

Reciprocity in the Workplace

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Abstract²

Using combined experimental and survey data, this paper provides empirical evidence that firm productivity is related to worker's pro-social behavior in the workplace. At the firm level, we find a strong positive relationship between firm productivity and reciprocating behavior among workers. Investigating workers' individual behavior we find a similar, strong relationship when regressing earnings, a proxy for productivity, on reciprocity. To address simultaneity we use an instrumental variable approach and find that the initial estimate was upwards biased, presumably because it did not take into account the positive feedback from earnings to reciprocity. The new coefficient remains substantially above zero, but it is statistically insignificant.

Key words: wages, reciprocity, field experiment
JEL classification: J31, C93, Z13

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1. Introduction

How important is worker behavior for productivity? Although direct empirical evidence to answer this question remains scarce, existing work suggests that behavioral traits may be important for productivity, perhaps even more important than the classic variables like education or age. Work by The Bureau of the Census (1998), for instance, shows that when recruiting new production staff, US employees rank attitude (and communication skills) above years of schooling and grades. Green, Machin and Wilkenson (1998) report that UK employers cite deficits in candidates' attitude and motivation as the primary reason for recruitment problems. Behavioral traits also have an effect on earnings, as reviewed by Bowles, Gintis and Osborne (2001). However, direct evidence on the relationship between worker behavior and productivity remains limited. The absence of a theoretical framework and the challenge to measuring 'worker behavior' seem two important hurdles. But the advances in behavioral economics help to overcome these hurdles, providing both a conceptual framework and new measurement tools.

At the conceptual level, there is a growing consensus that reciprocity is a key behavioral quality. The tendency to reciprocate has received considerable theoretical attention as a strong motivator in both interactive contexts in general and labor interactions in particular (see for example Rabin 1993, 1998; Dufwenberg and Kirchsteiger 2004, Fehr and Falk 2002). Akerlof (1982) was the first to model a labor transaction as a gift exchange game between employer and employee and argued that worker behavior is changed through the paying of efficiency wages: when workers

receive higher wages, they reciprocate this kindness and deliver more effort.³ This work also inspired a set of experiments, the results of which support the hypothesis that reciprocity is a motivating factor in the workplace (Fehr, Gächter and Kirchsteiger 1997; Fehr and Gächter 1998; Fehr, Kirchsteiger and Riedl 1998).⁴

But while most labor economists focus on reciprocity between employer and employee, the interactions between fellow employees may be just as, if not more, important. Social scientists argue that the notion of reciprocity is essentially interpersonal (Offer 1997, Polanyi 1957), so since employers are often perceived as abstract and anonymous rather than as real people, especially in large hierarchical and public organizations, it may be more appropriate to look at reciprocity between workers. Further, and even if an employer is all too real, in most firms employer-worker dyads represent only a small proportion of all the dyads in the firm; and where production processes depend on team work, as they often do, the relative importance of this small proportion may be reduced still further.

However, accepting that reciprocity between workers may have a significant impact on productivity is distinct from accepting that the relationship is likely to be positive.

While focusing on inter-worker cooperation rather than reciprocity, Holmstrom and

³ Agell and Lundborg (1995), Blinder and Choi (1990), Kahneman, Knetsch, and Thaler (2000), Kaufman (1984), Levine (1993), and Bewley (1999) all provide indirect supporting evidence for this, observing that employers resist cutting wages because of the impact it has on worker morale, especially, it seems, when the cut is viewed as unfair or as an act of hostility.

⁴ The findings from Fehr, Kirchsteiger and Riedl (1998), for instance, support the hypothesis that 'workers' deliver greater effort when 'wages' are set higher, while Fehr and Gächter (1998) conclude that reciprocity can be a powerful effort elicitation device, and Fehr, Gächter and Kirchsteiger (1997) argue that it can help for contract enforcement. Alternative explanations as to why effort increases with wages, for example that workers wish to share fairly, are seldom powerful enough in isolation and are typically considered in combination with reciprocity (see for instance Charness (1998). We pay no attention here to the literature that investigates the *limits* to the power of incentives to trigger off reciprocity. Higher wages may for example crowd out pro-social behavior incentives, as argued among others by Benabou and Tirole (2003) and Huck, Kubler and Weibull (2001).

Milgrom (1990) argued that its relationship to productivity could be either positive or negative. Cooperation between workers can improve coordination and reduce interaction costs and, thereby increase productivity. However, it can also support collusion against the employer and, thereby reduce productivity. Where firms are able to promote the former tendency while curbing the latter the observed relationship will be positive, but where attempts to curb the latter are absent or fail, the observed relationship could be negative. Holmstrom and Milgrom conclude that employers need to encourage inter-worker cooperation in some dimensions and inter-worker competition in others. Ultimately, the extent to which they succeed in this endeavour is an empirical question. And this, of course, brings us to the issue of measurement.

The problem of measuring reciprocity has been addressed by behavioral economists through the design and running of experiments. An experimental approach has major advantages over a survey-based approach, as there is fuller control over the decision making environment, which allows the researcher to isolate and measure specific individual behavioral tendencies. Thus, Schotter (1998) was able to show that a team's performance in a coordination task was positively associated with the level of interpersonal trust they demonstrated in a preceding trust game. However, most experiments, including Schotter's, are run in laboratories, often with undergraduate students as subjects, and we still have little evidence pertaining to the external validity of such experiments. In other words, it remains unclear how appropriate it is to assume that undergraduate students in university laboratories behave similarly to workers in enterprises.⁵ Survey-based methods do not suffer from this problem of

⁵ For a more elaborate discussion on this see Levitt and List (2007) who discuss external validity, or as they call it 'generalizability', of experiments and emphasize the importance of participant selection. Carpenter and Cardenas (2004) suggest that, if anything, the scarce evidence points in the opposite direction. Carpenter and Seki (2005), for instance, playing the same games with both students and

external validity, but can generate misleading data, especially relating to attitudes, dispositions, and behavioral tendencies, due to the opportunity they provide for inconsequential ‘cheap talk’.⁶

An alternative approach is to bring the experiment to the ‘field’, letting real workers from real firms engage with their colleagues, in a controlled environment in which their tendency to reciprocate can be observed and measured. The resulting experimental data can then be combined with survey data on the same firms and workers, in order to test hypotheses about the relationships between reciprocity and real economic outcomes.⁷ Following this approach, we investigate whether an experimentally derived measure of reciprocating behavior between colleagues is associated with the observed labor productivity of the firm within which they work. We find a significant positive relationship. At the individual worker level, we observe a corresponding relationship between productivity, proxied by earnings, and reciprocating tendencies. Moving from OLS estimation to two-stage instrumental variable estimation causes the coefficient on reciprocity to decline, indicating that there may be causal relationships running both from reciprocity to earnings and from

fishermen find that not only do their social preferences differ, but the social preferences from fisherman, who face the type of social dilemma simulated in the game in real life, are strongly related to their productivity in real life, while those from the students lack such external validity. Carpenter, Burks and Verhoogen (2004) compare the play of students and workers in a Dictator Game and find that the latter are distinctively more generous, which the authors attribute to the social framing of the workplace.

⁶ Of course survey data may still yield interesting results, for example when measuring attitudes, as shown by Bartel, Freeman, Ichniowski and Kleiner (2003), who surveyed several branches of the same bank in the US and found that employee attitudes, among others towards team work and cooperation, differ substantially between workplaces, and that they affect workplace productivity.

⁷ There is now a growing tradition to use experimental data in congruence with survey-based data. Binswanger (1980) was one of the first to combine both types of data, using experimentally derived measures of risk aversion to predict investment decisions by smallholder farmers in India. Barr and Packard (2002) used similar measures to predict involvement in formal pension schemes in Peru, while Karlan (2005) used experimentally derived measures of trust and trustworthiness to predict loan repayment in microfinance schemes, also in Peru. And as mentioned in the above footnote, Carpenter and Seki (2004) use the outcomes of experiments with fishermen in Japan to predict their productive behavior. Fehr et al (2003) follow a different route and combine data from a trust experiment with nationally representative survey data in order to obtain representative results on trustworthiness.

earnings to reciprocity. Although the coefficient remains substantially above zero following this move, it becomes statistically insignificant, probably because our instruments, while correlated with the reciprocity variable, capture only a small proportion of its variation and because our small sample size leads to high standard errors. We conclude that there is a positive relationship between reciprocating tendencies and productivity at both the firm level and the individual level and that, in the case of the latter in particular; the causality is likely to go both ways. We discuss briefly why this might be the case. In the next section we describe the data and method. Section 3 describes the results, while section 4 concludes.

2. Data and Method

We combine data from a behavioral game with data from the Ghana Manufacturing Enterprise Survey 2000, a matched firm and worker survey, implemented by a team from Oxford University in co-operation with the Ghana Statistical Services. The survey revisits firms initially sampled from the Census of Manufacturing Activities. The data contains rich information on firm characteristics, as well as information on individual characteristics for a sub-sample of workers. A detailed description of the sampling method can be found in the appendix.

During the survey special attention was paid to collecting detailed and reliable information on the firm's revenue, capital stock and labor force. During the worker interviews we paid special attention to the measurement of worker's earnings. What we call earnings in the remainder of this paper represents all payments received from

the firm to which they are matched, including both wages and allowances received in cash or kind and excluding taxes deducted at source.⁸

The experimental data is obtained from playing the Investment Game designed by Berg, Dickhaut and McCabe (1995) as a one shot game with a sample of the workers from a sub-sample of the surveyed firms, as explained in the appendix. The game has two players. At the start of the game both players receive an equal amount of cash, x . The first player has to decide how much of her cash, $s \leq x$, to pass to the second player. The amount she passes is tripled by the experimenter, and then given to the second player. The second player then decides how much to pass back, $r \leq 3s$, to the first player. So, the first player's final payoff is $x-s+r$ and the second player's final payoff is $x+3s-r$.⁹

We involved 424 full employees and apprentices from 20 Ghanaian manufacturing enterprises in the experiments. These workers were randomly selected from a full list of employees within each firm. The total number of sampled employees from each firm varied from 8 to 46, with sampling proportions varying from 9 to 53 percent. However, the experimental data used in the analysis below pertains only to the 164 employees and apprentices who took the role of second player and received some positive amount from their corresponding first player. Table 1 reports the descriptive statistics for these 164 workers. At the time of the experiment, their average monthly earnings were 231,880 (Old) Cedi or 29 USD and the distribution of earnings was skewed to the right (see Figure 1).

⁸ Allowances are paid in cash or in kind for food, housing, clothing and transport. Christmas, production and merit bonuses and other gifts from the employer during the last year are also included.

⁹ Note that under the classical assumptions of selfish money maximization the second player returns nothing and, expecting this, the first player sends nothing.

The games were played after work hours, in the evenings or on Saturday afternoons, in schools near to the employees' places of work. Two classrooms and a corridor were used in every case. The employees were taught the game while sitting at amply spaced desks in one of the classrooms. Then they were called one at a time to interviews with a research assistant (RA) sitting at a desk in the corridor. In these interviews they were taught the game once more, were verbally tested on their understanding of the game, and then played. The RA showed the second players what their corresponding first players had chosen to do by moving counters representing amounts of money around on a table top and adding to the number of counters on the table as appropriate. Then the second players were invited to indicate their chosen response by moving counters. Finally, the players were directed to wait in the second classroom until everyone had finished and they could receive their payoffs. Both the description of the game presented in the first classroom and the one-to-one interviews were scripted. The scripts were written in English, translated into Twi, a Ghanaian language spoken by all of the employees in our sample, piloted and adjusted, and then back translated by a second, uninformed translator to check that intended meanings had not changed. The scripts, a copy of which can be found in appendix, were adhered to at all times. If subjects asked questions, the relevant part of the script was repeated. The experimenter and a monitor were posted in the first classroom to prevent the waiting employees talking after learning the game but prior to making their decisions. The role each worker played in the game and the colleague with whom each was paired was determined by random assignment. The first players (the trustors) were interviewed in random order and then the second players (the trustees) were

interviewed, again in random order. Each player knew that they were playing with a colleague from his workplace but did not know which particular colleague.

In this paper we focus on the reciprocating tendencies of workers in the role of second player.¹⁰ Our measure of each worker's tendency to reciprocate is based on the amount returned by them when assuming the role of second player, expressed as a proportion of the amount sent by the first player (r/s).¹¹ Figure 2 contains a histogram indicating that this measure of reciprocity follows a bimodal distribution, with one peak corresponding to an r/s of 1 and another corresponding to an r/s of 2.¹² Those with an r/s of 1 sent back exactly what the first player gave away keeping all of the return on the trusting act for themselves; those with an r/s of 2 sent back twice the amount sent by the first player, thereby ensuring equal final payoffs to both players and providing a 100 percent rate of return to the trustor. Those in between choose some positive rate of return less than 100 percent for the trustor, just under one fifth of the sample choose a rate of return of 50 percent for the trustor.

¹⁰ Recent work suggests that it is less clear what the first player's behavior, which is often interpreted as a measure of trust, measures, as it may be affected by risk preferences, unconditional kindness and aversion to betrayal [see for instance Bohnet and Zeckhauser (2004) and Ashraf, Bohnet and Piankov (2006)]. A careful investigation into the first player's behavior requires an analysis that is beyond the scope of this paper.

¹¹ Note that, for our data, r depends linearly on s : when s^2 and higher powers of s are included in a regression of r on s they are insignificant.

¹² Berg Dickhaut and McCabe's (1995) data also displayed a bimodal distribution but with peaks at r/s values of 0 and 1.5. The mean and median r/s in our data are also higher: 1.49 and 1.5 compared to 0.99 and 1 respectively for BDM. There are a number of differences in experimental design that may account for the observed differences. First, our subjects were playing with and knew they were playing with colleagues. Second our subjects did not read the instructions and then write their chosen behavior down, the instructions were delivered verbally and then the subjects had to show the experimentalist what they wanted to do by moving counters around on a tabletop. Third, while BDM's design is double blind, ours is not. A more detailed description of the two distributions can be found in Appendix 3.

3. Results

3.1. Workers' Reciprocity and Firm Productivity

To investigate the relationship between firm productivity and worker's reciprocating tendencies across the firms, we first look at the correlation between output per worker and reciprocity in the workplace. Table 2 reports the results. Despite our small sample size, we find that output per worker is highly and significantly correlated with the proportion of sampled workers providing a return of more than 50 percent to their trustors (significant at the 1% level). Mean reciprocity, however, is uncorrelated with productivity. This may be because the reciprocating tendency seems to follow a bimodal distribution across individuals, which is better taken into account by the proportion than by the mean variable.¹³

To see whether this correlation is driven by other workplace characteristics, we regress output per worker on the proportion of high reciprocators, while controlling first for capital and then for sector of activity. Columns 1 and 2 in Table 3 show the high significance of the proportion of high reciprocators and capital each on their own. Column 3 then shows that the proportion of high reciprocators remains significant at the 1% level when both variables are included simultaneously. The figures in Column 4 show that this result remains when we control for sector of activity.¹⁴

¹³ We also observe a significant correlation between firm productivity and the median of reciprocity, which is less sensitive to the shape of the underlying distribution (significant at the six percent level).

¹⁴ Note that we have data on only 20 firms, so the degrees of freedom diminish quickly when including more variables.

These results indicate that there is a strong positive relationship between the productivity of a firm and the reciprocating tendencies of its workforce.

3.2. Individual Reciprocity and Wages

Of course, what we really wish to know is whether a similar relationship between reciprocating tendencies and productivity exists at the level of the individual. Unfortunately we have no data on individual productivity. We do however have information on earnings, which tends to be a good proxy for individual productivity.¹⁵ So, to investigate whether a worker's productivity is related to his reciprocating tendencies, we first look at the correlation between earnings and reciprocity and find a coefficient of correlation of 0.16 (significant at the 4% level). Consistent with the findings at the firm level, earnings are more strongly correlated with a dichotomous variable equal to one for high reciprocators and zero otherwise (coefficient of correlation 0.20, significant at the 1% level). We therefore proceed by regressing the worker's monthly earnings on this dichotomous variable.¹⁶

Column 1 in Table 4 reports the results of a simple OLS in which reciprocity is the only right-hand side variable. We find that the coefficient is positive, large, and highly significant. This result remains, albeit with a reduced coefficient, when we control for other characteristics. In Column 2 we add variables that are usually included in models of earnings, i.e., the age, tenure, education and gender of the

¹⁵ See for example Teal (2000), who studies this relationship using past data on the same firms.

¹⁶ We tried alternative cut offs between high and low reciprocal behavior (e.g. where those sending back 50% are categorised as highly reciprocal) and they yielded similar results. If, instead, we use the continuous variable for reciprocity we obtain very similar but slightly less significant results. This is again consistent with the results obtained at the firm level, where productivity is strongly related to the proportion of high reciprocators, i.e., the mean of the high reciprocator dichotomous variable, but not to the mean of the continuous reciprocity variable.

worker, as well as whether he or she is a member of a labor union and whether he or she is a relative of the employer. The coefficient on reciprocity remains large and highly significant.

What remains to be established is the causal direction of this relationship or, if the relationship goes both ways, which direction is strongest. Are workers with a greater tendency to reciprocate more productive, and therefore paid more, or do higher earnings induce more reciprocating behavior between colleagues? To address this issue we conduct an instrumental variable estimation. Since, in our case, the variable that is to be instrumented is dichotomous, we use the predicted probability from a first stage probit as an instrument, and apply classic 2SLS to obtain corrected standard errors (see Wooldridge 2002, p623-625). The identifying variables – which we expect to affect reciprocity but not earnings – that are included in the probit model are religious affiliation, birth order and how long the individual lived away from his parents during childhood. The results for the probit estimation are reported in Column 3 of Table 4 and show that all three variables are significant.

Column 4 in Table 4 reports the results of the instrumental variable estimation and shows that the coefficient on reciprocity is now smaller and insignificant (to be compared with Column 2). The decline in the coefficient indicates that the initial estimation - which did not account for simultaneity (Column 2) – was upwards biased, because it was capturing both the effect of reciprocity on earnings and that of earnings on reciprocity. Interestingly though, the coefficient remains well above zero. The decline in its significance may be because of weak instruments, as suggested by the

low adjusted R squared on the first-stage probit (0.08)¹⁷. We also need to bear in mind that we are working with a small sample, leading to relatively large standard errors, and that we may simply be asking too much of our data when we try to unravel the two causal relationships using IV estimation.

4. Discussion

Armed with these results, it is useful to return to Holstrom and Milgrom (1990) and consider why we have identified a positive rather than a negative relationship between inter-worker reciprocity and productivity. Here, we think three factors may be important. Firstly, unemployment in Ghanaian urban areas is high - around 11 percent - and combined with the absence of state benefits this is likely to have a disciplining effect on employed workers.¹⁸ Secondly, the majority of firms in our sample have production processes that require team work. This is especially true for the furniture-makers, metalworkers, and bakers and to a lesser extent for the clothing manufacturers. Thirdly, employers in the Ghanaian manufacturing sector make wide use of production and Christmas bonuses - extra payments at the end of the year that are only paid if the firm has done well. These bonuses are substantial, representing close to one month of the average workers' pay¹⁹, and, crucially, depend upon the goodwill of the employer rather than being contractually predetermined. Our data indicates that employers differentiate between workers to decide both *whether* a worker receives a bonus and *how much* he receives, making this payment, in effect,

¹⁷ If we only include the three identifying instruments in the probit, the adjusted R-squared drops to 0.04, which is a further indication that our instruments explain relatively little of the variation in reciprocating tendencies.

¹⁸ Figures obtained from the nationally representative Ghana Living Standard Survey (1998). We calculated the unemployment rates for Accra and Kumasi, the two cities where the firms of the participating workers are located.

¹⁹ The average bonus is 6% of the worker's annual salary.

performance dependent. Co-operation between workers may thus be balanced with inter-worker competition, as prescribed by Holstrom and Milgrom.

5. Conclusion

In this paper we investigate the relationship between workers' behavioral tendencies and firm productivity, focusing on inter-worker reciprocity. We combine data from a behavioral experiment and a survey relating to the same sample of Ghanaian employees and their places of work. We find evidence of a strong relationship between labor productivity and the proportion of workers in a workplace that demonstrate high reciprocity towards their colleagues. Firms with a greater proportion of high reciprocators in their workforce are more productive. We observe a similar relationship between reciprocity and earnings at the individual worker level and find suggestive evidence that the direction of causality runs both ways. However, due either to weak instruments or small sample size, we cannot separately identify the two relationships.

Why is worker reciprocity positively related to productivity? One possible explanation for these observed relationships is that the mechanism that is behind efficiency wage theory is more general than previously thought. If more productive firms pay higher wages, this may trigger reciprocal acts from workers, not just towards their employers, but also towards their co-workers. However, as Holmstrom and Milgrom point out, cooperative workers may also collude and work against the employer. Employers therefore need to encourage cooperation in some dimensions,

while stimulating competition in others and it appears that Ghanaian manufacturers succeed in this through the payment of end-of-year bonuses that depend on both collective and individual performance.

Alternative explanations involving selection or socialization may also play an important role. Under the former, worker behavioural tendencies would be predetermined and employers who are better at attracting and identifying reciprocators would have more productive enterprises. The fact that throughout our analysis, characteristics like Muslim, and having been the youngest in a family have a robust positive significant effect on reciprocity; while having spent time away from parents has a negative effect, suggests that selection may play a role. Under the latter, worker behavior would converge to a workplace norm over time, bearing in mind that both the norm itself and the strength of the norm may be different across work places. For now, the extent to which each of these alternative narratives explain the correlations observed above remains a topic for future research.

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Figures and Tables

Figure 1: The Distribution of Earnings

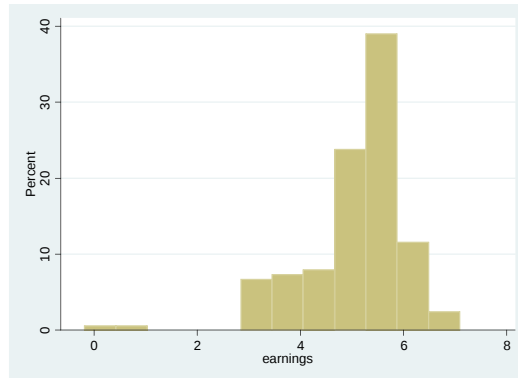


Figure 2: The Distribution of Reciprocity

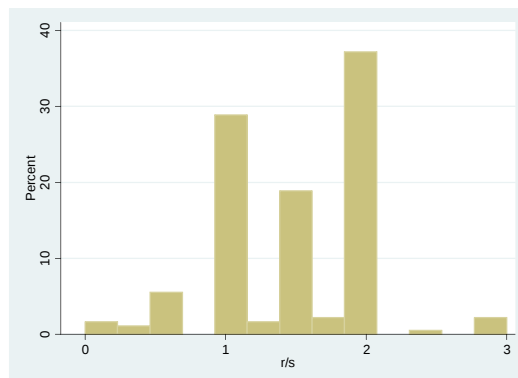


Table 1: Description of the variables

Variable name	Variable description	Mean	Std. Dev.
<i><u>Firm characteristics</u></i>			
Labor productivity	Output (Y) per employee in 000 000 cedi	14.861	16.026
Proportion of high reciprocity workers	The percentage of high reciprocity players in the firm	0.45	0.19
Total number of employees	Number of employees in the workforce	48	23.588
Capital	Market value of total capital used in the firm in 000 000 000 cedi	1.150	2.740
Domestically owned private firm	Dummy variable equal to 1 if employer is a domestically owned private firm	0.65	0.48
Food	Sector dummy, omitted sectors are wood, metal and machines	0.080	0.27
Bakery	Sector dummy, omitted sectors are wood, metal and machines	0.04	0.19
Garment	Sector dummy, omitted sectors are wood, metal and machines	0.09	0.29
Textile	Sector dummy, omitted sectors are wood, metal and machines	0.19	0.39
Furniture	Sector dummy, omitted sectors are wood, metal and machines	0.29	0.46
Chemicals	Sector dummy, omitted sectors are wood, metal and machines	0.13	0.34
<i><u>Individual characteristics</u></i>			
Earnings per month	Monthly individual earnings from the firm (in 000 old Cedi), including allowances, after tax	231.880	174.053
High reciprocity	Indicator variable for high reciprocity behavior	0.35	0.44
Age	Age in years	32	10
Years with current employer	Tenure	5.83	5.67
Years of formal education	Years of schooling	10	3
Member of a labor union	Dummy variable indicating whether individual is a union member	0.31	0.46
Female	Dummy variable equal to 1 if individual is female	0.19	0.39
Blood relative of employer	Dummy variable indicating whether individual blood relative of employer	0.13	0.34
Muslim	Dummy variable indicating whether individual is Muslim	0.09	0.29
Youngest	Dummy variable indicating whether individual is the youngest in his or her family	0.10	0.30
Years spent living away from parents	year individual has not been living with parents as a child	0.55	1.83

Table 2: Correlation between labor productivity and firm reciprocity

	Output per worker Correlation coefficient ρ (p-value for $H_0: \rho=0$)
Mean Reciprocity	0.22 (0.36)
Proportion of high reciprocators	0.55 (0.01)

Table 3: Regressing labor productivity on proportion of high reciprocal players

	(1)	(2)	(3)	(4)
	Output per worker	Output per worker	Output per worker	Output per worker
Proportion of high reciprocator workers	47.872 (16.926)**		54.081 (14.241)***	36.553 (19.884)*
Logarithm of Capital		2.975 (1.592)*	3.648 (1.218)***	4.441 (1.904)**
foods				13.893 (9.711)
bakery				26.047 (15.646)
garment				14.239 (9.382)
textile				10.724 (10.304)
Furniture				2.601 (7.844)
chemical				4.835 (15.886)
Constant	-6.787 (8.244)	-39.365 (29.203)	-76.084 (24.125)***	-89.412 (32.015)**
Observations	20	20	20	20
R-squared	0.31	0.16	0.55	0.70

Robust standard errors in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

Table 4: Regression of Ln(earnings) on high reciprocity behavior

Model	(1)	(2)	(3)	(4)
Variable used to predict High Reciprocity / Instrument	OLS1	OLS2	Probit	IV
Dependent variable → Independent variable ↓ High reciprocity	Ln(earnings)	Ln(earnings)	High reciprocity	Predicted probability from (3) Ln(earnings)
	0.399 (0.144)***	0.284 (0.124)**		0.167 (0.619)
Age in years		0.034 (0.008)***	0.034 (0.013)***	0.035 (0.009)***
Years with current employer		0.041 (0.011)***	-0.020 (0.023)	0.040 (0.011)***
Years of formal education		0.033 (0.017)*	0.046 (0.035)	0.034 (0.017)*
Member of a labour union		0.213 (0.119)*	-0.342 (0.280)	0.197 (0.157)
Player female		0.035 (0.218)	0.202 (0.284)	0.040 (0.228)
Blood relative of employer		0.219 (0.178)	-0.138 (0.301)	0.210 (0.187)
Muslim			0.858 (0.393)**	
Youngest			0.533 (0.333)*	
Years spent living away from parents			-0.112 (0.062)*	
Constant	4.951 (0.114)***	3.388 (0.315)***	-1.607 (0.526)***	3.393 (0.314)***
Observations	164	164	164	164
R-squared	0.04	0.31	0.08 ⁺	0.30 ⁺⁺

Robust standard errors in parentheses; * significant at 10%; ** significant at 5%; *** significant at 1%

⁺ Reports the adjusted R squared; ⁺⁺ Reports the centred R squared