaviour, only that the economic rationality effect is stronger in this case. We however note that the results presented here do not necessarily allow for a causal interpretation. Although we believe that by using a community level measure of market integration we account for concerns of reverse causality, there may be other endogeneity problems related to omitted variables that may drive the results. We have identified a number of next steps to address these issues in a future version of this paper. First we will use instrumental variables in a two-stage least squares model. Plausible candidates include the percentage of rubber tappers in a community and the share of income the community derives from rubber tapping. Rubber towns were "created" by large rubber companies in the beginning of the 20th century. Rubber tappers are typically less engaged in agriculture and hence expected to derive a larger share of

consumption from the market so we expect this variable to correlate strongly with our measure of market integration. We also expect the exclusion restriction to hold as historical reasons for creating a rubber town in a specific place is unlikely to affect current levels of pro-social behaviour other than through the channel of market integration. Second, we will use base-and endline data for our market integration measure that helps us identify whether market integration has changed over time, and whether possible changes correlate with outcomes from the experimental DG/UG games conducted at baseline. No significant correlation may support our argument that reverse causality is less of an issue here. Third, we intend to exploit the survey questions on "trust in strangers" to further explain the negative correlation between market integration and UG offers to traders.

References

Cecchi, F., Bulte, E., 2013. Does market experience promote rational choice? Experimental evidence from rural Ethiopia. Economic Development and Cultural Change, 61(2), 407-429.

Ensminger, J., 2004, Market Integration and Fairness: Evidence from Ultimatum, Dictator, and Public Goods Experiments in East Africa. In: J. Henrich, R. Boyd, S. Bowles, C. Camerer, E. Fehr, H. Gintis (Eds.). Foundations of Human Sociality: Economic Experiments and Ethnographic Evidence from Fifteen Small-Scale Societies. Oxford University Press, Oxford, pp. 356-381.

Fehr, E., Schmidt, K.M., 2006, The economics of fairness, reciprocity and altruism - Experimental evidence and new theories. In: S.-C. Kolm, J.M. Ythier (Eds.). Handbook of the Economics of Giving, Altruism and Reciprocity. North-Holland (Elsevier), Amsterdam, pp. 615-691.

Fischer, J.A.V., 2008. Is competition good for trust? Cross-country evidence using micro-data. Economics Letters, 100(1), 56-59.

Henrich, J., Boyd, R., Bowles, S., Camerer, C., Fehr, E., Gintis, H. (Eds.), 2004. Foundations of Human Sociality: Economic Experiments and Ethnographic Evidence from Fifteen Small-Scale Societies. Oxford University Press, Oxford.

Henrich, J., Ensminger, J., McElreath, R., Barr, A., Barrett, C., Bolyanatz, A., Cardenas, J.C., Gurven, M., Gwako, E., Henrich, N., Lesorogol, C., Marlowe, F., Tracer, D., Ziker, J., 2010. Markets, religion, community size, and the evolution of fairness and punishment. Science, 327(5972), 1480-1484.

Knack, S., Keefer, P., 1997. Does Social Capital Have an Economic Payoff? A Cross-Country Investigation. The Quarterly Journal of Economics, 112(4), 1251-1288.

Lamba, S., Mace, R., 2013. The evolution of fairness: Explaining variation in bargaining behaviour. Proceedings of the Royal Society B: Biological Sciences, 280, 1-8.

List, J.A., Millimet, D.L., 2008. The market: Catalyst for rationality and filter of irrationality. B.E. Journal of Economic Analysis and Policy, 8(1).

Siziba, S., Bulte, E., 2012. Does market participation promote generalized trust? Experimental evidence from Southern Africa. Economics Letters, 117(1), 156-160.

Tu, Q., Bulte, E., 2010. Trust, Market Participation and Economic Outcomes: Evidence from Rural China. World Development, 38(8), 1179-1190.

Table 1a: Allocations (dictator and ultimatum game)

DG: Allocation to receiver (N=297)	Mean	S.D.	Min	Max	Median
Community member	26.70	16.82	0	70	20
Trader	20.05	16.64	0	70	20

UG: Offer to receiver (N=297)					
Community member	34.65	13.95	0	70	40
Trader	27.78	14.72	0	80	30

Table 1b: Acceptance rates (ultimatum game)

Amount offered	Community members (N=287)				Traders (N=10)				Difference (p-value t-test)
	Mean	S.D.	Min	Max	Mean	S.D.	Min	Max	
0 LD	0.324	0.469	0	1	0.3	0.483	0	1	0.024
10 LD	0.645	0.479	0	1	0.4	0.516	0	1	0.245[+]
20 LD	0.735	0.442	0	1	0.4	0.516	0	1	0.335**
30 LD	0.836	0.371	0	1	0.5	0.527	0	1	0.336***
40 LD	0.895	0.306	0	1	0.8	0.422	0	1	0.095
50 LD	0.972	0.165	0	1	1	0	1	1	-0.028
60 LD	0.937	0.243	0	1	1	0	1	1	-0.063
70 LD	0.934	0.249	0	1	1	0	1	1	-0.066
80 LD	0.927	0.261	0	1	1	0	1	1	-0.073
90 LD	0.882	0.324	0	1	1	0	1	1	-0.118
100 LD	0.655	0.476	0	1	0.9	0.316	0	1	-0.245[+]

Table 2: Summary statistics

Variable	Obs.	Mean	S.D.	Min	Max
Market integration					
Market integration (in terms of USD)	567	0.821	0.276	0	1
Market integration (in terms of Kcal)	568	0.795	0.311	0	1
Individual controls					
Household head (b)	578	0.606	0.500	0	1
Age	569	42.557	14.321	17	86
Years of education	580	2.945	4.384	0	19
Household controls					
Consumption (in 1000 L$ in 2 weeks)	581	40.651	218.048	0	3772.35
Assets	581	7.666	3.010	0	17
Household size	576	3.717	1.911	1	15
War attack	539	0.314	0.464	0	1
Community controls					
Community size (number of households)	34	30.647	19.982	3	110
Road (b)	36	0.528	0.506	0	1
NGO (b)	35	0.543	0.505	0	1
Protestant share	35	5.286	1.045	0	6
Kpelle share	36	3.917	1.317	0	6
Plantation (acres)	35	144.714	238.971	0	1000
Distance to nearest major town *	36	3.139	0.961	2	6

  * Categorical variable: 2=less than 30 minutes; 3=30 minutes – 1 hour; 4=2 hours – ½ day; 5= ½ – 1 day; 6=more than 1 day