Does Similarity in Social Traits Breed Connection? Evidence from Lab-in-Field Behavioural Experiments in Burkina Faso

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Abstract

Economists and sociologists have long documented the existence of connections between individuals based on similarities in socio-demographic characteristics, which in academic literature received the name *status homophily*. On the contrary, investigation of connections based on values and behaviour has received yet less attention in the literature, and particularly, in empirical development economics. Based on unique data on networks and behaviour, which we collected in lab-in-field experiments in 68 villages in Burkina Faso, we investigate the existence of *value homophily*, i.e. connections based on similarities in trust, trustworthiness, risk preferences, patience, altruism, and willingness to donate to the public good. We observe that similarities in social capital and preferences play an important role in building networks. Similarities in the levels of trust and patience are important for building social ties, while individuals with similar risk preferences and patience levels are more likely to build stronger economic ties. We also observe that individuals with different levels of trustworthiness are more likely to build stronger economic ties, suggesting that there may be a fraud or unreliability in economic transactions. Finally, we find strong support for status homophily, i.e. connections based on similarities in ethnicity, religion, gender, age, household size, physical proximity and kinship. The existence of status homophily is found to be robust in both economic and social connections.

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1 Introduction

It was first mentioned by Burton (1927) that "birds of a feather gather together" or, in other words, "similitude of manners ties most men in an inseparable link". Lazarsfeld and Merton (1954) named this behaviour *homophily*, or the "love of the same". They also distinguished two types of connection: *status* homophily and *value* homophily.

Status homophily, i.e. connections based on similarities in race, ethnicity, age, gender, religion, education, occupation, and social class, has been widely studied by many researchers in economics and sociology (see McPherson et al. (2001) for a literature review). This type of homophily is found robust over various types of relations. For example, Arcand and Fafchamps (2012) found that joint participation of households in community-based organisations in Burkina Faso and Senegal is determined by geographical and ethnic proximity as well as by wealth and household size. Strong status homophily is found in building marriage, friendship, work relation, and other social and economic networks (Currarini et al. 2009; Jackson 2007; Kalmijn 1998; Marsden 1987, 1988).

On the contrary, value homophily, which is based on values, attitudes, beliefs, and behaviour,[1] has received less attention in the academic literature, and shifts us to the link between economics and psychology. One of the first academic works on the topic is a review by Huston and Levinger (1978), which focuses on "interpersonal attraction".

In this paper, based on unique data collected from randomized lab-in-field behavioural experiments in 68 villages in Burkina Faso, we study both connections empirically. In particular, we investigate social and economic links between individuals, and how these links depend on similarities in the levels of social capital and other social preferences between the individuals. To measure social capital and preferences we implemented adaptations of well-established games (Trust, Dictator, Public Goods, Lottery, and Discount rate games). These games are designed to measure trust and trustworthiness, altruism, willingness to supply a public good, risk and time preferences, respectively. In addition, we also study the influence of socio-demographic characteristics on link formation between individuals.[2]

This paper also touches the important area of economic research based on whether joint levels of trust and other social preferences are fundamental for economic connections. It has been noted that social capital may have large effects on the regularities of social life, or in other words, enforce social norms. This is especially important in developing countries where formal institutions are weak. For example, in the Trust game, no reciprocity may be used to punish "bad" behaviour, so no formal mechanism is needed. Since networks and economic development are also positively linked, we try to find support for whether joint levels of social capital and preferences determine economic and social networks in the villages of Burkina Faso.

The behavioural experiments are a part of the impact evaluation of the World Bank's Community Monitoring for Health and Education Services Delivery project in Burkina Faso. This is a community-

[1] Here we assume that behaviour is a function of values, attitudes and beliefs, rather than socio-demographic characteristics.

[2] Here, in contrast to Putnam's definition of social capital, as "features of social organization such as networks, norms and social trust", we separate the concept of networks from the concept of social capital, and broaden the latter with other behavioural characteristics.

driven development intervention, which implies community-based monitoring of health centres and primary schools. The pilot project has been introduced in an attempt to raise the quality and quantity of weak health and education services in Burkina Faso. It aims to increase the transparency and accountability of service providers by helping individuals and communities to demand good governance.

Successful diffusion of information is key to the project's success. With better access to information, villagers are more aware of the types and costs of services provided, while the service providers are more willing to increase the quality of services under the threat of social sanction. Since network structure influences information diffusion, the extent to which a society is segregated across different groups can be critical in determining which groups are in a disadvantageous position (Banerjee et al. 2012; Jackson 2008), and how the community monitoring interventions could be better implemented in order to achieve economic development goals.

Using an original methodology based on dyadic regressions, we find evidence of value homophily, even when controlling for socio-demographic characteristics. In particular, we observe that similarities in the levels of trust and patience result in stronger social ties between individuals. We also observe that people who are more trusting, are also more altruistic. Stronger economic ties are more likely to be created between individuals with different levels of trustworthiness, and between those with similar risk and time preferences. We also document strong positive correlation between altruism and trustworthiness.

Consistent with existing economic and sociological research we find strong evidence of status homophily, i.e. strong ties based on socio-demographic dimensions including ethnicity, religion, age, gender, kinship and physical proximity. We also document that a similitude in cultural traits such as ethnicity and religion, or gender, is the strongest determinant of link formation. Status homophily is found to be important for both economic and social connections.

The paper is organized as follows. Section 2 describes the implemented experimental activities in Burkina Faso. The empirical model is presented in Section 3. Results are presented in Section 4. Section 5 concludes and proposes some policy implications.

2 Experimental design and data

2.1 Overview

In this community-based monitoring, the main tool for improving health and education services is a community scorecard mechanism through which communities evaluate the quality of service in health and education facilities. In each village, the community itself defines the evaluation criterion for schools and health facilities. They then use this criterion to identify service delivery issues and develop strategies to solve them, with progress discussed at quarterly meetings.

It is expected that this monitoring, coupled with public praising or shaming through the dissemination of scores, will elicit increased effort by health and education service providers, which is our intermediate outcome, and in turn will yield improvements in human development outcomes (Björkman and Svensson (2009) perform an analogous study of health centers in Uganda).

The community-based monitoring program is currently being implemented in 36 pilot villages randomly selected across three of Burkina Faso's thirteen administrative regions: Cascades, Plateau-Central and Sahel. An additional 36 villages from these regions are randomly selected for a control group in the impact evaluation design. Each of the 72 villages selected for control and intervention has a facility, either a health center or a primary school. Section A1 of the Appendix provides a detailed description of the randomization procedure.

We conducted behavioural experiments and collected information on networks in 68 out of the 72 villages.[3] The average number of households in a typical village in Burkina Faso is 150. We randomly selected 20 households per village: 16 - for participation in behavioural activities and 4 - for replacement, in case a household head in one of the 16 households previously selected was not available. The survey of household characteristics was conducted one year before we carried out the experimental activities. In total, we ended up with a sample of 1,031 individuals.[4]

2.2 Networks

First, we collected data on networks. The network questionnaire consisted of 17 questions related to different connections. Section A2 of the Appendix provides the exact questions and the type of network each question represents. Overall, the networks are classified into two primary categories: economic and social ties (Table 4). In addition, we also collected information on family and neighbour connections between the participants.

Each economic or social tie is symmetric, i.e. agreement of both players is necessary to establish and maintain the relationship. Figure 2 represents one of the economic ties. It is a buy and sell network in Moussodougou village of the Cascades region. In this particular village, we had 16 participants and each node (circle) represents an individual. Because the networks are symmetric, the links between the nodes are undirected. In this particular network, individuals 5 and 12 are central. From the individual level data set of socio-economic characteristics of the participants, we found that Player 5 is a merchant and Player 12 has family ties with the village chief and is engaged in agriculture. We presume that merchants and individuals who have family ties with a village chief are more likely to be socially and economically connected with other individuals in the village, so we control for these characteristics in our analysis.

Figure 3 is another example of a network. This is a social network representing giving or getting advice in Yalanga village of the Sahel region. The network has 16 nodes, but it is not as dense as the network in Figure 2 and has two isolated nodes. In this village, for example, we found that participant 13, who is connected with individuals 5 and 14, is the oldest individual (72 years old) among all 16 participants. So age may be an important determinant of how strongly a person is connected socially.

Table 5 shows the frequency of the particular networks, as measured by the percentage of households who share the same type of network. Almost 80 percent of the households participate in

[3] Due to the theft of a computer during implementation of the behavioural activities we lost 4 villages from our sample.

[4] Th initial sample of the households consists of 3,840 individuals. 20 households were randomly sampled from all the villages located in the coverage area of each health centre. Due to budget constraint, we implemented behavioural activities in the villages only where a health or education facility is located. Nevertheless, we still ended up with a relatively large sample of households.

meetings organised by the community, such as parent-teacher (PTAs) and mother-teacher associations (MTAs), and management committees for education and health (COGES).[5] The majority of households have children. However, we do not know whether participation in community meetings is voluntarily or parents are forced to participate. When we aggregate the 17 networks into two groups in Table 4, we find that social ties are predominant in our sample. 92 percent of households share social ties, 68 percent share economic ties, and 26 and 12 percent have family and neighbour ties, respectively (Table 6).

2.3 Social capital

In addition to the information which we collected on networks, we performed five different experimental activities, which allowed us to measure social capital and preferences. We implemented adaptations of well-established games: Trust, Dictator, Public Goods, Lottery, and Discount Rate games. These games are designed to measure trust and trustworthiness, altruism, willingness to donate to the public good, attitudes towards risk, and patience, respectively.

Some of these games were used to measure social capital by Karlan (2005) and they are a staple of the *Foundations of Human Sociality* project (Henrich et al. 2004) as well as other studies in developing countries as reviewed in Cardenas and Carpenter (2008). Each of these games is discussed in more detail in Section A3 in the Appendix. However, let us focus more on the outcomes from the Trust game and then briefly describe the outcomes from the other experimental activities, as this is important for future discussions. Table 7 presents summary statistics of all our collected behavioural measures.

2.3.1 Trust game

To measure trust and trustworthiness we used the well known "investment game" by Berg et al. (1995) (BDM further in the text). The game has two rounds and two players ("senders" and "receivers"). In each village, half of the participants were allocated to be "senders" (or Player 1, or investors) and another half - "receivers" (or Player 2, or trustees). The game guaranteed subjects anonymity. At the beginning of the game both players are endowed with w francs. In the first round, Player 1 chooses how much, if anything, to send to Player 2, M_a, and we triple this amount, $3M_a$. Then in the second round, Player 2 has to choose how much of this amount and the initial endowment to send back to Player 1, $k_b(3M_a + w)$. Using this notation, M_a is our indicator of trust and k_b is our indicator of trustworthiness.

Visually, our Trust game could be represented by the tree in Figure 1. If Player 1 chooses not to send anything in the first round, $M_a = 0$, the payoffs to Player 1 and Player 2 are (w, w). If, on the other hand, Player 1 chooses to send some positive amount, $M_a > 0$, then in the second round Player 2 can choose to send back nothing, $k_b = 0$, and the payoffs are $(w - M_a, w + 3M_a)$ or Player 2 can choose to send back a positive share, $k_b > 0$, in which case the payoffs are:

$$P_a(M_a, k_b) = w - M_a + k_b(3M_a + w) \tag{1}$$

[5] Comités des Gestion

and

$$P_b(M_a, k_b) = w + 3M_a - k_b(3M_a + w). \tag{2}$$

Solving for an equilibrium recursively, Player 2 would choose not to send anything back $k_b = 0$ and Player 1 will choose not to send anything to Player 2 in the first round, $M_a = 0$. So the Nash equilibrium would be (w, w).[6] However, if Player 2 chooses to reciprocate, that is, send back at least the amount sent by Player 1:

$$k_b(3M_a + w) \geq M_a, \tag{3}$$

then both players could be better off, $P_a > w$ and $P_b > w$, and we arrive at a social optimum strategy. In this case:[7]

$$\frac{M_a}{3M_a + w} < k_b < \frac{3M_a}{3M_a + w} \tag{4}$$

In our sample, both players were endowed with $w = 300$ francs at the beginning of the game. As indicated in Table 7, the average amount sent by Player 1 in the first round was about 100 francs, or one-third of the pot. We could denote it as the average amount sent: $\overline{M}_a = 100$. About 11 percent of the Trust games played ended in the "self-interested" strategy: $(300, 300)$ (Table 8).

The average amount returned by Player 2 to Player 1 was close to 150 francs and was less than a quarter of the total amount available to Player 2, that is, our average share is equal to $\overline{k}_b = \frac{1}{4}$. So, we observe that on average "receivers" reciprocated, that is, sent back more than the amount which was sent to them by "senders". According to double inequality 4, for the average "sender" who sends 100 francs, the values of k_b, what the average receiver reciprocates, range between $(\frac{1}{4}, \frac{3}{4})$. In 85 percent of the Trust games, the "receiver" sent back at least the amount sent by the "sender".

Johnson and Mislin (2011) conduct a meta-analysis of 162 Trust games played in many countries, and find that in Africa individuals tend to send and reciprocate less. In our sample, we find

[6] In fact, we have "receivers" (23 out of 520 observations in the sample) who chose to reciprocate even if the "sender" decided not to invest. This does not change the logic of our discussion here. The Nash equilibrium will be the same: (w, w).

[7] In BDM's investment game, Player 2 puts the initial endowment in the pocket. We allowed her to use it and send back more than $3M_a$. In Berg's formulation:

$$P_a(M_a, k_b) = w - M_a + k_b(3M_a)$$

and

$$P_b(M_a, k_b) = w + 3M_a - k_b(3M_a).$$

Then,

$$M_a < k_b(3M_a) < 3M_a,$$

or

$$\frac{1}{3} < k_b < 1$$

This is essentially the same thing. In our modification, the larger the initial endowment available to the receiver, the smaller would be the share, k_b, needed to make both players better off. However, no one in our sample sent more than $3M_a$.

that the participants sent less than in Johnson and Mislin (2011) (33 percent against 46 percent) and reciprocated more (85 percent against 32 percent).

Finally, we find evidence for BDM's "kindness" in reciprocity. That is, Player 2 tends to send back more if the amount sent by Player 1 is higher. In our sample, the correlation between M_a and $k_b(3M_a + w)$ is 68 percent.

2.3.2 Other social preferences

As many social scientists point out, the Trust game may not necessarily reveal trust and trustworthiness, but it may capture other social preferences.

It has been shown that persons with greater risk tolerance may exhibit behaviour that on the surface appears more trusting but is actually a greater willingness to gamble on the cooperative behaviour of the other player.[8] To control for this potential problem, we measured our subjects' attitudes toward risk. The variable associated with risk is a 5-scale variable, which ranges from 1 (risk averse) to 5 (risk taker). According to Table 7, the subjects were generally quite risk averse, with a median lottery choice of 2.

As noted by Cox (2004) and Camerer and Fehr (2004), in the Trust game it is not clear whether the first mover makes a choice to benefit the second mover because she trusts that the second mover will not defect or because the first mover is altruistic. Therefore, it is important to separate trust from altruism. The same argument holds for the relation between trustworthiness (and reciprocity) and altruism.[9] However, since we played the Trust game in each village only in one sequence, the positive correlation between trustworthiness and altruism may be higher than that between trust and altruism because the receivers do not expect the next round. We measured altruistic behaviour of the individuals using the Dictator game. In this game the subjects were asked to decide how much, if anything, of their endowment to donate to a needy family in their village or in another village. The average amount donated was about 100 francs or about one-third of the pot. This amount did not vary much depending on whether the money was given to a local needy family or one in another village (Table 2). In the sample, 8 percent of individuals chose not to donate anything.

It might be, that individuals in our activities reveal not their real social preferences but rather a lack or excess of patience. We observed patience of the individuals using the Discount Rate game. Discount rates were measured by offering six situations. In each situation the subjects had a choice of receiving an amount on the day of the games or to opt for a larger amount to be disbursed in three days. Discount rates (or patience levels) range from 0 (no patience shown in all six situations) to 6 (patience shown in all six situations). As shown in Table 7, the villagers displayed remarkable patience, with the median villager choosing to wait in 5 situations out of 6. Almost half of the participants selected the higher amount in a week in all six cases, and this was the modal category (Table 9). The next most common behaviour was to select the immediate payment in all cases,

[8] Actually, the evidence for this conjecture is mixed. Schechter (2007) found evidence that the amount sent in the Trust game was positively correlated with willingness to take risks among subjects in rural Paraguay, but Ben Ner and Halldorsson (2010) found no such link.

[9] "Altruism represents unconditional kindness while reciprocity means non-selfish behaviour that is conditioned on the previous actions of the other actor" (Camerer and Fehr 2004).

giving the distribution a bimodal character.

Our last experiment was the Public Goods game. Preferences in the Public Goods game are measured as a binary variable, which is equal to 1 if an individual makes the choice to contribute, and 0 otherwise. As shown in Table 7, almost three-fourths of the subjects contributed to the collective good in our sample. Separating willingness to donate to the public good from altruism and reciprocity is also important. The Public Goods game cannot typically distinguish between players who are self-interested, and players who would like to reciprocate but believe pessimistically that others will not contribute (Camerer and Fehr 2004).

Upon completion of the experimental activities, we calculated the average total payout. It was a little over 1,000 francs or about two-thirds of a full days wage in the poor rural areas where we worked.[10]

2.4 Other socio-economic characteristics of the participants

The summary statistics of the socio-demographic characteristics of the participants are presented in Table 10. Most of the participants are household heads, so 89 percent of them are male with an average age of 43 years old. Average household size is a bit less than 8 members. With regards to marital status, 53 percent of the participants practice monogamous marriage and 41 percent practice polygamy.

Moving to cultural traits, the main ethnic groups are Mossi, Senoufo and Fulfulde, which are predominant in the regions of Plateu-Central, Cascades and Sahel, respectively. 81 percent of the participants identified themselves as Muslim, 12 percent as Christian, and 7 percent as Animist. The latter come mostly from the Cascades region. As for the language groups, the most frequently spoken language is Moore, which is shared by many ethnic groups in Burkina Faso. The other languages are associated with a particular ethnic group, such as Senoufo or Fulfulde. The Dioula language is a trade language in Western Africa, and is spoken as the first or second language in Burkina Faso (Ethnologue). French speaking individuals, who also have the highest level of education in our sample, live in Plateu-Central.

Unfortunately, we did not collect data on household income or land ownership. However, we did obtain information about the main income source of the household. The majority of the population in the sample is engaged in agriculture (80 percent in our sample), followed by teaching (7 percent), commerce (5 percent) and mining (4 percent). Participation of women is more visible in agriculture and commerce: 76 and 10 percent of women in our sample, respectively.

Illiteracy rates are very high in Burkina Faso. During the behavioural activities, we collected data to measure the level of comprehension of the players by using specific cognitive questions. We also collected information on the level of education and if an individual could read and write. We found that 75 percent of adults over the age of 15 cannot read and write, and 80 percent have no primary education.[11]

[10] This total payout includes both the winnings for the day and winnings from the Discount Rate activity to be paid in three days.

[11] For our analysis, we use the level of education as one of the independent variables. We also control for whether an individual answered the cognitive questions correctly, but this does not explain significantly the variation of the dependent variables and is positively correlated with the level of education.

Finally, 64 percent of the participants reported that they have family ties with the village chief. As mentioned previously, this could have a large effect on the likelihood of building an economic or social network.

3 Dyadic regressions

Following Jackson (2008), let us first define the set $N = \{1, ..., n\}$ as the set of nodes involved in a network. Each individual or player is considered as a node i. A graph (N, g) consists of a set of nodes N and a real-valued $n \times n$ matrix g, where g_{ij} represents the symmetric relation between nodes i and j. Symmetry implies $g_{ij} = g_{ji}$.

In most villages we managed to gather 16 individuals, but not always. In our sample, n takes values from 8 to 16 with an average of 15.3 players per village. Figures 2 and 3 are examples of the graphs with $n = 16$ and g equal to a "buy or sell" or "give or get advice" type of network, respectively.

The existence of a link between individuals i and j in the network m is measured as a binary variable:

$$g_{ij}^m = 1 \text{ if a link is reported in the data, } g_{ij}^m = 0 \text{ otherwise,}$$

and m is one of the 17 relationships. Let t be one of the two types of connection:

$$t = \{\text{ECONOMIC TIE, SOCIAL TIE}\}.$$

We construct a measure of the strength, S_{ij}^t, of a type t between two individuals i and j. This measure is the sum of all relationships, g_{ij}^m, corresponding to each type t (Table 4). S_{ij}^t is equal to 0 if there are no economic or social ties reported between the individuals. According to Table 4, the maximum possible strength of an economic tie is 7, and of a social tie is 8.[12]

Following the literature on dyadic regressions (Arcand and Fafchamps 2012; Fafchamps and Gubert 2007), we estimate an empirical model, in which each observation expresses a relationship between pairs of nodes and the dependent variable is the strength of a tie:

$$S_{ij}^t = \alpha + |w_i - w_j|\theta + (w_i + w_j)\eta + PG_{ij}\lambda + z_{ij}\delta + \varepsilon_{ij}, \tag{5}$$

where w_i and w_j are the vectors of the characteristics of individuals i and j, respectively; z is a binary variable, which captures "sameness" characteristics and is equal to 1 if individuals share the same ethnicity, religion, language, gender, educational level, or have the same source of income; PG captures whether individuals made the same choice in the Public Goods game; ε_{ij} is the disturbance term.

Coefficient θ measures the effect of differences in attributes on the strength of a tie S_{ij}^t, while η captures the effect of the combined level of w_i and w_j on S_{ij}^t.

Summary statistics on paired data are presented in Table 6. In total, there are 7,909 dyads. In our sample, the strength of an economic tie ranges from 0 to 5 with an average value of 1.14 and

[12] For women, the strength of a social tie may be higher because of women's group joint participation included in the social tie group in Table 4. If we leave this network out, our analyses and the results do not change.

the strength of a social tie ranges from 0 to 7 with an average value of 2.14. In terms of socio-economic characteristics, 80 percent of individuals share the same gender (male). 68 percent of individuals share the same educational level (no education) and 75 percent share the same income source (agriculture). To control for whether at least one of the individuals in a dyad is a merchant or has family ties with a village chief, we create binary variables, each of them equal to 1 if this is the case, and 0 otherwise. In our sample, 9 percent of all dyads include at least one individual engaged in commerce and 65 percent of dyads include at least one individual having family ties with a village chief. Finally, since age and household size are continuous variables, we control for their sums and absolute differences. In terms of cultural characteristics, around 80 percent of the households share the same ethnicity, religion or language.

Consistent with existing findings in economics and sociology, we expect that individuals in rural areas in Burkina Faso to be more likely to connect based on similar socio-demographic characteristics. So, we expect the corresponding vector coefficient δ to be positive. Also, we expect that θ, which is associated with age and household size, to be negative. Age may reflect social status, while household size may reflect marriage type, family traditions or wealth. So, similarities in these social characteristics between individuals may increase the strength of ties.

Moving to the sums and absolute differences in social capital and preferences, in the regressions we measure trust as the logarithm of the amount the "sender" sent to the "receiver" and altruism as the logarithm of the amount donated to the poor family. Trustworthiness is measured as a percentage of the total amount returned by the receiver. As with status homophily, we may expect that people are more likely to connect if they have the same preferences and values, which lead to similar behaviour. For instance, two altruistic or two trusting individuals may tend to have stronger social ties. Value homophily may also apply to risk and time preferences and behaviour in the Public Goods game. According to the descriptive statistics, 68 percent of the pairs of individuals made the same choice, to contribute or not, in the Public Goods game.

In social ties we may, however, observe an opposite situation when two dissimilar people connect, that is, when "extremes meet" or "the love of the different". As an opposite of homophily, this type of connection has received the name *heterophily*. Although, heterophily has not been widely studied, the presence of it has been found in large networks, when diversity of ideas may promote an innovative environment in large organizations (Rogers 2003).

In terms of economic ties, if individuals have the same time and risk preferences, they are, for example, more likely to be in the same credit group or borrow or lend to each other. However, in terms of trust and trustworthiness, altruism, and willingness to contribute in the Public Goods game, we may observe heterophily. For instance, individuals may take advantage of the altruistic or trusting behaviour, or simply cheat in economic connections. Heterophily in economic connections may imply economic profit for one of the participants, but may also imply a benefit of ideas in large networks (ibid.).

As for the sums of social capital and preferences, we expect that high joint levels of trust and trustworthiness, altruism, willingness to contribute to the public good and patience may have a positive effect on social and economic ties. The effect of a higher joint preference for risk on ties is ambiguous. If, for instance, two risk-averse individuals are more likely to maintain their connections,

then the coefficient on the corresponding distance will be negative.

If we further assume that an individual's social capital and preferences stem from socio-demographic characteristics, such as ethnicity, religion or level of education, we would expect the effect of value homophily to disappear when we control for socio-demographic similarities.

In equation 5 we also control for two individuals belonging to the same family or neighbourhood. Both are binary variables, and as with social or economic ties, equal to 1 if a link is reported in the data set, and 0 otherwise. Kinship ties are expected to increase the probability of building social networks, and perhaps, to a lesser extent, an economic network. Being neighbours serves as a proxy for physical distance, and therefore, may increase the strength of social and economic ties.

4 Results

Tables 11 to 16 present the coefficient estimates of the dyadic regressions of equation 5. In all regressions we control for village fixed effects. Standard errors are corrected for two-way clustering to allow for dependent dyadic observations (Conley 1999; Fafchamps and Gubert 2007).[13]

4.1 Status homophily

First, we examine the existence of status homophily. Table 11 presents the results from the estimations of equation 5 with only kinship (family ties) and physical distance (neighbour ties) as binary variables and socio-demographic characteristics added as the covariates. Columns [1] and [2] show the results when the dependent variable is the strength of an economic or a social tie, respectively.[14]

As expected, family and neighbour ties have a positive effect on the formation of both economic and social ties. Consistent with existing empirical literature, we find strong homophily in ethnicity, religion and gender. The coefficient estimates on the sameness binary variables are statistically significant for both relationships (columns [1] and [2]). Interestingly, speaking the same language is not a major determinant in building stronger networks. In fact, more than 80 percent of the dyads may speak the same language, as only the primary language was reported in the individual level survey. More educated people, for instance, may speak both French and one local language, which was not reported in the sample.

We do not find that individuals with the same social status are more likely to connect. The coefficient estimates on the same income source binary variable are statistically zero in both columns [1] and [2]. Likewise, having a similar educational level is not important for building an economic tie. However, the corresponding coefficient estimate on education is negative in column [2], meaning

[13] As in Conley (1999) and Fafchamps and Gubert (2007), in order to deal with spatial correlation of errors in the estimation of equation 5, the asymptotic variance-covariance matrix of the estimates is corrected for being

$$AVar(\widehat{\beta}) = \frac{1}{N-K}(X'X)^{-1} \times (\sum_{i=1}^{N}\sum_{j=1}^{N}\sum_{k=1}^{N}\sum_{l=1}^{N} \frac{m_{ijkl}}{2N} X'_{ij}\varepsilon_{ij}\varepsilon_{kl}X_{kl}) \times (X'X)^{-1},$$

where β denotes the vector of coefficients, N is the number of dyadic observations, K is the number of regressors, X is the matrix of all regressors, X_{ij} is the vector of regressors for dyadic observation ij, and $m_{ijkl} = 1$ if $i = k, j = l, i = l$ or $j = k$, and 0 otherwise. Formula (2) also corrects for possible heteroskedasticity.

[14] We estimated equation 5 with the dependent variable as just the probability of building any type of network. The results from logit estimations are similar to those presented in the tables.

that individuals tend to build stronger social ties when having different levels of education. Since most of the population have no education (80 percent) and most social ties in the villages are not based on education, but rather on culture such as ethnicity and religion, the few ties that are based on education, such as "give or get advice" or "child help", may be the cause of the heterophily in the results.

Next we turn to the regressors which enter equation 5 in absolute differences $|w_i - w_j|$ and sums $(w_i + w_j)$. We find homophily in age for building economic and social ties. The coefficient estimates on absolute differences in age in columns [1] and [2] are negative and statistically significant, meaning that people with large age differences are less likely to connect. The combined effect of age is positive for building social networks, meaning that with age an individual builds stronger social connections. However, the coefficient estimate on the sum of age for economic ties is negative, meaning that older people may tend to connect less economically, but it is not statistically significant.

Finally, individuals with similar family size are more likely to build stronger ties. There are several explanations for this finding. One of the more interesting ones concerns marital status in the villages of Burkina Faso, where polygamous marriage is common. In the sample, household size is a proxy for the type of marital relation. Larger household size is likely to be associated with a family being polygamous (in the sample, the correlation coefficient is positive and is equal to 35 percent), while lower household size is likely to be associated with a family being monogamous (in the sample, the correlation coefficient is negative and is equal to 33 percent). So homophily in household size adds to homophily in culture. Also, the combined effect of household size is positive and statistically significant in both columns [1] and [2], meaning that having more family members brings more connections.

Overall, we find strong evidence of status homophily. The results also show that cultural similarities in ethnicity, religion, marital relation are more important for building connections than similarities in social status associated with occupation and education. Since we sampled individuals who live in the rural areas of Burkina Faso, for whom cultural traits and traditions play an important role, the results we found are as expected. Consistent with existing research, we also find strong homophily in age and gender.

Researchers have observed that family ties with a village chief play an important role for joint participation in community-based organizations in Burkina Faso (Arcand and Fafchamps 2012). 64 percent of the respondents in our sample show family ties with a village chief, so in Table 12 we add an additional control variable if one of the individuals in a dyad has family ties with a village chief. However, the coefficient estimate on the corresponding variable is insignificant in both columns [1] and [2]. This result is likely due to most of the connections in our sample not being of the nature that are dependent on connections with a village chief (e.g. volunteer for public service, visit temple/practice religion).

Instead of controlling for the same source of income, we investigate whether being a merchant increases the strength of a connection, especially an economic one. In Table 12 we add a binary variable equal to 1 if one of the individuals in a dyad is a merchant. As expected, it increases the strength of an economic tie (column [1]). However, it decreases the strength of a social tie (column [2]). In our sample only 5 percent of the individuals are engaged in commerce, and it is possible

that this small minority does not participate as actively in regular social connections due to the time constraints from being a merchant.

4.2 Value homophily

Next we move to investigating the effects of value homophily in Table 13. First, we do not control for status variables and regress the strength of an economic or a social tie on kinship, levels of social capital, and preferences.

Since half of the participants were senders in the Trust game, and the other half were receivers, we had to split the sample randomly in half, in order to investigate the effects of trust and trustworthiness separately. Columns [1] and [2] of Table 13 present the results when we control for absolute differences and sums of trust, while columns [3] and [4] present the results for trustworthiness.

First, trust seems to play a more important role in building stronger social ties than economic ones. The coefficient estimate on the absolute difference of the corresponding variable in column [2] is negative and statistically significant, meaning that similarities in the levels of trust of individuals increase the strength of a social connection. Also, the coefficient estimate on the sum of trust levels is positive and statistically significant, meaning that joint levels of trust have a positive effect on the strength of social connections. Moreover, the combined effect of altruism and similarities in patience levels, both influence the strength of social connections positively (columns [2]-[4]).

Interestingly, we observe heterophily in risk preferences (column [2]), meaning that a risk-taker and a risk-averse person are more likely to connect socially. However, this effect disappears in the trustworthiness sample in column [4]. This may be due to the positive correlation between trustworthiness and risk preferences in our sample.[15] Since trustworthiness is measured by a receiver's willingness to send money back in the second round, a more risk-friendly individual may send more money back in the anticipation of possible future benefits, while a risk-averse individual will keep the money that she already has and not be concerned with future outcomes.

When we analyse the economic ties of the trustworthiness sample in column [3], we observe strong homophily in risk and time preferences. Also, high joint levels of patience are important for building economic networks in columns [3] and [4]. Similar behaviour in the Public Goods game is found to be insignificant for both economic and social ties.

Surprisingly, we find strong heterophily in trustworthiness. To check whether this result and the others are robust, we include the status variables together with our behavioural measures. Table 14 presents the corresponding results.

As previously, we find that similarities in levels of trust are important in building social connections (column [2]), although the combined effect of trust disappears. The joint level of altruism remains important and the relation between the two variables is interesting. The correlation between trust and altruism is positive and equal to 44 percent (Table 15). We also find a positive correlation between altruism and trustworthiness (37 percent).

Interestingly, when we control for trust in columns [1] and [2], the coefficient estimate on the ethnicity binary variable loses its statistical significance, meaning that trust and ethnic cleavage may

[15] Though, the correlation coefficient between absolute differences in risk and absolute differences in trustworthiness is positive and equal to 1 percent (Table 15)

be related.[16] The finding of homophily in other socio-demographic variables such as age, religion, gender, family ties and physical proximity (neighbour), remains robust when we include behavioural measures.

Similar to our previous results in Table 13, we find heterophily in trustworthiness on economic ties. Also, we observe a strong positive effect of similar risk and time preferences for economic ties in column [3].[17] The coefficient estimates on absolute differences of the corresponding variables are both negative and statistically significant. A high joint level of patience affects the strength of both economic and social ties positively in the trustworthiness sample.

Same choice in the Public Goods game becomes important only for social ties (columns [2] and [4]), and only when we control for status variables. However, when we control for trustworthiness, there is a sign reversal of the corresponding coefficient estimate. To understand this dynamic, in Table 16 we split the choice into three binary variables: players both contributed, players both did not contribute, and only one of the players contributed to the public good. The reference group are the dyads in which only one of the players contributed. According to the summary statistics for the Public Goods game in Table 3, in 10 percent of all dyads, none of the players contributed to the public good. Splitting the public good choice in Table 16, the difference in signs is found to be due to the negative effect of having two contributors and the positive effect of having two non-contributors (relative to the pairs where only one of the players is a contributor). The sign reversal of the coefficient on the same choice in the Public Goods game variable, when controlling for trustworthiness, is puzzling.

In sum, the findings on value homophily suggest that similarities in trust levels and patience determine social ties, while dissimilarities in the levels of trustworthiness contribute to economic ties.[18] The latter effect may be due to a "cheating hypothesis" which implies that there may exist dyads where one of the participants is unreliable in economic transactions. There is also a slight evidence of homophily in risk and time preferences being important for building economic networks.

The findings associated with behavioural measures should, however, be taken with caution, as it may be that social interactions lead to the similarities in social capital and other social preferences. It may therefore be more appropriate to treat the obtained coefficient estimates as correlations, rather than interpret them as causal effects.

5 Conclusion

Based on network data and behavioural measures of social capital, which we collected in a lab-in-field setting in rural Burkina Faso, we investigate the existence of value homophily, i.e. connections based on similarities in trust, trustworthiness, risk preferences, patience, altruism, and willingness to donate to the public good.

[16] The statistical significance of the household size also disappears, meaning that trust and cultural similarities in the type of marital relations are also related.

[17] The positive effect of similarities in risk and time preferences and dissimilarities in trustworthiness on the strength of economic ties come mostly from labour exchange network, which is the largest contributor to the group of economic ties.

[18] When running regressions with the dependent variables as different social ties, we find that the biggest contributor to homophily in trust is participation in the community meetings.

We observe that similarities in social capital and preferences, though not consistently, play an important role in building networks. Similarities in the levels of trust and patience are important for building social ties, while individuals with different levels of trustworthiness are more likely to build stronger economic ties. Similarities in risk and time preferences, though not consistently, positively affect the strength of economic connections. There are some unexplained puzzles in the correlations between behaviour in different games. We find that there is a strong positive relation between altruism and trust, and altruism and trustworthiness. As for future research, we would like to look at particular types of interesting social and economic connections to gain a better understanding of how they depend on values and behaviour.

Combining the information on social capital and preferences with household and individual level surveys of socio-economic characteristics, we find support for status homophily, i.e. connections based on similarities in ethnicity, religion, gender, age, household size, physical proximity and family. In contrast, similarities in language, education and occupation are found to be less important. The existence of status homophily is found to be robust in both economic and social connections.

The results obtained, especially those related to studying social ties, raise policy related comments. First, the findings on networks show that a large percentage of villagers connect through communities meetings and volunteer for public service, implying that strong participation in the community monitoring program can be anticipated. Second, although similarities in religion, ethnicity, age, household size, physical proximity and family are significant for participation in social ties, participation is not restricted by differences in language, education or income source. This finding provides further support for a community monitoring program with broad participation. Finally, while mutual participation in community groups is, as expected, more prevalent among people with common social characteristics, personal values also contribute to participation. When controlling for similarities in status, individuals with certain personality traits or values are also found to contribute to participation. This finding gives additional support to the potential of achieving broad participation in a community monitoring program.

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Appendix

A1: Randomisation: commune and facility selection

The planned randomization procedure was to first randomly select 3 communes per region and, within each commune to select 8 facilities: 4 primary schools and 4 health centers (Centre de Santé et de Promotion Sociale, or CSPS). For each type of facility, 2 units were to be randomly assigned to the treatment group and the other 2 units to the control group. However, it was found that not all communes in the selected regions had a sufficient number of CSPS and so the randomization procedure was modified as follows:

1. 3 communes per region were randomly selected (9 communes total);
2. Within each of these communes, two CSPS were randomly selected from the universe of eligible CSPS and assigned to the treatment group (6 treatment facilities per region; 18 total);
3. In each coverage area of the health facilities assigned to the treatment group, 2 primary schools were randomly selected and each school was assigned to either the intervention or control group (18 treatment schools; 18 control schools);
4. 3 additional communes per region were randomly selected, and within this a further 2 health facilities per commune were randomly assigned to the counterfactual/control group (6 control facilities per region; 18 total).

A2: Network questions

1. **Family** Are you members of the same family?

2. **Neighbours** Are you neighbours?

3. **Buy or sell** Do you buy from or sell products or services to anyone present here today?

4. **Colleagues** Do you work on the same farm, field or market?

5. **Employment** Does anyone of you work for anyone (employed by anyone) present here today?

6. **Labour exchange** Do you help anyone from this group in the farm, field or market (exchange labour)?

7. **Visit temple/practice religion** Do you attend mess in the Mosque/Church together or practice the same traditional religion?

8. **Spend time** Do you spend time together (share food/play games or music/go to the market/etc. together)?

9. **Women's group** Are you members of the same women's group?

10. **Credit group** Are you members of the same credit association/group?

11. **Producers' group** Are you members of the same group of producers (agricultural, handicraft, etc.) or irrigation service group?

12. **Volunteer for public service** During the last 12 months, did you volunteer together for a public service (roads, wells, schools, etc.)?

13. **Village council** Are you members of the same village council?

14. **Community meetings** Do you participate together in PTA/MTA/COGES[19] meetings?

15. **Give or get advice** During the last 12 months, did you ask for an advice on any important to you issue from anyone present here today?

16. **Borrow or lend** During the last 12 months, did you borrow/lend anything (fuel, fodder, etc.) from/to anyone present here today?

17. **Child help** During the last 12 months, did anyone present here today look after your children, or did you look after children of anyone present here today?

[19] Parent-Teacher Association/Mother-Teacher Association/Management Committee for Education and Health (Comités des Gestion)

A3: Games description

Game instructions were given entirely verbally according to a specific script in the local language. Illiteracy rates are very high in rural Burkina Faso,[20] and our respondents found the use of paper and pens very challenging. As such, like Karlan (2005), we were forced to have the subjects complete the game tasks for the lottery, discount rate, altruism and Trust games under the supervision of a games facilitator and a record keeper. Such observation was not required for the public goods game. While we were concerned about Hawthorne effects, having the subjects play under supervision proved to be the only way we were able to make sure that the subjects understood the game they were playing. Total payouts from all four games were aggregated and made in one lump sum at the end of the session.

Risk Subjects were asked to choose one from among five lotteries each with two possible outcomes. The lotteries were decided by a random draw performed by the subject. The expected value of all of the lotteries was one-hundred CFA francs but the lotteries contained increasing levels of risk. The first lottery contained no risk, with subjects receiving one hundred francs regardless of the result of the draw so the expected payoff had a variance of zero. In the riskiest lottery subjects would receive zero francs if they lost and two-hundred francs if they won, for a variance in the expected payoff of 1,000 francs. In other words, this game offered a five point scale of willingness to gamble for a higher payoff. Risk averse people should choose lottery 1. Risk acceptant people should choose one of the higher numbered lotteries depending on the amount of risk they are willing to accept.[21] Subjects' lottery choices are summarized in Table 1. The subjects were generally quite risk averse. The modal selection, which was chosen by roughly a third of the subjects, was lottery 1, which involved no risk. On the other hand 28 percent of the subjects chose the riskiest two lotteries, so we do have some nice variation on our measure of willingness to gamble.

Table 1: Lottery Choices

Lottery Choice	L	W	Freq.	Percent
1	100	100	334	32.40
2	75	125	192	18.62
3	50	150	216	20.95
4	25	175	167	16.20
5	0	200	122	11.83
Total	-	-	1,031	100.00

Discount Rate We measured discount rates by offering the subjects a choice of receiving an amount on the day of the games or to opt for a larger amount to be disbursed in three days. We faced

[20] In our full sample of 3,840 individuals we found that 75% of adults over the age of 15 cannot read and write.

[21] Since all lotteries have the same expected value, risk neutral people will be indifferent between the five lotteries. Risk neutrality corresponds to a very specific parametrization of the subject's utility function. Indeed, if the curvature parameter of the subjects' utility functions is continuously distributed, the probability of a person being *exactly* risk neutral is zero. Therefore, we considered it unlikely that there were any risk neutral people in our sample and as such were not concerned about this ambiguity for those specific types of risk preferences.

each subject with six different situations. The first situation gave the subject an option of receiving 100 FCFA francs on the day of the games or 125 francs in three days. In each subsequent situation (2 through 6) we raised the amount that the subject would receive in three days by 25 francs always keeping the amount received on the game day at 100 francs. Subjects were asked to specify their preference in each of the six possible situations. Once the subject specified his or her preference in each situation the subject drew a number 1 through 6 from a bag to determine their situation and which payoff they would receive. In this way we constructed a seven-point scale of subjects' discount rates (or patience) ranging from zero (the subject chose to receive 100 francs on the game day in all six cases) to six (the subject chose to receive the higher amount in a week in all six cases).

Altruism We measured subjects' altruism with a simple dictator game. Subjects were given 300 francs in six 50 franc coins. They were asked to decide how much, if anything, of that amount to donate to a needy family. The subjects were not told the name of the needy family to protect the family's privacy and also to avoid any differences between subjects in their affinity with the needy family. Each subject was called individually to the games area. The six 50 franc coins were set side by side on a sheet of paper with a line drawn across the middle. The subjects were instructed to push the amount they wished to donate to the needy family across the line on the paper and they were told that any remaining amount would be added to the lump sum that they would receive at the end of the session. We enjoy a relatively large sample size in this study so we were able to introduce a new feature that can determine if altruism is stronger among members of the subject's own village than it is for persons in different villages elsewhere in Burkina Faso. Before the subject played the altruism game he or she randomly drew a card from a bag. The card determined whether their donation would go to a needy family in their village or to a needy family in another village somewhere else in Burkina Faso. The subjects were told the outcome of the draw and its implications. No further details about the identity of the family were given. In this way we were are able to observe whether subjects felt a greater sense of altruism toward members of their own village than they did to other villages.

Table 2: Altruism

	Obs.	Mean	Median	St. dev.	Min	Max
Own village	1,031	752.2	750	340.77	150	2,450
Other village	1,031	757.5	750	271.16	200	1,800

Notes: Total payout per village to a needy local family versus the one in another village, in FCFA.

Trust and Trustworthiness We used the standard Trust game protocol (Berg et al. 1995) to measure trust and trustworthiness. The game was conducted in two rounds. In the first round all subjects were called, one by one, to the private game area. They drew a number from a bag. That number determined whether they were a "sender" or a "receiver" and senders

and receivers were paired according to the number they drew.[22] Senders did not know the identity of their receiver and vice versa. Both senders and receivers were given an initial endowment of 300 francs in 50 franc coins. Receivers had no decision to make in the first round. Senders were asked how many coins they wanted to send to their receiver, knowing that we would triple that amount and that in the second round their receiver would decide how much to return to their sender. The six coins were placed side by side on a sheet of paper with a line through the middle. Senders indicated their choice by pushing the number of coins they wanted to send to the receiver over a line on the sheet of paper. We then tripled that amount and added the receiver's endowment of 300 francs to show the sender exactly how much money the receiver would have in front of him when he made the decision about how much to return. Once all players had been called to the game area round one ended and we began round two by calling each player back one by one. Senders had no decision to make in the second round but they were reminded of the decision that they made in round one. Receivers were shown their pot (triple what the sender had sent plus their initial endowment of 300 francs) in 50 franc coins placed side by side on the game sheet. Receivers indicated the amount they wished to return to the sender by pushing that number of coins over the line on the sheet of paper.

Public Goods The final game was a public goods game similar to the one described in Barrett (2005). This game does not require supervision of the subjects to play. Each subject was given two folded cards. One of the cards had an "X" written inside the fold and the other card was blank inside the fold. Play proceeded in two rounds. In the first round subjects were asked to turn in one of their cards. For each "X" card that was turned in in the first round every subject received 10 francs regardless of whether they turned in their "X" card or not. In the second round we asked the subjects to turn in their remaining card. If a subject turned in an "X" card in the second round that subject (and only that subject) was given an additional 100 francs on top of the amount determined by the number of "X" cards turned in in the first round. If subject turned in the blank card in the second round that subject was given no extra money, only the 10 francs per "X" card turned in in the first round.

Table 3: Contribution of players in the Public Goods game

Binary variables	Mean	St. dev.
Both players contributed	0.58	0.49
Both players did not contribute	0.10	0.30
One player contributed	0.32	0.47
Number of pairs	7,709	

[22] In actual game play we used the neutral terms, "Player 1" and "Player 2", for the sender and the receiver respectively.

A4: Tables and figures

Table 4: Types of Networks

ECONOMIC TIES	SOCIAL TIES
Buy or sell	Community meetings
Labour exchange	Volunteer for public service
Producers' group	Visit temple/practice religion
Credit group	Village council
Colleagues	Spend time
Borrow or lend	Give or get advice
Employment	Child help
	Women's group

Notes: Section A2 in the Appendix provides detailed network questions.

Table 5: Percentage of households who share the same network

Community meetings	77.9%
Volunteer for public service	63.4%
Visit temple/practice religion	44.4%
Buy or sell	38.9%
Labour exchange	32.2%
Family	26.1%
Producers' group	18.7%
Village council	12.5%
Neighbours	11.7%
Credit group	10.9%
Colleagues	8.0%
Spend time	6.9%
Borrow or lend	5.1%
Give or get advice	4.7%
Child help	3.5%
Women's group	0.6%
Employment	0.5%
Number of pairs	7,709

Figure 1: Trust game tree

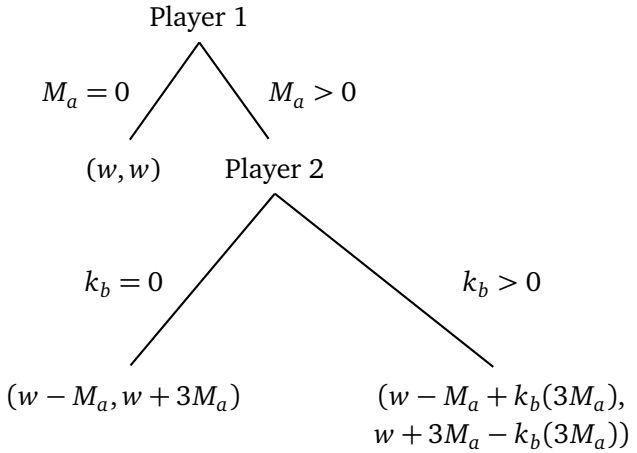

Table 6: Descriptive statistics on paired data

	Mean	St.dev.
Percent of households with Economic ties	68%	
Percent of households with Social ties	92%	
Percent of households with Family ties	26%	
Percent of households with Neighbour ties	12%	
Strength of Economic ties	1.14	1.06
Strength of Social ties	2.14	1.15
Sameness dummies		
Ethnicity	0.82	0.38
Religion	0.80	0.40
Language	0.82	0.38
Gender	0.80	0.40
Education	0.68	0.47
Income source	0.75	0.43
Choice in public good game	0.68	0.47
Absolute difference in household characteristics		
Age	15.91	12.09
HH size	3.97	3.60
Risk (index 1 to 5)	1.44	1.18
Patience (index 0 to 6)	2.37	2.49
Altruism (in FCFA)	57.71	55.68
Trust (in FCFA)	59.57	60.23
Trustworthiness (in %)	13.6	12.5
Sum of household characteristics		
Age	86.73	21.08
HH size	15.18	5.58
Risk (index 1 to 5)	5.13	2.06
Patience (index 0 to 6)	7.72	3.91
Altruism (in FCFA)	196.39	90.71
Trust (in FCFA)	196.26	111.73
Trustworthiness (in %)	46.0	25.2
At least one of the players in a dyad has		
Family ties with village chief (dummy)	0.65	0.48
Engaged in commerce (dummy)	0.09	0.29

Notes: Minimum strength of economic ties in the sample is 0 and maximum is 5. Minimum strength of social ties in the sample is 0 and maximum is 7.

Table 7: Summary Statistics: Social Capital

	Obs.	Mean	Median	St. dev.	Min	Max
Total payout (in FCFA)	1,031	1,011.1	1,005	175.7	405	1,980
Risk (index 1 to 5)	1,031	2.6	2	1.4	1	5
Patience (index 0 to 6)	1,031	3.8	5	2.6	0	6
Altruism (in FCFA)	1,031	98.1	100	60.7	0	300
Choice in public goods game (dummy)	1,031	0.74		0.44	0	1
Sent by sender in Trust game (in FCFA)	511	98.1	100	70	0	300
Percent returned in Trust game	520	0.23	0.22	0.16	0	1
Returned by receiver in Trust game (in FCFA)	520	147.8	100	127.5	0	600

Table 8: The amount sent by the "sender" (in FCFA)

Sent to receiver	Freq.	Percent
0	56	10.77
50	157	30.19
100	163	31.35
150	91	17.5
200	23	4.42
250	4	0.77
300	26	5
Total	520	100

Table 9: Discount Rate Choices

Patience	Freq.	Percent
0	285	27.64
1	22	2.13
2	19	1.84
3	29	2.81
4	61	5.92
5	105	10.18
6	510	49.47
Total	1,031	100.00

Table 10: Summary Statistics: Socio-Economic Characteristics of the Participants

	Mean	St. dev.
Gender (1 for male)	0.89	0.32
Age	43.42	14.54
HH size	7.6	3.87
Ethnic group dummies		
Mossi	0.39	0.49
Senoufo	0.19	0.39
Fulfulde/Peul	0.16	0.37
Other	0.25	0.44
Religious affiliation dummies		
Muslim	0.81	0.39
Catholic	0.11	0.31
Animist	0.07	0.25
Protestant	0.01	0.10
Atheist	0.002	0.04
Language dummies		
Moore	0.38	0.48
Senoufo	0.18	0.38
Fulfulde	0.17	0.37
Dioula	0.05	0.22
French	0.007	0.08
Other	0.22	0.41
Household's main income source dummies		
Agriculture	0.80	0.40
Teaching	0.07	0.26
Commerce	0.05	0.21
Mining	0.04	0.19
Other	0.04	0.19
Marital status dummies		
Monogamous marriage	0.53	0.50
Polygamous marriage	0.41	0.49
Single	0.05	0.22
Divorced/separated	0.01	0.11
Educational dummies		
No education	0.79	0.41
Primary education	0.16	0.37
Secondary and post-secondary education	0.05	0.21
Family ties with a village chief (dummy)	0.64	0.48

Notes: Number of observations is equal to 1,031. In the sample, minimum age is 14 and maximum is 85. Minimum household size is 2 and maximum is 27. Either an individual has family ties with a village chief, or is a village chief herself (the latter is less than 1 percent in the sample.

Table 11: Status homophily

Dependent variable	[1] Strength of Economic tie	[2] Strength of Social tie
Family tie	0.215***	0.293***
	(0.048)	(0.043)
Neighbour tie	0.439***	0.653***
	(0.045)	(0.044)
SAMENESS DUMMIES		
Ethnicity	0.087**	0.102**
	(0.034)	(0.045)
Religion	0.168***	0.268***
	(0.039)	(0.053)
Language	-0.024	0.051
	(0.045)	(0.043)
Gender	0.221***	0.254***
	(0.042)	(0.025)
Education	-0.038	-0.051***
	(0.029)	(0.016)
Income source	0.003	0.030
	(0.025)	(0.029)
ABSOLUTE DIFFERENCES		
Age	-0.005***	-0.007***
	(0.001)	(0.001)
HH size	-0.010***	-0.012***
	(0.003)	(0.004)
SUMS		
Age	-0.001	0.003***
	(0.001)	(0.001)
HH size	0.011***	0.012***
	(0.002)	(0.003)
Number of pairs	7,909	7,909

Notes: Reported are the coefficients from OLS estimations with two-way clustered standard errors in parentheses. Village fixed effects are included.

Table 12: Status homophily (continued)

Dependent variable	[1] Strength of Economic tie	[2] Strength of Social tie
Family tie	0.217***	0.292***
	(0.049)	(0.043)
Neighbour tie	0.437***	0.653***
	(0.045)	(0.043)
SAMENESS DUMMIES		
Ethnicity	0.093***	0.103**
	(0.036)	(0.046)
Religion	0.167***	0.269***
	(0.039)	(0.053)
Language	-0.021	0.052
	(0.046)	(0.042)
Gender	0.224***	0.251***
	(0.042)	(0.026)
Education	-0.035	-0.053***
	(0.027)	(0.015)
ABSOLUTE DIFFERENCES		
Age	-0.005***	-0.007***
	(0.001)	(0.001)
HH size	-0.010***	-0.011***
	(0.003)	(0.004)
SUMS		
Age	-0.001	0.003***
	(0.001)	(0.001)
HH size	0.011***	0.012***
	(0.002)	(0.003)
ONE OF THE PLAYERS		
Merchant	0.092*	-0.092*
	(0.053)	(0.048)
Family ties with chief	-0.028	-0.014
	(0.025)	(0.017)
Number of pairs	7,709	7,709

Notes: If at least one of the players in a dyad is engaged in commerce or has family ties with a village chief. Reported are the coefficients from OLS estimations with two-way clustered standard errors in parentheses. Village fixed effects are included.

Table 13: Value homophily

Dependent variable	[1] Strength of Economic tie	[2] Strength of Social tie	[3] Strength of Economic tie	[4] Strength of Social tie
Same choice in PG game	0.005	-0.060	-0.012	0.039
	(0.053)	(0.042)	(0.046)	(0.027)
ABSOLUTE DIFFERENCES				
Risk	0.016	0.026**	-0.022***	0.004
	(0.012)	(0.013)	(0.008)	(0.017)
Patience	0.001	-0.019*	-0.010*	-0.016***
	(0.009)	(0.012)	(0.006)	(0.005)
Altruism	-0.001	-0.005	-0.010	0.000
	(0.008)	(0.007)	(0.010)	(0.009)
Trust	-0.007	-0.017**		
	(0.011)	(0.007)		
Trustworthiness			0.228***	-0.122
			(0.064)	(0.088)
SUMS				
Risk	0.004	0.010	0.007	-0.010
	(0.009)	(0.010)	(0.013)	(0.008)
Patience	-0.005	-0.004	0.012**	0.015**
	(0.007)	(0.005)	(0.005)	(0.007)
Altruism	0.018	0.052*	-0.005	-0.039
	(0.036)	(0.027)	(0.026)	(0.034)
Trust	-0.005	0.037*		
	(0.048)	(0.022)		
Trustworthiness			-0.085	0.079
			(0.057)	(0.153)
Number of pairs	1,766	1,766	1,827	1,827

Notes: Reported are the coefficients from OLS estimations with two-way clustered standard errors in parentheses. Village fixed effects are included. Kinship and physical proximity (neighbour tie) binary variables are included but not reported.

Table 14: Value and status homophily

Dependent variable	[1] Strength of Economic tie	[2] Strength of Social tie	[3] Strength of Economic tie	[4] Strength of Social tie
Same choice in PG game	-0.017	-0.083**	-0.008	0.040**
	(0.052)	(0.035)	(0.047)	(0.019)
ABSOLUTE DIFFERENCES				
Risk	0.013	0.023***	-0.022***	0.003
	(0.010)	(0.009)	(0.006)	(0.016)
Patience	0.000	-0.018	-0.009*	-0.014**
	(0.008)	(0.012)	(0.006)	(0.006)
Altruism	0.002	-0.002	-0.009	-0.002
	(0.005)	(0.006)	(0.010)	(0.010)
Trust	-0.002	-0.011*		
	(0.010)	(0.005)		
Trustworthiness			0.211***	-0.104
			(0.079)	(0.095)
Age	-0.008***	-0.008***	-0.002*	-0.009***
	(0.002)	(0.002)	(0.001)	(0.001)
SUMS				
Risk	-0.002	-0.001	0.008	-0.007
	(0.007)	(0.009)	(0.012)	(0.008)
Patience	-0.003	0.001	0.013**	0.016**
	(0.008)	(0.005)	(0.005)	(0.006)
Altruism	0.014	0.046*	-0.008	-0.048
	(0.028)	(0.023)	(0.025)	(0.029)
Trust	-0.014	0.017		
	(0.043)	(0.022)		
Trustworthiness			-0.124**	0.061
			(0.053)	(0.159)
Age	-0.001	0.004***	-0.001	0.003**
	(0.002)	(0.001)	(0.001)	(0.001)
SAMENESS DUMMIES				
Ethnicity	0.135	0.039	0.152***	0.177**
	(0.096)	(0.066)	(0.026)	(0.088)
Religion	0.185***	0.309***	0.147**	0.225**
	(0.048)	(0.062)	(0.068)	(0.094)
Gender	0.245***	0.307***	0.216***	0.212***
	(0.070)	(0.055)	(0.063)	(0.057)
Number of pairs	1,766	1,766	1,827	1,827

Notes: Reported are the coefficients from OLS estimations with two-way clustered standard errors in parentheses. Village fixed effects are included. Family and neighbouring ties, household size absolute differences and sums, same income source, education and language binary variables are included but not reported.

Table 15: Correlation table: social capital

Obs.=1,766	Risk diff	Risk sum	Patience diff	Patience sum	Altruism diff	Altruism sum	Public good	Trust diff	Trust sum
Risk diff	1								
Risk sum	0.211	1							
Patience diff	-0.009	-0.026	1						
Patience sum	0.040	0.101	-0.365	1					
Altruism diff	0.024	0.011	0.010	0.036	1				
Altruism sum	-0.002	-0.039	0.018	0.057	0.232	1			
Public good	-0.024	-0.078	-0.008	-0.041	-0.007	0.025	1		
Trust diff	0.055	0.060	-0.015	0.002	0.134	0.062	-0.008	1	
Trust sum	0.006	-0.103	0.012	0.010	0.068	**0.435**	0.042	0.230	1

Obs.=1,827	Risk diff	Risk sum	Patience diff	Patience sum	Altruism diff	Altruism sum	Public good	Trust-worthy diff	Trust-worthy sum
Risk diff	1								
Risk sum	0.194	1							
Patience diff	-0.012	-0.036	1						
Patience sum	0.015	0.186	-0.357	1					
Altruism diff	-0.020	0.001	0.047	-0.045	1				
Altruism sum	-0.023	0.010	0.010	0.006	0.187	1			
Public good	-0.005	0.018	0.050	-0.055	0.007	0.052	1		
Trustworthy diff	0.009	0.046	0.011	-0.073	0.098	0.124	0.019	1	
Trustworthy sum	0.075	0.114	-0.010	0.016	0.080	**0.368**	0.039	0.307	1

Notes: "diff" means absolute difference.

Table 16: Contribution in the Public Goods game

Dependent variable	[1] Strength of Social tie	[2] Strength of Social tie
PG GAME		
Both players contributed	-0.099***	0.027
	(0.031)	(0.034)
Both players did not contribute	-0.030	0.089***
	(0.081)	(0.034)
ABSOLUTE DIFFERENCES		
Risk	0.023***	0.003
	(0.009)	(0.016)
Patience	-0.018	-0.014**
	(0.012)	(0.006)
Altruism	-0.002	-0.002
	(0.006)	(0.009)
Trust	-0.010**	
	(0.005)	
Trustworthiness		-0.105
		(0.094)
Age	-0.008***	-0.009***
	(0.002)	(0.001)
SUMS		
Risk	-0.002	-0.008
	(0.010)	(0.008)
Patience	0.001	0.016***
	(0.005)	(0.006)
Altruism	0.047**	-0.047
	(0.023)	(0.030)
Trust	0.017	
	(0.022)	
Trustworthiness		0.062
		(0.160)
Age	0.004***	0.003**
	(0.001)	(0.001)
SAMENESS DUMMIES		
Ethnicity	0.040	0.176**
	(0.067)	(0.088)
Religion	0.311***	0.226**
	(0.062)	(0.092)
Gender	0.310***	0.211***
	(0.058)	(0.057)
Number of pairs	1,766	1,827

Notes: Reference group: only one of the players contributed. Reported are the coefficients from OLS estimations with two-way clustered standard errors in parentheses. Village fixed effects are included. Family and neighbouring ties, household size absolute differences and sums, same income source, education and language binary variables are included but not reported.

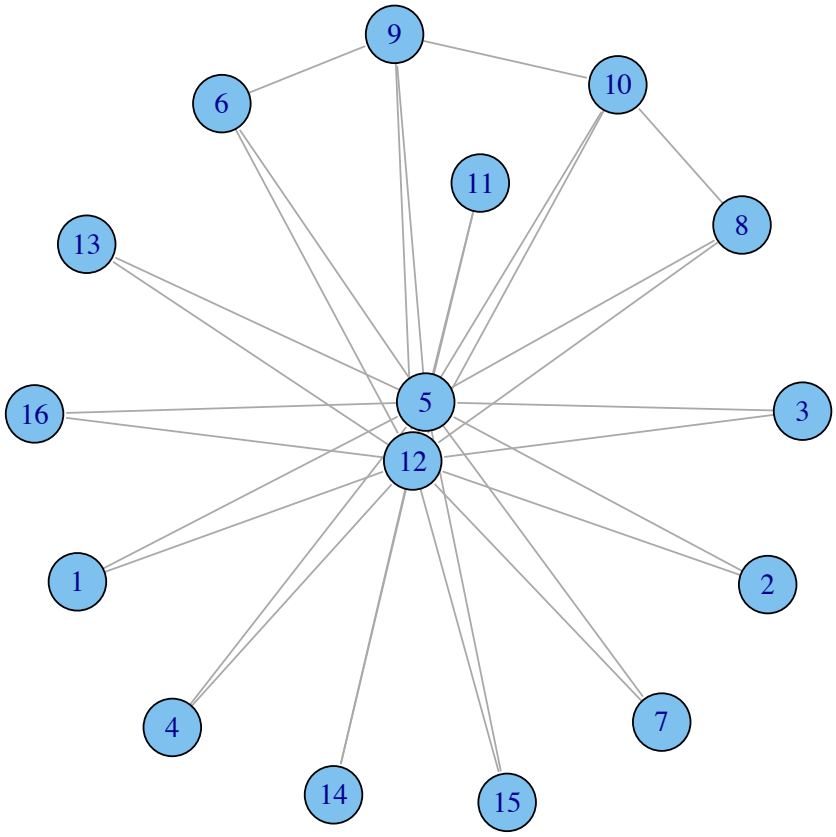

Figure 2: Buy or Sell network in Moussodougou village (Cascades region)

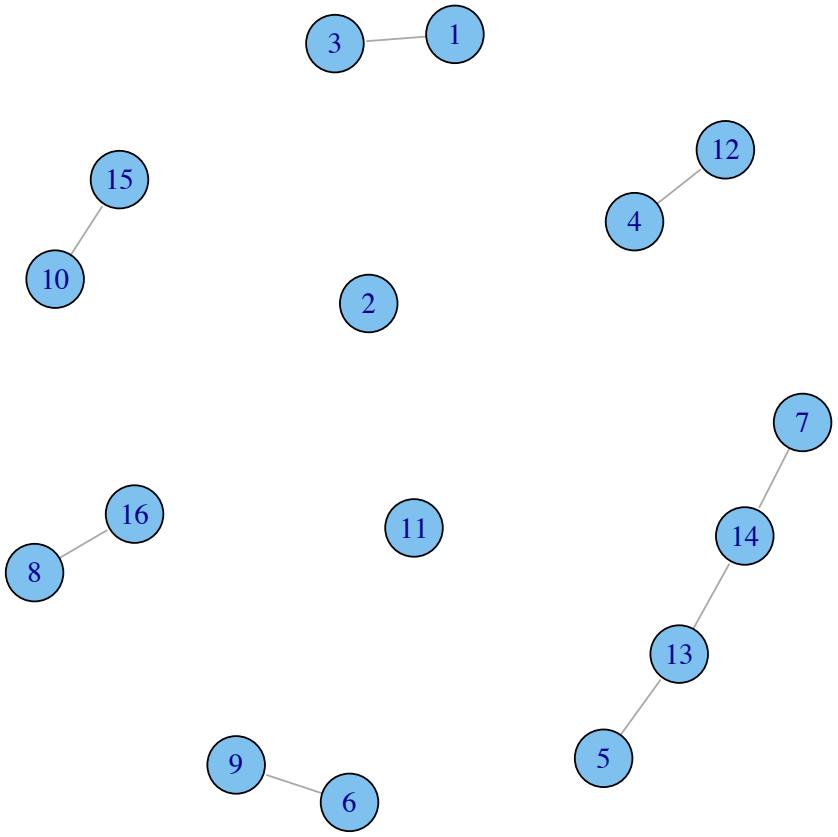

Figure 3: Give or Get advice network in Yalanga village (Sahel region)