Labor Migration and Social Networks Participation: Evidence from Southern Mozambique*

Juan M. Gallego† and Mariapia Mendola‡

This version: January 2011

Abstract

This paper investigates how social networks in poor developing settings are affected if people migrate. Using a unique household survey from two southern regions in Mozambique, we test the role of labor mobility in shaping participation in groups and interhousehold cooperation by migrant-sending households in village economies at origin. We find that households with successful migrants (i.e. those receiving either remittances or return migration) engage more in community-based social networks. Our findings are robust to alternative definitions of social interaction and to endogeneity concerns suggesting that stable migration ties and higher income stability through remittances may decrease participation constraints and increase household commitment in cooperative arrangements in migrant-sending communities.

Keywords: International Migration, Social Capital, Networks, Group Participation, Mozambique.

JEL classification:O17, O15, O12

*We thank Giorgio Barba, Sonia Bhalotra, Michael Clemens, Guido Friebel, Paolo Garella, Valeria Groppo, Max Steinhardt, Dean Yang and seminar participants at Toulouse School of Economics, University of Milan Bicocca, Centro Studi Luca d'Agliano in Milan, the 2010 Workshop on "Migration and Economic Development" in Florence, the 2009 CSAE Conference in Oxford, the 2009 ESPE Conference in Seville and the 2009 NEUDC Conference in Boston for useful comments and discussions. We are grateful to Basilio Cubula, Elisio Mazive, Ines Raimundo and the whole fieldwork team from the Eduardo Mondlane University and the National Statistical Institute in Maputo. Financial support from Centro Studi Luca d'Agliano (LdA) is gratefully acknowledged. Juan M. Gallego thanks the Marie Curie RTN on "Transnationality of Migrants (TOM)" for financial support.

†Departiment of Economics, Universidad del Rosario, Bogotá and LdA, Calle 14 #4-80, Bogotá - Colombia. E-mail: gallego.juan@ur.edu.co

‡Corresponding author. Department of Economics, University Milan-Bicocca and LdA, Milan. P.za Ateneo Nuovo 1, 20126 Milano, Italy. E-mail: mariapia.mendola@unimib.it

1 Introduction

Social capital and networks are increasingly receiving attention from economists, on both theoretical and empirical grounds, in that a key source of information and resources, ultimately influencing economic performance (Bala and Goyal 2000, Durlauf and Fafchamps 2005). A significant body of research suggests that social interactions yield significant economic returns by facilitating cooperation and enabling individuals to benefit from trade when commitment is not possible (Ostrom 1990, Platteau 1991, Putnam, 1993). This is particularly true in developing economies where institutional or market failures make membership in community associations and social networks crucial for exchanging goods and services, getting access to credit and sharing risk (see Besley 1995, Foster and Rosenzweig 1996, Fafchamps and Minten 2000, Fafchamps and Lund 2003, Udry 2005). A common perception in this literature is that social capital is hampered by geographic mobility and distance as networks may depend on the future presence of their members (Glasear et al. 2000 and 2008, Schiff, 2002).[1] Yet, migration and network formation may also be complementary if migrants decrease aggregate risk through uncorrelated income sources and remittance inflows.

There is little evidence on the extent to which migration may exert social costs in village economies at origin. This paper aims at filling this gap by directly testing the role of migration in shaping household participation in social networks in source communities in Southern Mozambique, where informal social arrangements are vital and migration flows - typically to South Africa - are substantial. Our empirical analysis is based on a unique representative household survey purposely collected by the authors in southern Mozambique in summer 2008. By analyzing a rich set of social interaction measures with non-family members, we distinguish general knowledge of the subjective network from the actual contribution to the network. Hence we focus on two broad categories of informal cooperation as outlined in the existing literature,

[1] We use the terms social networks, informal institutions, inter-household cooperation and social capital as synonymous. This is a catchall for all those social arrangements that make relatively little use of formal contractual obligations enforced through codified legal system and that operate as a 'network' in which individuals are connected to other people (Ellsworth 1989). It is worth noting that all these measures are positively correlated and, in particular, membership in community groups is always conceived as positively associated with the probability of interpersonal network formation (see for example Barr and Genicot, 2008 for empirical evidence).

namely participation in (formalised) groups that provide some shared economic benefits and (informal) mutual arrangements with other households in the community (Fukuyama 2000; Putnam 2000; Miguel et al. 2006). Overall, our findings show that successful migration and remittances may significantly reduce the potential loss of social capital and cohesion associated with labor out-flows in source communities.

There is a growing literature that documents the importance of labor migration and remittances for economic well-being in many developing contexts. In particular migration, either on a temporary or a permanent basis, has been recognized as a familial arrangement with benefits in terms of risk-diversification, income smoothing and investment financing, whereby remittances are a central element of such household strategy (Lucas 1987, Stark 1991, Yang, 2008). There are different mechanisms through which household labor mobility may affect social interactions at origin. On the one hand, migration is presumed to weaken social ties and cohesion by withdrawing human capital and raising the cost of establishing and maintaining social relationships in the community left behind. This is because mobility and distance drive down social capital returns (Glaeser et al. 2000), impede monitoring and enforcement (Fafchamps and Gubert 2005, Miguel et al.2006) and make migrant-sending households less dependent on others since self-protection is now possible through migration (Ligon et al. 2000). On the other hand though, migration may increase the scope of inter-household risk-sharing arrangements by raising aggregate income stability (Foster and Rosenzweig, 2001; Winters et al. 2001). This is so as households with migrants may be more appealing partners for network relationships in the community at origin as they increase the potential for drawing upon stable income resources (remittances), the fluctuations of which are uncorrelated with locally covariate shocks. Moreover, while group membership and inter-household arrangements serve many important functions for subsistence and well-being in economically poor settings, they are not without costs and frictions as full cooperation is not possible (Coate and Ravallion, 1993; La Ferrara 2000; Miguel et al. 2006). Thus, successful migration (e.g. remittances) may decrease participation costs in the community at origin.

Overall, how family members' out-migration and remittances affect household incentives to cooperate within the source community is not unambiguous *a priori*. We address this issue by using a tailored representative household survey on migration and networks conducted by the authors on more than 1000 households in two southern provinces of Mozambique. The latter is one of the poorest country of the world where social relations typically extend into non-family forms and constitute a subject's major investment for subsistence and well-being.

A major challenge in the empirical analysis is the possibility of reverse causality, in addition to the fact that migration experience may not be randomly allocated across households and regions. While we argue that cross-border migration costs are relatively low and own savings or within-family help is used in first place to ease migration, we empirically tackle above issues of unobserved heterogeneity by using both community-fixed effects and instrumental variable estimation strategies. Overall, our findings are robust to alternative definitions of social interaction and show that, while family labor out-migration may decrease social capital in households left behind, remittance receipt, as well as return migration, plays a statistically significant and economically relevant role in increasing the household probability of joining community groups and social networks at origin. We interpret these results as evidence that stable migration ties or higher income stability through remittances may decrease participation costs and increase household commitment in informal social arrangements in migrant-sending communities.

Furthermore, in order to explore the role of the institutional context on migrant household voluntary participation in community groups, we carry out a sensitivity analysis of results across socio-economic heterogeneous communities, according to observable attributes correlated with household cooperative behavior, i.e. institutional development (e.g. land market), economic inequality, ethnic and religious fragmentation. Overall, our findings suggest that migrant-sending households in Southern Mozambique are more likely to engage in social capital investment and cooperation in more economically even societies, where social sanctions may be more effective, whilst they are not unevenly responsive to the social composition of the community

in terms of ethnicity or religion.

Our results contribute to the existing migration literature by providing new insights into how labor mobility, as a key component of a development process, affects social networks and institutions in the community at origin. To the best of our knowledge, this paper represents the first study that attempts to provide systematic evidence on this issue, which has important implications for future research on the degree to which migration may generate positive externalities at the aggregate level. While our analysis is tailored to the specific context of Southern Mozambique, findings have broader relevant implications if considering the growing temporary or circular nature of cross-border migration flows in different parts of the world and the enduring ties that contemporary migrants maintain with their home communities.

From a policy perspective, exploring migrants' contributions to social capital investment in communities at origin contributes to shedding light on one of the most important engines of local development and growth. Since the seminal studies of Granovetter (1985), Coleman (1988) and Putnam (2000), social networks have long been shown to play an important role in building trust and generating efficient allocation of resources in both developed and developing economies (see also Glaeser et al. 2000 and Guiso et al. 2004). This is even more relevant if the lack of trust and social capital deter individuals from acquiring capital even when investment opportunities are strong, thereby generating inefficiency or poverty traps (Glaeser, Sacerdote, and Scheinkman 2003; Karlan et al. 2009).

The rest of the paper is organised as follows. Sections 2 and 3 describe the theoretical background and institutional context. Section 4 presents the original household survey data and descriptive statistics. Section 5 describes the empirical strategy and Section 6 presents results. Section 7 concludes.

2 Literature and Theoretical Background

Labor out-migration, either domestic or abroad, is an important route out of poverty for many developing societies (Adams and Page, 2005, Yang 2006, Yang and Choi 2007 among others). There are several mechanisms through which international mi-

gration and remittances translate into important economic improvements in source communities. While much of the focus has been put on investment in physical and human capital by migrant-sending households left behind (e.g. Cox and Ureta, 2003, Mendola 2008, Yang, 2008), less is known on the extent to which social capital in general, and group participation and inter-household informal exchanges more specifically, are affected when people migrate.[2]

The common wisdom is that migration threatens the social structure and the organisation of common duties in local communities at origin, by increasing information asymmetries and imperfect monitoring (Besley et al. 1993, Miguel et al. 2006, Fafchamps and Gubert 2007) and by withdrawing human and labor resources from the household left behind.[3] Moreover, having a migrant member working abroad has been regarded as a within-family income diversification strategy so that insurance may be achieved within the family and the incentive to participate in reciprocal insurance arrangements with non-family community members may decrease.[4]

However, group participation and informal social networks in low-income settings are not only a 'social activity' but serve many functions that in developed contexts are served by market mechanisms and formal institutions (e.g. informal insurance, credit access, public goods provision, production opportunities etc.) (La Ferrara, 2000, Fafchamps 2005).[5] In poor developing settings, households' productivity and

[2] Social capital has a wide and variable definition in the literature, e.g. generalized trust; confidence in institutions, social network (social relationship and group membership), political participation, civic awareness and social norms (see Putnam et al. 1993, Alesina and La Ferrara 2000, Helliwell 2001, Sabatini 2005, and Durlauf and Fafchamps 2005, for the principal differences on the definition and measures of social capital).

[3] Futhermore, when migration is conceived as an individual strategy, it reduces the probability of trading with the same person in the future and reciprocity becomes less enforceable. This is to say that risk-sharing contracts become more "spot contracts", in which commitment is unfeasible (Routledge and von Amsberg, 2003).

[4] The insurance motives for migration have been emphasised by the New Economics of Labour Migration (NELM), according to which greater income uncertainty may encourage out migration as a risk diversification strategy (Stark and Levhari, 1982; Katz and Stark, 1986). Moreover, remittances received from migrant members represent a potential means to overcome credit constraints for source households (Lucas, 1987; Stark, 1991).

[5] The social capital networks we refer to (which provide mutual assistance between households) are informal in the sense that they take place outside the market place and are made without any legal arrangement that could in any way be binding. They are not closed multilateral grouping based on well-defined formal associations that have written rules or regulations governing their operation, though. Hardship and risk are often difficult to face individually. Thus people voluntarily participate into such arrangements which are sustained over time as they offer higher expected payoff than the one in autarky.

well-being are fundamentally affected by the ease with which social arrangements such as loans or insurance can be taken by community's members. Informal cooperation is not without costs and obligations though, as contribution is expected from every network member. Thus, when aggregate income is risky and impediments to informal cooperation are binding, households with migrants members may be more likely to participate in social exchanges with other households in the community. This is so as families with a more stable income source such as remittances can expect to be able to commit themselves more easily to regular payments in informal exchanges and, similarly, certain households and informal groups may be more inclined to accept partners that have a regular and uncorrelated source of income. In other words, the ability of migrant-sending households to decrease covariate risk by drawing upon locally non-covariate income sources makes them attractive network partners. Hence, by increasing income stability and lowering risk of default, migration may have a positive impact on the probability of joining a group.

These ideas have a long-standing theoretical foundation in the literature on collective action and social network formation. Informal private transfers through networks and mutual arrangements between households have been modelled as self-enforcing contracts (i.e. based on voluntary participation), where current generosity is justified by expected future reciprocity (Kimball, 1988; Foster, 1988; Coate and Ravallion, 1993; Foster and Rosenzweig, 2001).[6] This is because (full) informal insurance arrangements are potentially limited by the presence of various incentive constraints, with the lack of commitment receiving particular attention (Ligon et al. 2002, Dubois et al. 2008).[7] Accordingly, numerous empirical studies have shown that mutual informal arrangements do not work at village level but within sub-groups in a community and even among specific individuals within a group (e.g. Townsend 1994, Udry 1994, Fafchamps and Lund 2003). This is to say that households *decide* to share inputs, services, risk and more generally 'mutual help' through networks of friends and relatives,

[6] By allowing mutual help to be history-dependent, informal insurance arrangements are consistent with models of 'quasi-credit' where enforcement constraints limit gift giving (e.g. Kokerlakota, 1996; Ligon, Thomas and Worrall, 2001; Fafchamps, 1999).

[7] Liquidity constraints may be thought as a 'reduced form' expression for market imperfections resulting from informational problems, such as adverse selection and moral hazard, and the lack of enforcability.

whereby some form of compensation is involved - in terms of time, money or labor contributions - against the attainment of individual and collective benefits (see also De Weerdt, 2002, Dekker, 2003, Narayan, 1997).[8] Thus, the effect of family members' out-migration and remittances on household incentives to cooperate and join community groups that provide some shared (economic) benefits is not theoretically unambiguous.

At the same time, though, it is important to note that there may be different motivations behind incentives to cooperate in migrant-sending households related to community-level institutions and heterogeneity. Households' propensity to engage in informal social arrangements may, for example, be mitigated when there are other (formal) ways of exchanging goods and services or if socio-economic heterogeneity (or conflicts) at community level undermines trust and cooperation (Kranton, 1996 and Alesina and La Ferrara, 2000). In particular, the economic and anthropological literature has emphasised that both extrinsic incentives, e.g. (social) sanctions that can credibly threatened, and intrinsic motivations, such as altruism, inequality aversion and reciprocal kindness, can act as bases for commitment (Platteau, 1994, 1996; Fafchamps, 1992 1996, Posner and Rasmusen, 1999).[9]

We use an original and unusually detailed survey data on household migration and social interactions from Southern Mozambique to document how these factors interplay with each other. According to the literature, we focus on one of the most important component of social capital, that is participation in different groups that provide economic benefits in terms of information sharing and the production of collective goods (La Ferrara, 2000).[10] Yet, owing to its comprehensive or intangible character, we also consider other forms of social capital, such as household social

[8] Indeed, pure altruistic motivations behind informal insurance arrangements at network level are ruled out by various and 'sophisticated' (e.g. contingent) contractual forms that can take place within limited market opportunities for risk-sharing (e.g. grain transfers, labour assistance, land access, quasi-credit etc.) (see Fafchamps, 1992; Platteau, 1991).

[9] Anderson and Baland (2002) provide evidence that individuals living in Kenyan slums put money in rotating savings and credit associations (ROSCAs) to avoid claims on their resources by spouse and relatives. Ambec (1998) and Banerjee and Mullainathan (2007) take these observations as starting point to model the saving behavior of poor households.

[10] The character of a group is double-fold: it is a collective actor that performs in its own right, fulfilling tasks in society and eventually providing public goods to members (Putnam et al., 1993). But it is also built on the willingness of individual actors who work together on shared objectives and norms (Coleman, 1990).

expenditure and informal exchanges of goods and services with important persons or neighbours in the community.[11] In both cases, though, we focus on the economic benefits of group membership and informal interaction, as opposed to more intangible psychological and social benefits of social capital.

3 The Mozambican context

Mozambique is an interesting testing ground for studying the impact of labor migration on the creation (or destruction) of social capital in village economies left behind. Despite the fact that the country's economy has registered some positive achievements over the last 16 years (the average annual GDP growth rate increased to 7 percent during the 1990s), Mozambique still remains one of the poorest countries in the world, with 70 percent living below the poverty line (and 35 percent of its population living below the extreme poverty line) (PRSP, 2007). Mozambique has been characterized by slow economic growth until the beginning of the 90s with poor levels of education of the economically active members of households, especially women; high dependency rates in households; low productivity in the family agricultural sector; lack of employment opportunities in the agricultural sector and elsewhere; poor development of basic infrastructures in rural areas and hence poor integration of rural-urban markets. In the face of such extreme poverty, informal social arrangements between households are often an important way of coping with a state of permanent vulnerability and eventually substituting for or enhancing existing forms of capital/investment.

Yet, compared to other countries in Southern Africa, social networks in Mozambique are unique as a result of various factors. People predominantly organise their social life around their kin, who may provide social protection, since social services (e.g. health, child care, pensions) are rarely in place (Ministerio do Plano e Financas, 1998). Though, due to a low population density, settlement patterns are scattered

[11] It is worth noting that scholars agree that, even in developing and poor settings, objective and visible networks, such as group membership, are more institutionalised than informal interaction patterrns. Yet both refer to the 'structural social capital', compared to the 'cognitive social capital' that includes norms, trust, attitudes and subjective beliefs (Grootaert et al, 2004, Uphoof and Wijayaratna, 2000).

and households do not necessarily live in 'villages' but are often long distances apart from one another.[12] Moreover, kinship relations and alliances also reflect the common practice of polygamous marriages and the temporary or impermanent nature of family life in this poor context. Thus, social relationships in Mozambique typically extend into non-family forms, like relations with key persons in the community and neighbours, in addition to community group participation, church relations, and inter-household exchanges of varying degrees of formality. This set of alliances in southern Mozambique go beyond matrimonial linkages and beyond the kinship circle. It defines a person, and the construction of this network is a subject's major investment for socio-economic life in Mozambique.

Most importantly, since shortly after independence from the Portuguese colony in 1975, the country had been battered by an internal war that had been going on for almost 20 years. The war intensified in the 1980s displacing about 50 percent of the population.[13] As a result, social ties in Mozambican communities were largely destroyed by the war and the a massive return of refugees and displaced persons in the 1990s was even more problematic. This is because in many cases, refugees and internally displaced people had been away from their villages for ten or fifteen years, and their dwellings and agricultural plots had been occupied by other displaced people. Thus, the many systems of informal cooperation and structure of rural society were destroyed, while new forms of reciprocal exchange and insurance arrangements arose at the community level. The main types of informal cooperation between households include *xtique* (credit and saving), *ajuda mutua* (mutual assistance in daily

[12] Mozambique is a country of about 800,000 km2, almost half the size of Mexico, that has to support a population of only 15 million. See also Bandiera and Rasul (2006) on Northern Mozambique.

[13] This was a protracted bloody war during which the Frelimo Government, that came to power after independence, was being pressured by its neighbors, first by Rhodesia and then by South Africa, to give up its Socialist view. It was in fact a point of contact of the superpowers during the cold war. The peace agreement that ended the war was signed on October 4, 1992 in Rome. The UNHCR reports about 5 million displaced people and refugees as a result of this war – between 1.5 to 1.7 million refugees in camps in these neighboring countries (primarily Malawi, Tanzania, Zimbabwe, to a lesser extent Zambia, South Africa, and Swaziland), and 3.5 million or so internally displaced throughout the entire country. In the same period Mozambique's southern and central provinces experienced a long dry period that resulted in widespread famine and people's displacement of people. Of those returning home after being displaced from their homelands for 10, 15, even 20 years, the UNHCR repatriated about 600,000 or 700,000. The other almost a million or more who spontaneously came back from the neighboring countries that border Mozambique, mostly found their hometowns, dwellings and neighbours vanished, so resettled where possible (Raimundo, 2009).

work) and *buscato* or *ganho-ganho* (exchange of labor, money, food, or traditional drinks) (Marsh 2003). Formal cooperation is comparatively less diffused, even though with the increase of donor activities over the last two decades, a growing number of institutional groups and associations are emerging all over the country.

Strengthening social capital and community-based associations is increasingly recognised as an essential relay for development assistance, and it has been identified as an important way of responding to some of the major Mozambican challenges in the local development debate (G20, 2005, PRSP, 2007). Indeed, diversification of social relations has become of growing importance in the country, as soon as it became increasingly hard for the extended family and traditional rural society to cope with new problems such as HIV/AIDS, orphanhood, natural disasters and significant out-migration flows, both rural-urban and to South Africa.

The Republic of South Africa is the continent's economic superpower, and has been the destination of substantial regional migration flows throughout its history, with Mozambicans making up at least one third of the immigrant workforce, followed by immigrants from Lesotho and Zimbabwe.[14] According to preliminary estimates, over 200.000 Mozambicans work in South Africa (SAMP: Migration News, 01/03/2003), impacting significantly on the Mozambican development pattern, especially in southern rural regions. Yet, despite the strong linkages between the Mozambican and South African labor markets, very little systematic evidence exists on migration patterns and consequences in the area.

[14]South Africa has been the destination of substantial migration flows since the colonial period. Male labor migration to the mines and commercial farms from almost every other country in the region (especially modern-day Lesotho, Mozambique and Zimbabwe) was the most enduring form of legal cross-border labor migration. Significant poverty and unemployment rates in source countries have pushed also undocumented migrants to cross the border with South Africa. The end of the apartheid in the early 90s and the ensuing integration of South Africa in the Southern African Development Community (SADC) produced new opportunities for cross-border mobility and new incentives for temporary migration.While Lesotho's geographical land-locked position and Zimbabwe's economic and political implosion constitutes special cases of migration and displacement in the region, Mozambique offers an appropriate setting for studying charateristics and consequences of modern migration flows in the region.

4 The Data

Our study is based on a unique household survey covering 1002 households from 42 communities (both urban and rural) in four districts (Manhica, Magude, Chokwe', Chibuto) in two provinces (Maputo and Gaza) of southern Mozambique, conducted by the authors in Summer 2008 in collaboration with the Eduardo Mondlane University and the National Institute of Statistics (INE) in Maputo. Sample households were selected with a probability proportional to population size estimated from the most recent 2007 General Population Census provided by INE so that the household survey is representative at the provincial level. In each community the population was canvassed prior to the beginning of the survey to identify two groups, i.e. households with at least one current international migrant and households with no migrants. The target number of households was drawn randomly from each of the two subgroups, in the same proportion as the actual migration rate[15]

The survey was tailored so as to allow accurate measurement of the migration experience of each adult member in the household, including information on past or return migration of resident members as well as migration status of household members currently abroad, and whether they send remittances home. In addition, the survey also collected detailed information on demographic characteristics of all household members, individual human capital, household asset endowment, farm and non-farm occupational status and household social networks participation.

With respect to the latter, information on several dimensions of social interactions outside the family was collected, in particular (i) whether any household member participates in various types of community groups, both economic and socio-political, including characteristics of group membership (i.e. as beneficiary or promoter/decision maker), (ii) whether the household is in contact with relevant persons in the community (i.e. traditional communiity leader, elected village chief, school teacher, doctor/'curandeiro', agricultural agent, neighbours) and which type of exchange or mutual help (if any) is in place with them. In particular the information

[15] A more detailed description of the survey can be found at http://dipeco.economia.unimib.it/persone/mendola/moza.htm

includes whether households give or receive (or both) any goods or services to/from each of their network partners. In addition, a community questionnaire was administrated to community leaders in order to collect information on the institutional and market organizations, community infrastructure and social cohesion. After deleting observations with missing values we end up with a representative sample of 905 households and 4851 individuals.

In what follows we present some descriptive statistics of household characteristics and data point particularly to the importance of migration patterns in the region (sampling population weights are always used so as to provide representative figures). Table 1 reports incidence of migration at the household level: 55 percent of the households have some migration experience - 38 percent report having at least one current migrant member, remaining households have return migrants - and the average number of current migrants per household is 1.6. Among current migrant-sending households, 60 percent of them receive remittances from migrants (24 percent of the total household population). It is worthwhile stressing that 40 percent of households with migrants do not receive any money or goods from them. This reflects the precarious nature of socio-economic life in Southern Mozambique, whereby sometimes families send relatives to work abroad without receiving any news from them: hence the need to address household migration status and remittances separately.

-Table 1 about here-

If we look at the individual characteristics of adult migrant and non-migrant household members (information was collected for all household members of 15 years old and over), 11 percent of our sample individuals are currently working away from home, whilst 6 percent are return migrants - in both cases more than 90 per cent of them migrate to South Africa. Table 2 reports individual-level characteristics of past/return migrants and current international migrants (information on the latter was collected through a proxy respondent). Return migrants are predominantly men, of working age, more married and educated than those who stay put. The same is true of household members currently working abroad, but differences are even

more striking. The occupations of current migrants abroad range from informal jobs (traders, street vendors) (12%) to miners (16%) and unskilled workers (15%). As for returnees, the average time spell since their return is a little less than one year and once back home almost one-third of them report to work on their own farm, whilst 14 percent are non-farm workers, 10 percent informal workers, 7 percent self-employed and only 5 percent are unemployed.

As additional information, returnees report that the reason to be back has to do mainly with family issues, and with the end of a job or vacation. Most of this migration may be circular as 58 percent of them report their intention to leave again sometime in the future. Also 80 per cent of current migration is reported to be temporary in nature. Current migrants visit home mostly once per year and 45 per cent of them send remittances home.

-Table 2 about here-

Most important, Table 3 displays that both current and past migrants received help to migrate in first place from their families (either in Mozambique or abroad) or from their own previous experience (Panel A). Migrants also report having to cover costs of migration typically through their own resources or with the help of relatives, either in Mozambique or abroad (Panel B). Overall this is suggestive evidence that social networks with non-family members is not a key determinant of migration nor the main source to cover migration costs. This is due to the fact that migration history between Mozambique and South Africa dates back to the mid-nineteenth century, making cross-border migration costs relatively low. Table 4 reports the characteristics and management of remittances: 55 percent of current migrants send remittances home on a regular basis, mainly in person mainly in person or through informal avenues (e.g. close family friends, local bus drivers or taxis) and the money is reported to be spent mostly for primary consumption needs such as food, clothing and housing. Even though we do not have longitudinal data, this pattern is in line with the well-known stable nature of workers' remittances, with respect to other public or private financial flows (Ratha 2003).

-Table 3 about here-

-Table 4 about here-

Table 5 presents the incidence and characteristics of household participation in groups and social arrangements. In our sample 27 percent of households are members of at least one group whilst almost all of them are in contact, and 74 percent talk daily, with at least one important person in the community (this is true even excluding neighbours from the list of important persons). Yet, not all of them exchange something with them or expect mutual help with key persons and neighbours in the community, as 27 percent give or receive goods or services from them.[16]

-Table 5 about here-

We use this information as a proxy for different forms of social networks. It has been claimed that social capital can be measured by participation in 'institutionalised' community groups or associations, which may differ from informal contacts or arrangements with neighbours and friends (Durlauf and Fafchamps, 2005, Miguel et al. 2006). We argue that our measures of social capital, i.e. group membership and contact with important persons in the community are good proxies for social networks participation.We also provide information on the reason why households do not join a group or get in contact with important persons (we ask this for each group and for each key person in the community about these questions). Tables 6 sheds light on the household's subjective perception of the costs and benefits of group participation and social networks at the community level. The table lists the main reason why households choose not to join a group or to get in contact with important persons. The answers related to group participation show that the most frequent reason is the lack of money, followed by lack of time and lack of interest; as far as important persons are concerned, the main reason is lack of interest, followed by lack of time and lack of money. This is in line with the idea outlined above about the different

[16]The actual survey questions on this are: 1) In the last 30 days, did you or someone in your family give any money, gifts or services to [each important person]? and 2) In the last 30 days, did you or someone in your family receive any money, gifts or services from [each important person]?

degree of formality of 'institutionalised' groups and 'informal' social arrangements in the community.

-Table 6 about here-

Table 7 presents household characteristics by migration status and network type. Overall, households belonging to community groups seem to be better off with respect to some indicator of physical and human capital. This is consistent with the idea that group members tend to sort into a homogeneous pool of persons with respect to some characteristics such as income, human capital, ethnicity etc. (La Ferrara, 2000). This is less true with respect to informal social networks (here measured through an indicator as to whether households engage in mutual help or spend money in social ceremonies), which show a less systematic pattern with respect to standard socio-economic variables (Panel A). Interestingly, though, while households with international migration experience and remittances appear not to be particularly concentrated in community groups (Panel A), households receiving remittances or return migration engage significantly more in both formal and informal social networks (Panel B).[17]

-Table 7 about here-

Yet, given the concurrent effect of household characteristics and migration on social capital, descriptive statistics are not fully explanatory in this regard and a multivariate analysis is required.

5 Empirical analysis design

We start by estimating a model that relates the household decision to participate in social networks to household attributes, including migration and remittances, and community-level characteristics. The social capital literature agrees on considering

[17] This is also true with respect to remittances, i.e. 41 percent of households joining community groups (39 percent of households with informal networks) report receiving remittances, compared to 23 percent (21 percent) of households with no group membership (social networks).

the family as the primary unit of analysis and we specify the expected net benefit from group or network participation for household i in the community j as follows:

$$B_{i,j} = \alpha_0 + \alpha_1' X_{i,j} + \alpha_2' H_j + \beta_1' M_{i,j} + \beta_2' R_{i,j} + \varepsilon_{i,j} \tag{1}$$

where M and R are respectively the number of migrants in the household and whether the household receives remittances from them[18], and X and H are vectors of household and community characteristics respectively (such as demographics, education, wealth, residence). $\varepsilon_{i,j}$ is the standard error term. The parameters of interest are β_1, which captures the effect of sending one unit of household labor to work abroad and β_2, representing the effect of receiving remittances on household incentive to join a group. What we observe, though, is not the latent variable B but only the choice made by the household that takes value 1 (participation) if the expected net benefit is positive, and 0 (no participation) otherwise:

$$\begin{aligned} P_{i,j} &= 1 \text{ if } B_{i,j} > 0 \\ P_{i,j} &= 0 \text{ if } B_{i,j} < 0 \end{aligned} \tag{2}$$

We estimate the model above with both a linear and a probit model. Our main dependent variable is whether households participate in any (formal) group. Yet, we also use other cooperative outcomes such as measure of household engagement in informal networks of 'mutual benefit' or '*ganho-ganho*' and whether the household incurs in social expenses for ceremonies or funerals outside the family.

As for regressors, we specify a model where we include a continuous variable for migration in order to carefully capture the effect of lack of family members due to mi-

[18] We specify a model where we include a continous variable for migration as to cleanly capture the effect of shourtage of family members due to migration. We here assume a linear relationship between group membership and number of migrant members. As this is not obviuos, we also estimate a model where we include a dummy variable for whether a household has a migrant or not and results have the same sign but are less precisly estitamted. This is consistent with the hypothesis of social networks being hampered by shortage of family members or human capital. As for remittances, including the level of this cash inflow as explanatory variable would be ideal, but the quality of the information collected is not enough to include it as a continuous vairable. From related survey information we are aware of the fact that remittances are mainly in-kind and sent through informal channels, like friends, relatives or returnees and quantifying them resulted a particularly difficult task for interviewed households (see descriptive statistics above).

gration. We here assume a linear relationship between group membership and number of migrant members. As this is not obvious though, we also estimate a model where we include a dummy variable for whether or not a household has a migrant member and results have the same sign but are less precisely estimated[19]. This is consistent with the above hypothesis of social networks being hampered by the departure of family members or human capital loss. As for remittances, including the level of cash inflows as explanatory variable would be ideal, but the quality of the information collected is not sufficient to include it as a continuous vairable. From related survey information we reckon that remittances are mainly in-kind, sent through informal channels, such as friends, relatives or returnees and quantifying them proved to be a particularly difficult task for interviewed households (see descriptive statistics above). Yet, this is less of a concern as it is likely to assume that the relationship between remittances and 'benefits' is non-linear, with more dramatic effects going from 'no remittances' to 'positive remittances' than from the marginal effect of one unit of money. This is so as what matters in this context is the potential that a households is able to draw upon a source of income, the patterns of which are uncorrelated with local shocks - and this is captured by our dummy variable for remittances.

Our model above, though, may suffer from potential endogeneity and simultaneity bias with respect to migration and remittances. This is so as households are likely to self-select into sending migrants abroad based on unobserved characteristics, including ex-ante social network participation. Indeed, the literature has argued that social networks can facilitate subsequent migration (Massey at al. 1993, Munshi, 2003) or offer those better connected services in the home region so as to discourage migration (Munshi and Rosenzweigz, 2009). Even though social networks are heterogeneous in kind and, as we reported above, family networks in Mozambique are more relevant for migration behaviour than social networks, estimates would still be biased upward or downward according to the complex role that social capital is likely to play in the migration decision. Furthermore, remittances are produced by allocating family members to labor migration and, given migration, they are simultaneously shaped by

[19] Results are available upon request.

many of the same characteristics that affect a household's social capital investment (Taylor and Martin, 2001). To correct for these possibilities, we estimate a system of linear probability models and instrument both migration and remittances using exogenous instrumental variables. The simultaneous equation model estimated in this case is:

$$P_{i,j} = \alpha_0 + \alpha_1' X_{i,j} + \alpha_2' H_{,j} + \beta_1' M_{i,j} + \beta_2' R_{i,j} + \varepsilon_{i,j}$$

$$M_{i,j} = \delta_1 + \delta_2' X_{i,j} + \delta_3' Z_{i,j} + \pi_{i,j} \tag{3}$$

$$R_{i,j} = \partial_1 + \partial_2' X_{i,j} + \partial_3' W_{i,j} + \theta_{i,j}$$

where Z and W are the instruments for migration and remittances respectively. The model above constitutes a recursive system where both migration and remittances are endogenously determined with social capital. Migration, M is a function of individual- and household-level characteristics, especially related to human capital variables. Given migration, motivations to remit, R, may be influenced by human capital variables, as well as by expected norms in the source village and a household's need for insurance (see Lucas and Stark, 1985, Yang and Choi 2007). The identification of the model depends on finding instrumental variables Z and W that affect social capital solely through their impact on migration and remittance choices. The stochastic terms ε, π and θ are assumed to be normally and independently distributed with variance $\sigma^2_{,j}$. However, from the set-up it is likely that there is cross-equation correlation, since all three activities may be subject to the same exogenous shocks. We estimate the model using both a two-stage least-squares (2sls) and a recursive 3sls estimator so as to account for contemporaneous correlation.

In order to further explore the role of migration coupled with remittances as a commitment device in group participation, we address some issues related to the 'direction' of social interaction, i.e. whether migrant-sending households give or receive relatively more in inter-household exchanges. Finally, in the last part of our empirical analysis, we further estimate group participation for socio-economic homogeneous and heterogeneous communities separately as to check the robustness of

migration and remittance coefficients across subsample populations (i.e. institutional environments).

6 Regression results

Table 8 reports our baseline estimates from the reduced form linear probability model, where the dependent variable is a binary indicator equal to 1 if the household participates in at least one group in the community (basic statistics of main indipendent variables are reported in Table A.1 in the Appendix). Following the existing evidence on determinants of group and social networks participation, the variables X and H are household demographic, human- and physical-capital variables and community-level controls. Household characteristics include: age, sex and education of household head, household size and demographic characteristics, ethnicity and religion, household residence and occupation. Household wealth is measured through a 'synthetic asset index' weighting the ownership of various durable goods and the dwelling conditions.[20] We further include community-level characteristics, such as the quality of roads, school, health facilities, formal bank and market availability. We finally include community fixed effects (where the community is our primary sampling unit) as to fully focus on the within-community variation only and rule out any structural difference or covariate shock across communities.

-Table 8 about here-

Column 1 in Table 8 shows that the direct effect of the household number of migrants on group participation is negative, whilst access to capital through remittance receipt is significantly and positively associated with social capital investment. These results are more precisely estimated with the inclusion of a large set of household-level

[20] The wealth index uses principal components analysis (PCA) to assign weights to the indicator. This procedure first standardizes the indicator variables (assets ownership and dwelling conditions); then the factor coefficient scores (or factor "loadings") are calculated using the first component of a PCA analysis; and finally, for each household, the indicator values (or asset ownership) are multiplied by the "loadings" and summed to produce the household's wealth index. In this process, only the first of the factors produced is used to represent the wealth index. For a complete discussion of the advantage and disadvantes of asset and wealth index under pca procedures see Filmer and Pritchett (2001).

characteristics and community attributes (column 2). Household decision to join a group significantly decreases by 5 percentage points as each family members leaves the household to work abroad. Yet, there is a significant offsetting effect from receiving remittances, that increases the probability of participating by 18 percentage points (see Probit marginal effects in Table A.2 in the Appendix). As far as controls are concerned, demographic household characteristics have the expected sign, including a negative relation between the number of women in the household and the likelihood to join groups. This is due to the strongly patriarchal structure of Mozambican society, particularly in the South of the country, and to the low 'voice' of Mozambican women in many different aspects of their socio-economic life. Belonging to ethnic minorities, instead, or having traditional religious beliefs significantly increases group participation.[21] Moreover, higher education of the household head is positively associated with group participation while the household wealth index is positive and significant, suggesting that joining a group may be a 'normal good' (La Ferrara 2000). Concerning community level characteristics, many of them do not appear to be significant with the exception of living in a community with an elementary school, which is positively and significantly associated to social capital.[22] In Column 3 we finally use a community fixed effects specification as to rule out variation at the community level. Results are consistent with the above and show that neither magnitude nor significance of migration effects change significantly. The latter suggests that our variables of interest are not correlated with community unobservables and do not suffer from community-level omitted variables bias. Hence, even within communities, household migration exposure remains negatively associated to social networks whilst remittances generates a statistically significant and positive effect on group participation and social capital investment.

[21] Basic statistics show a relative majority of Changana ethno-linguistic group in our sample followed by Ronga, Chope and other groups (see Table A.1 in the Appendix). As for religion, the majority of people are either Catholic or believe in traditional Spirtism.

[22] Some community characteristics are not significant but the sign is consistent with expectations. Yet, it should be noted that formal banks and financial institutions (as well as health care facilities) are very few and still largely under-developed in Mozambique, as people are not used to manage medium-large quantity of money.

As mentioned above, though, informal cooperation is a multifaceted asset that may be defined (and measured) in different ways. Moreover, the effect of migration and remittances on group participation may be the result of a supply-side effect, in that communities with more migrants (richer communities) may develop more institutionalized groups and associations (see also Miguel at al. 2006, La Ferrara 2000).[23] Similarly, it may be the case that migrant households form a coalition or 'club' that excludes non-migrant members of society. Thus, in order to control for these issues, we regress the same models as above using different measures of inter-household cooperation through informal social networks.

In Table 9 we report results from the community fixed effects specification where the dependent variables are (i) a dummy variable equal to 1 if any member of the household is in contact, through daily talks, with any relevant person in the community (i.e. traditional community leader, elected village chief, school teacher, doctor/'curandeiro', agricultural agent, neighbours); (ii) a dummy variable equal to 1 if the household exchanges (i.e. gives or receives) any good or service with at least one relevant person in the community, as above; and (iii) a binary variable equal to 1 if the household reports expenditure for festivals, ceremonies or funerals within its community. The latter variable is another proxy variable for informal social arrangements and underlying social connections within the community of residence. With the exception of daily contact networks, we find that migration and remittance indicators have patterns broadly similar to group membership behavior, even though the migration result is less precisely estimated. This suggests that main results (especially on remittances) are robust to alternative definitions of social arrangements that provide some individual or collective economic benefit, i.e. in terms of exchange of goods and services rather than information sharing (see marginal effects from probit model regressions in Table A.3). It is worth noting that, unlike group membership, in the case of informal cooperation the wealth effect is not so strong and robust in increasing the household incentive to participate in informal exchanges with nonfamily

[23] As argued in Miguel et al. (2006), community group data may capture relatively formal expressions of social networks.It is also possible that migration-driven modernization is associated with a shift toward formal forms of cooperation, but not considerable changes in underlying social networks.

community members.

In order to explore whether migrant-sending households give or receive more (or both, through mutual help) from the interaction with other community members, in Table 10 we report results on the 'direction' of the exchange link. Estimates show no clear dominant direction in the informal exchange pattern (a slightly bigger coefficient for the 'giving' variable) as households receiving remittances are positively associated with all directions of the exchange link. This is consistent with the idea that remittances, as stable source of income, may enable migrant-sending households to overcome both commitment and enforcement constraints on informal contracts.[24]

-Table 9 about here-

-Table 10 about here

Finally, we also test whether past household migration experience has any effect on social capital investment. Table 11 reports linear probability model regressions as above where the main explanatory variable is whether there is any return migrant in the household. Findings show that this latter household status, which entails the return of both human and physical capital after international migration, has a positve effect on any form of community-based social networks.

-Table 11 about here

Overall, reduced form results seem to suggest that out-migration in a poor developing setting such as Southern Mozambique is likely to contribute to inter-household informal arrangements and cooperation through remittances or by returning home, even though dispatching family labor abroad might tighten the constraint on engaging in social interactions (especially group membership). However, the direction of causal nexus is one of the particularly difficult points in the social capital and migration literatures (Durlauf, 2002, Munshi 2003). As we mentioned above, unobservable determinants of both the household decision to join social networks and to have a

[24] Migrant-sending households may improve allocative efficiency by removing or relaxing some of the impediments that limit informal exchange - i.e. they use remittances as a committment device and make credible enforcable contracts.

migrant member – such as idiosyncratic shocks or household implicit propensity for specific types of (social) arrangements – are still unlikely to provide consistent estimates. Furthermore, a simultaneity bias would be present. Having more social networks at home may increase the probability of migrating, and thereby of receiving remittances, and bias our reduced form estimates in a positive direction. More access to resources due to social networks, though, could also increase household well-being, enabling initially non-migrant households either to send migrants abroad or to forego migration and stay put. Moreover, families are likely to allocate more or less resources to informal social arrangements depending on the achievement of specific migrant members or may vary their resources in response to changes in their migration circumstances (e.g.remittance receipt). In these cases, our reduced form coefficients would be downward biased. Overall, the estimation reported so far would be biased and inconsistent in the event that migration and remittance are endogenous. Thus, to try to correct for this possibiity and reveal the 'true' relationship between household migration exposure and social networks, using an appropriate IV strategy is required. To this we now turn.

6.1 IV results

In order to address the causal impact of migration and remittances on social network participation in households left behind, we estimate the system of equations (3) using an instrumental variable strategy. We examine two sets of potential instruments. The set of variables to identify migration is whether the household had a migrant before the war (1982-1992) as well as the number of male household members aged between 20 and 30 years old in 2005. The former variable is a proxy for family migration networks and herd behavior, which are related to the pre-war period and does not affect the current level social capital, unless by affecting current migration decisions and attitudes. This is so as the prolonged armed war largely destroyed existing social networks by massively displacing refugees and returnees. Therefore, given remittances, any individual characteristic of migrants before the war is orthogonal to social network participation as the latter is a property of the household, and not

of the individual who migrated in the past.[25] We further use the number of male household members of working/migration age (i.e. between 20 and 30 years old) in 2005, when Mozambique and South Africa agreed to visa-free travel for their nationals, consistent with the new, high-level political vision of South Africa as part of an integrated region. This is an exogenous migration-policy shock that, interacted with a restricted household age structure, is likely to affect networks in Mozambique only via migration outflows. Thus we argue that, given our household demographic controls, the specific gender-age composition at the time of the exogenous migration-policy 'shock' occurred in South Africa is randomly assigned and does not affect networks in Mozambique beyond its influence through migration out-flows.

In order to identify the remittance equation, we use a set of three instruments interchangeably. The first one is the short-run deviation in rainfall levels, measured as rainfall in 2007 minus the average historical rainfall since 1979.[26] This is so as variations in rainfall may have an important effect on changes in household income (in a region where most households are either directly or indirectly dependent on agriculture), thereby affecting remittances as well, as a form of insurance (Yang and Choi, 2007). On the other hand, as long as we control for a large set of household- and community-level determinants of income variation, it is unlikely that short-run covariate shocks such as poor rainfall will affect household membership in social networks directly, unless making remittance receipt more likely for migrant-sending housheolds.[27] We further use whether household migrants have a permanent job-contract at destination and the number of migrants in the rest of the community

[25] It should be noted that given the long timeframe, past migrants from before the war may be dead or no longer part of the household. Nevertheless, this variable as such is likely to capture well the long-lasting migration networks and, most importantly, individual attitudes towards moving abroad. The important role of the historic migration of family members (and even of neighbors or friends) has been largely examined in influencing an individual's potential migration decision, by chain-migration networks and attitudinal effects (see, among others, Massey et al., 1993, Massey and Espinosa, 1997; Munshi, 2003). Accordingly, several studies use migration histories at a village- or family-level to identify current migration (see Woodruff and Zeteno, 2001, Hanson and Woodruff, 2003, Lopez-Cordova, 2004, McKenzie and Rapoport 2004, Hildebrandt and McKenzie, 2005).

[26] The rainfall data source is the NASA GPCP (Global Precipitation Climatology Project) which has been used by Miguel et al. (2004) among others. The data can be downloaded from the following website: http://precip.gsfc.nasa.gov/

[27] We also use, as in Munshi (2003), rainfall levels from the recent past at a community level obtaining the same results as when using rainfall deviation. Other research using rainfall shocks as instruments include Paxson (1992), Miguel (2005), Yang and Choi (2007).

sending remittances home as other instruments. The rationale for including the former variable lies in the fact that migrants' employment conditions at destination are a function of labour market characteristics abroad, especially considering that migrants from Mozambique typically sell their work to South Africans on the spot market (see for example Raimundo, 2009). Therefore, the latter variable may be related to social networks at home only through remittance behavior. Given household and community controls, instead, the average remittances rate at community level is very commonly used in the literature as a proxy for the local 'remittance norm' (see Rozelle et al.1999, Taylor et al. 2003).

Results based on the IV estimation strategy are presented in Table 12. We use both 2sls and 3sls estimator, whereby the latter applies an IV procedure to produce consistent estimates and generalised least squares to account for correlation structure in the disturbances across equations. Our specifications include a rich set of household and community level controls as in reduced form specifications above. In columns (3)-(4) we report one sensitivity check to specific instrument selection by using a different combination of instruments. Even though our reduced form results have proved to be free of bias from omitted community-level characteristics, the use of community-level instruments obviously precludes the introduction of community fixed effects in the IV specification. Hence, as an additional strategy we consider household-level instruments only and include community fixed effects (columns (4)-(6)). The F-statistics of all combinations of excluded instruments and the overidentification Sargan tests suggest that the instruments are valid and not weak. Overall, results in Table 12 show the same net-effect of migration on group participation. In particular, the number of household migrants has a significant negative effect on household participation in community networks. On the other hand, there is an offsetting significant effect of remittance receipt that positively influences the propensity to join groups and social networks in households left behind. The difference in coefficients' magnitude, which are higher in the IV regressions than in reduced form linear probability models, suggest that correcting for endogeneity does have an effect in revealing the causal relationship. In particular, if social networks increase the migration likelihood among

initially non-migrant households, the reduced form coefficients would be downward biased.

-Table 12 about here-

Hence, by using different approaches we find that migration coupled with remittances is economically and statistically significant in increasing household memership in groups at origin. We interpret these results as evidence that remittances, in being a stable source of income, may decrease participation costs and increase household commitment in informal social arrangements in developing settings. Indeed, households with a more stable income entry can expect to be able to commit themselves more easily to regular payments in informal exchanges, through lower risk of default. Moreover, certain informal groups will be more inclined to accept members that have a regular and secure source of income (i.e. reducing adverse selection problems). That would be an extra effect favoring a positive effect of remittances on the probability of joining.

Yet, membership in groups or informal social arrangements, and the level of enforceability in particular, varies with the institutional and legal environment. This is why we futher explore the social impact of household migration exposure in different contexts (i.e. subsamples) where heterogeneous degrees of enforcement (e.g. social sanctions) may be at work.

6.2 Institutional efficiency and heterogeneous results

Labor migration from a poor to a richer destination and remittance receipt by people left behind is a key source of heterogeneity in village economies in a developing setting. Yet, the role of these processes in affecting the household incentive to participate in reciprocal informal arrangements at origin may be at work through further effects, related to changes in community-level institutions and socio-economic characteristics. The existing literature has pointed out the importance of the community institutional efficiency in shaping cooperative behavior. In particular, more heterogenous societies may hamper cooperation in the provision of local public goods and informal exchange

arrangements in that social sanctions are less effective (or alternatively said, trust and norms are weaker in more heterogeneous societies)[28]. Overall the existing findings indicate that heterogeneity along economic, religious or ethnic lines is correlated with lower contributions to public goods, higher extraction levels from common resources and poorer maintenance of common infrastructure. Thus, even though we do not tackle these mechanisms directly, we rule out confounding factors by carrying out a sensitivity analysis of our results in the Mozambican context.

Table 13 presents our estimates for a set of sub-samples defined by observable community attributes correlated with both household migration status and the level of 'cohesion' at community level. Hence, we distinguish heterogenous communities by (i) wealth inequality (reported by the community leader and measured with the Gini coefficient), (ii) the way land is allocated (traditional vs modern law)[29], (iii) ethno-linguistic and religious diversity.[30] As the latter is concerned we build an index of ethnic (religion) fractionalization that is the probability that two randomly selected individuals from a community will not belong to the same group (see Alesina and LaFerrara 2000, LaFerrara, 2002 and Peri and Ottaviano, 2006 among others). [31]

-Table 13 about here-

As shown in Panel A in Table 13, migration and especially the remittance effect is more precisely estimated in communities with lower levels of inequality, both reported by the community leader (subjective measure) or measured with the Gini index (in the latter case we consider communities in the top two and bottom two quantiles of the Gini index distribution). When we distinguish communities where land is allocated by the leader, the government or the whole community through participatory

[28] It is hypothesized that homogeneity at community level increases trust and common norms and lowers information and monitoring costs, such that it encourages social exchanges. See Alesina et al. 1999, Alesina and La Ferrara 2000, Bandiera et al. 2005.

[29] As other regions in Africa, Mozambique is a country of relatively low densities of population with strong cultural traditions and respected local authorities who, in the absence of official authorities, are in charge solve conflicts and allocate land -often (but not always) jointly with the community council- using indigenous knowledge and local capacity.

[30] Mozambique is peculiar in terms of diversity, as our data indicate a very low level of ethnic diversity and a relatively high level of religious diversity.

[31] Specifically, we use the variable "ethnic (religious) group" to define the cultural identity of each household. The fractionalization index is defined as: $I_j = 1 - \sum_{i=1}^{M} (\pi_j^i)^2$ where π_j^i is the share of people of group i among the residents of community j. This index varies from 0 (perfect homogeneity) to 1 (highest degree of heterogeneity or fragmentation).

meetings (Panel B), results show that remittances are relevant for group participation in societies with traditional land allocation rules, and even negatively associated with group participation where modern law holds (yet in the latter case variation is too low to reach stable conclusions as most of the communities follow traditional patterns of land allocation). Finally, migrant-sending households do not appear to respond very differently according to the social composition of the community, when the latter is measured in terms of ethnic or religious fractionalization (also in this case we consider communities in the top two and bottom two quantiles of the fractionalization indexes distribution). In particular, migrant-sending households appear to participate in the same way in both ethnically homogeneous and heterogeneous communities, and even slightly more in communities with more religious diversity. We interpret these results as evidence that economically homogeneous societies may be more effective in devising mechanisms, related to egalitarian rules or social sanctions, that foster cooperative behavior in migrant-sending households. This is not the case, though, when communities are homogeneous in their ethnic or religious composition. The latter may be explained by the little history of religious fundamentalism or ethnic conflict in Southern Mozambique, and therefore by the little relevance of ethnicity or religion in determining heterogeneous preferences on the provision and characteristics of common goods.[32]

7 Conclusions

This paper examines the role of labor migration and remittances in shaping group participation and social networks in village economies left behind. By using an original household survey containing detailed information on family migration status, group participation and inter-household informal exchanges from two provinces in the south of Mozambique, we find that households with successful migrants, i.e.

[32] Mozambicans often identify primarily with the ethnic and/or linguistic group. However, the independence movement that began in the 1960s was a unifying force, causing disparate elements to join together in resisting the Portuguese. Ironically, some of the main unifying factors in the country have been remnants of the colonial system, including the Portuguese language and the Roman Catholic religion. Thus, despite ethnic and linguistic differences, there is little conflict among the various groups. The greatest cultural disparities are those which divide the north of the country from the south.

those receiving remittances or return migration, engage more in community based social networks. In particular, contrary to the common presumption, we find that the probability of a family engaging in a social network is decreasing in the number of migrants but increasing in an indicator for receipt of remittances. The former result is weaker when informal social arrangements are considered, while the latter finding is robust to alternative definitions of social interaction, to the introduction of community fixed effects, and to potential endogeneity issues, which we address with an instrumental-variable estimation strategy. The same positive result holds when we look at the compound effect of return migration on social networks participation. We interpret these results as evidence that in a poor developing setting, even though social networks are open, income risk and participation constraints may limit both access to them and their effectiveness in facilitating inter-household cooperation and trade. Thus, higher income stability through remittances or strong family migration ties may decrease participation costs and increase household commitment in engaging in groups and reciprocal arrangements.

We also explore the role of the institutional and social environment in driving group participation of migrant-sending households in more homogeneous communities. We find that migrant households in Southern Mozambique are more likely to engage in social networks and cooperation in more economically even societies, where social cohesion and sanctions may be more effective, whilst they are not unevenly responsive to the social composition of the community in terms of ethnicity or religion.

Our results contribute to the existing migration literature by providing new insights into how labor mobility, as a common within-family strategy in many developing countries, affects the informal structure of village economies at origin. This is even more relevant when considering the wide literature showing the key role played by social capital and networks in shaping economic development and institutions in low income countries. Thus, labor out-migration may have a positive effect on the social structure and the organization of the common duties in local communities at origin, through the enduring ties that migrants maintain with their home country.

8 References

Adams, R., and J. Page. 2005. Do International Migration and Remittances Reduce Poverty in Developing Countries? *World Development* 33(10), 1645–1669.

Alesina, A., R. Baqir, and W. Easterly. 1999. Public Goods and Ethnic Divisions. *Quarterly Journal of Economics 114(4), 1243-1284.*

Alesina, A., and E. La Ferrara. 2000. Participation in heterogeneous communities. *Quarterly Journal of Economics* 115, 847–904.

Bala, V., and S. Goyal. 2000. A Non-Cooperative Model of Network Formation. *Econometrica* 68(5),1181.1229.

Bandiera, O. and I. Rasul. 2006. Social Networks and Technology Adoption in Northern Mozambique. *Economic Journal* 116(514), 862-902.

Besley, T. 1995. Nonmarket Institutions for Credit and Risk Sharing in Low-Income Countries. *Journal of Economic Perspectives* 9(3), 115-127.

Besley, T., S. Coate, and G. Loury. 1993. The Economics of Rotating Savings and Credit Associations. *American Economic Review* 83(4), 792–810.

Coate, S., and M. Ravallion. 1993. Reciprocity Without Commitment: Characterization and Performance of Informal Insurance Arrangements. *Journal of Development Economics* 40, 1.24.

Coleman, J. 1988. Social Capital in the Creation of Human Capital. *American Journal of Sociology* 94, S95-S121.

Coleman, J. 1990. *The Foundations of Social Theory.* Cambridge: Harvard University Press.

Conley, T., and C. Udry. 2004. *Social Networks in Ghana.* Economic Growth Center Working Paper no. 888.

Cox Edwards, A., and M. Ureta. 2003. International Migration, Remittances and Schooling: Evidence From El Salvador. *Journal Of Development Economics* 72(2), 429-461

Davis, B., G. Stecklov, and P. Winters. 2002. Domestic and international migration from rural Mexico: Disaggregating the effects of network structure and composition. *Population Studies* 56(3), 291-309.

Docquier, F., and H. Rapoport. 2008. Brain drain and human capital formation in developing countries: winners and losers. *Economic Journal* 118(528), 631-652.

Dubois P., Bruno J. and Magnac T. 2008. Formal and Informal Risk Sharing in LDCs: Theory and Empirical Evidence. *Econometrica* Vol. 76(4), 679-725.

Durlauf, S. 2002. On the Empirics of Social Capital. *Economic Journal* 112(483), 459-479.

Durlauf, S., and M. Fafchamps. 2005. Social Capital. *Handbook of Economic Growth*, Wiley, New York.

Ellsworth, L. 1989. Mutual Insurance and Non-Market Transactions Among Farmers in Burkina Faso, University of Wisconsin. Unpublished Ph.D. thesis.

Fafchamps, M. 1992. Solidarity Networks in Pre-Industrial Societies: Rational Peasants with a Moral Economy. *Economic Development and Cultural Change* 41(1),147-174.

Fafchamps, M. and Minten, M. 2000. "Returns to Social Network Capital among Traders," *Oxford Economic Papers*, 54(2), 173-206.

Fafchamps, M., and F. Gubert. 2007. The Formation of Risk-Sharing Networks. *Journal of Development Economics* 83(2), 326-350.

Fafchamps, M., and S. Lund. 2003. Risk Sharing Networks in Rural Philippines. *Journal of Development Economics* 71(2), 261-287.

Foster, A., and M. Rosenzweig. 1996. Comparative Advantage, Information and the Allocation of Workers to Tasks: Evidence from an Agricultural Labor Market. *Review of Economic Studies* 63(3), 347-374.

Foster, A. and M. Rosenzweig. 2001. Imperfect Commitment, Altruism and the Family: Evidence from Transfer Behavior in Low-Income Rural Areas. *Review of Economics and Statistics* 83(3), 389-407.

Fukuyama, F. 2000. Social Capital and Civil Society, IMF Working Paper WP/00/74, April 2000.

Glaeser, E., D. Laibson, J. Scheinkman and C. Soutter. 2000. Measuring Trust. *Quarterly Journal of Economics* 115(3), 811-846.

Glaeser, E., D. Laibson, and B. Sacerdote. 2002. An Economic Approach to

Social Capital. *Economic Journal* 112(483), 437-458.

Glaeser, E., B. Sacerdote, and J. Scheinkman. 2003. The Social Multiplier. *Journal of the European Economic Association* 1(2), 345-353.

Granovetter, M. 1985. Economic Action and Social Structure: Embeddedness. *American Journal of Sociology* 91(3), 481-510.

Guiso, L., Sapienza P. and Zingales, L. 2004. "The Role of Social Capital in Financial Development," *American Economic Review*, vol. 94(3), pages 526-556

Helliwell, J. 2001. *Social Capital, the Economy and Well-being.* The Review of Economic Performance and Social Progress 2001: The Longest Decade: Canada in the 1990s, 2001, vol. 1.

Karlan, D., M. Bertrand, S. Mullainathan, E. Shafir, and J. Zinman. 2009.What's Advertising Content Worth? Evidence from a Consumer Credit Marketing Field Experiment. *Quarterly Journal of Economics* (forthcoming).

Kimball, M. 1988. Farmers Cooperatives as Behavior Toward Risk. *American Economic Review* 78(1), 224-232.

Kocherlakota, N. 1996. Implications of Efficient Risk Sharing Without Commitment. *Review Economic Studies* 63(4),595-609.

Kranton, R. 1996. Reciprocal Exchange: A Self-Sustaining System. *American Economic Review* 86(4), 830-851.

La Ferrara, E. 2002. Inequality and group participation: Theory and evidence from rural Tanzania. *Journal of Public Economics* 85(2), 235–73.

Ligon, E., J. Thomas, and T. Worrall. 2000. Mutual Insurance, Individual Savings, and Limited Commitment. *Review of Economic Dynamics* 3(2), 216–46.

Ligon, E., J. Thomas, and T. Worrall. 2002. Informal Insurance Arrangements with Limited Commitment: Theory and Evidence from Village Economies. *Review of Economic Studies* 69(1), 209-244.

Lucas, R.E.B. 1987. Emigration to South Africa's Mines. *American Economic Review* 77(3), 313–330.

Lucas, R.E.B., and O. Stark. 1985. Motivations to Remit: Evidence from Botswana. *Journal of Political Economy* 93(5), 901–918.

Marsh, R. 2003. Working with local institutions to support sustainable livelihoods. Food and Agriculture Organization of the United Nations (FAO), Rome.

Massey, D., Arango, J., Hugo, G., Kouaouci, A., Pellegrino, A., & Taylor, J. 1993. Theories of International Migration - a Review and Appraisal. *Population and Development Review,* 19(3):431-466.

Mendola, M. 2008. Migration and Technological Change in Rural Households: Complements or Substitutes? *Journal of Development Economics* 85(1-2) ,150–175.

Miguel, E., S. Satyanath, and E. Sergenti (2004). Economic Shocks and Civil Conflict: An Instrumental Variables Approach. *Journal of Political Economy* 112 (41): 725-753.

Miguel, E., P. Gertler, and D. Levine. 2005. Does Industrialization Buil or Destroy Social Networks? *Economic Development and Cultural Change* 54(2), 287-318.

Ministerio do Plano e Financas.1998. Republic of Mozambique.

Munshi, K. and Rosenzweig, M. 2009. Why is Mobility in India so Low? Social Insurance, Inequality, and Growth mimeo 2009.

Munshi, K. 2003. Networks in the Modern Economy: Mexican Migrants in the U.S. Labor Market. *Quarterly Journal of Economics* 118(2), 549–597.

Narayan, D. 1997. *Voices of the Poor: Poverty and Social Capital in Tanzania.* ESD Monograph Series: World Bank. Washington, D.C.

Narayan, D., and L. Pritchett. 1999. Cents and Sociability: Household Income and Social Capital in Rural Tanzania. *Economic Development and Cultural Change* 47(4), 871-897.

Ostrom, E. 1990. *Governing the Commons: The Evolution of Institutions for Collective Action.* Cambridge University Press: New York.

Platteau, J. 1991. Traditional Systems of Social Security and Hunger Insurance: Past Achievements and Modern Challenges. In E. Ahmad, J. Dreze, J. Hills, and A. Sen (eds.). *Social Security in Developing Countries.* Clarendon Press, Oxford.

Platteau, J. 1991. *The Social Prerequisites of the Market (Sotsialnye Predposilki Rinka)*, Eco, Novosibirsk.

PRSP, 2007. Republic of Mozambique: Poverty Reduction Strategy Paper. IMF Country Report 07/37. January.

Putnam, R. 2000. *Bowling Alone*. New York: Simon and Schuster.

Putnam, R. 1995. Tuning In, Tuning Out: The Strange Disappearance of Social Capital in America. *PS: Political Science & Politics* December, 664-683.

Putnam, R., R. Leonardi, and R. Nanetti. 1993. *Making Democracy Work: Civic Traditions in Modern Italy*. Princeton University Press, Princeton, NJ.

Rozelle, S., E. Taylor, and A. deBrauw. 1999. Migration, Remittances and Agricultural Productivity in China. *American Economic Review* 89(2), 287–291.

Raimundo, I. M. 2009. International Migration Management and Development in Mozambique: What Strategies? *International Migration* Vol. 47 (3) forthcoming.

Ratha, D. (2003), "Workers' Remittances: An Important and Stable Source of External Finance", Global Development Finance, pp 157-175.

SAMP. 2003. MigrationNews. Southern African Migration Project.

Stark, O. 1991. *The Migration of Labour*. Basil Blackwell, Cambridge.

Stark, O., and D. Levhari. 1982. On Migration and Risk in LDCs. *Economic Development and Cultural Change* 31(1), 191–196.

Schiff, M. 2002a. Love Thy Neighbor: Social Capital, Trade and Optimal Migration Policy. *European Journal of Political Economy*

Schiff, M. 2002b. Trade, Migration and Welfare: The Impact of Social Capital. Chapter 26 in H. Singer, N. Hatti and R. Tandon (eds.) *Globalization, Technology and Trade in the 21st Century*. Vol. 19 of New World Order Series. B.R. Publishing: Delhi.

Taylor, J.E , Rozelle, S. and de Brauw, S. 2003. Migration and Incomes in Source Communities: A new Economics of Migration Perspective from China. *Economic Development and Cultural Change*. Octobre 52 (1), 75–101.

Taylor J.E. and Martin, P. 2001. Human Capital: Migration and Rural Population Change, in *Handbook for Agricultural Economics*, Elsevier Science, New York.

Towsend, R. 1994. Financial Systems in Northern Thai Villages. *Quarterly Journal of Economics* 110(4),1011-1046.

Udry, C. 1994. Risk and Insurance in a Rural Credit Market: An Empirical Investigation in Northern Nigeria. *Review of Economic Studies* 61.

Winters, P., A. de Janvry, and E. Sadoulet. 2001. Family and Community Networks in Mexico-U.S. Migration. *Journal of Human Resources* 36(1), 159-184.

Yang, D. 2006. Why Do Migrants Return to Poor Countries? Evidence from Philippine Migrants' Responses to Exchange Rate Shocks. *Review of Economics and Statistics* 88(4), 715-735.

Yang, D. 2008. International Migration, Remittances, and Household Investment: Evidence from Philippine Migrants' Exchange Rate Shocks. *Economic Journal* 118, 591-630.

Yang, D., Choi, H., 2007. Are remittances insurance? Evidence from rainfall shocks in the Philippines. *World Bank Economic Review* 21(2), 219-248.

8 Annex of Tables

Table 1
Incidence of migration and remittances (household level)

	Mean	s.d.
HH with any international migration experience (%)	0.55	(0.5)
N. of current migrants in the HH	1.59	(1.18)
HH with current migrants (%)	0.38	(0.49)
HH receiving remittances (total) (%)	0.24	(0.43)
HH receiving remittances (out of migrant HHs) (%)	0.60	(0.49)
N. of return migrants in the HH	1.29	(0.68)
HH with returm migrants (%)	0.29	(0.45)
Obs.	905	

Table 2
Individual characteristics by migration status (15 years old or above)

	Current migrants	Return migrants	Never migrants
Gender (male) (%)	0.82	0.67	0.43
Age in years	30.64	38.41	23.34
Married/cohabit (%)	0.52	0.62	0.38
HH size	5.08	5.52	6.34
Literate (%)	0.80	0.69	0.55
Years of education	5.21	4.60	4.09
English speaker (%)	0.27	0.20	0.05
HH head no education (%)	0.45	0.34	0.43
HH head primary education (%)	0.48	0.54	0.45
HH head secondary or more education (%)	0.07	0.13	0.12
No religion (%)	0.10	0.10	0.11
Occupation (a) (%)			
Farmer (work own land)	-	0.27	0.22
Farm worker	0.01	0.07	0.02
Non-farm worker/employee	0.05	0.14	0.07
Self-employed	0.02	0.07	0.05
Informal worker (trader, street vendor)	0.12	0.10	0.04
Student	0.04	0.06	0.34
Domestic worker	0.03	0.07	0.11
Miner	0.16	-	-
Skilled wokers	0.08	-	-
Unkilled worker	0.15	-	-
Unknown	0.21	-	-
Unemployed	0.04	0.05	0.06
Other	0.08	0.09	0.05
Retired	-	0.06	0.01
Country of destination (%):			
South Africa	0.92	0.90	-
Other African Country	0.01	0.08	-
Other(EU/US)	0.01	0.01	-
Other region in Mozambique	0.06	-	-
Send remittances (%)	0.45	-	-
Wish to migrate again (%)	-	0.58	-
Years since return	-	0.92	-
Years since last migration episode	3.85	9.52	-
Years since first migration episode	9.44	14.99	-
Total	0.11	0.063	0.83
Obs.	527	304	4020

Notes: **(a)** We here report occupations of current migrants at destination and occupations of return migrants at home.

Table 3
Reported source of help to migrate (individual level)

	Current migrants	Past migrants
	PANEL A	
	Source of help to migrate (%)	
Family in Mozambique	33.75	33.89
Family abroad	12.97	17.94
Friends in Mozambique	4.53	2.99
Friends abroad	5.16	1.33
Own previous experience	34.69	24.58
Neighbours	0.78	0.66
Government	0.78	3.32
Recruiting agency	4.69	11.63
Other	2.66	3.65
Total	100	100
	PANEL B	
	Source of help to cover migration costs (%)	
Own savings	39.11	24.32
Assets sale	6.14	3.76
Help from family in Mozambique	20.67	20.89
Help from family abroad	6.1	17.47
Informal loans (friends)	4.45	3.08
Other	1.43	9.93
Dont know	22.1	20.55
Total	100	100

Table 4
Remittance management (current migrants- indiv. level)

Frequency	**Mean (%)**	**s.d.**
Regularly	0.55	(0.35)
Weekly	0.02	(0.13)
Monthly	0.14	(0.35)
Trimestral	0.23	(0.42)
Yearly	0.16	(0.36)
Occasionally	0.41	(0.49)
Ns/NR	0.05	(0.22)
Use		
Current consumption (food)	0.86	(0.34)
Housing	0.03	(0.16)
Health	0.03	(0.17)
Investment in own business	0.01	(0.10)
Clothing	0.02	(0.13)
Other	0.06	(0.06)
Means of transport		
Personally	0.20	(0.4)
Friends or collegues	0.24	(0.43)
Taxi	0.33	(0.47)
Public transport/ mochibombo	0.07	(0.1)
Bank account (teba)	0.04	(0.19)
Postal mail	0.03	(0.17)
Other	0.09	(0.12)
Obs.	527	

Table 5
Social network participation (household level)

	Mean (%)	s.d.
Community groups		
Participation in any group (dummy)	0.27	(0.45)
By type		
ROSCAs (rotating saving and credit groups)	0.06	(0.23)
Farmers cooperative association	0.03	(0.18)
Bank group	0.04	(0.19)
Civic committees (a)	0.02	(0.19)
Burials' association	0.01	(0.11)
Self-help religious/church group	0.14	(0.34)
Women group	0.02	(0.11)
Youth group	0.01	(0.10)
Other groups (b)	0.02	(0.12)
Type of participation		
Member	0.25	(0.43)
Beneficiary	0.17	(0.37)
Decision maker	0.13	(0.33)
Promotor	0.11	(0.31)
Informal social interaction		
Daily talk with any important person	0.74	(0.43)
Give or receive (any good or service)	0.27	(0.44)
Expenses on ceremonies	0.14	(0.34)
Direction of the social exchange		
Receive	0.18	(0.38)
Give	0.14	(0.35)
Give and Receive (mutual help)	0.05	(0.21)
Obs.	905	

Notes: (a) Civic committees include both participation in meetings and voluntary labor exchage to improve community infrastructures. (b) Other groups includes: informal cross-border traders associations or "mukhero", cooperatives of producers, unions, NGOs, agricultural voluntary labor.

Table 6

Reasons for not participating in social networks (a) (%)

	Lack of money	Lack of time	Lack of interest/trust
Formal groups			
ROSCAs (*xitique*)	0.31	0.28	0.30
Farmers cooperative association	0.34	0.34	0.25
Political group	0.35	0.34	0.21
Bank group	0.30	0.28	0.30
Civic committees (b)	0.33	0.34	0.24
Burials' association	0.34	0.34	0.25
Self-help religious/church group	0.30	0.27	0.26
Women group	0.34	0.34	0.21
Youth group	0.37	0.35	0.22
Other groups (c)	0.32	0.36	0.23
Informal social interaction			
Community leader	0.08	0.26	0.57
Goverment authority	0.16	0.15	0.59
Teacher	0.09	0.29	0.48
Farming agent	0.21	0.21	0.41
Priest	0.15	0.20	0.45
Neighbours	0.11	0.17	0.63
Health provider	0.20	0.15	0.53
Healer	0.14	0.10	0.41
Employer	0.21	0.24	0.38
Obs.		925	

Notes: (a) The survey question is: why did you or any member of your family not participate in [....] or exchange resources with [...]? The alternative answers were: (i) no need, (ii) does not work, (iii) no trust, (iv) no useful, (v) too costly, (vi) too time consuming. (b) Civic committees include bothn participation in meetings and voluntary labor to improve community infrastructure. (c) Other groups includes: informal cross-border traders associations or "mukhero", cooperatives of producers, unions, NGOs, agricultural voluntary labor.

Table 7

Household and community characteristics by social network measures and migration status (household level)

	Panel A					
	Formal groups (a)		Give or receive (b)		Expenses in ceremonies (c)	
	No	Yes	No	Yes	No	Yes
N. of current migrants in the HH	0.64	0.52	0.56	0.71	0.55	0.90
HH with internt. migration experience	0.53	0.60	0.52	0.62	0.51	0.76
HH receives remittances (%)	0.23	0.28	0.20	0.37	0.22	0.41
Female HH head (%)	0.40	0.38	0.40	0.37	0.39	0.40
Age of HH head	46.56	45.48	46.31	46.16	46.5	44.87
Head no education (%)	0.46	0.33	0.42	0.42	0.43	0.37
HH head education- primary (%)	0.47	0.44	0.45	0.50	0.46	0.49
HH head education- secondary or more (%	0.07	0.22	0.12	0.08	0.11	0.14
HH head occupation- farmer (%)	0.42	0.45	0.42	0.46	0.41	0.57
Household size	4.83	5.57	5.06	4.95	4.87	6.03
N. of females in the HH	2.88	3	2.94	2.84	2.81	3.53
N. of children in the HH (<5years-old)	0.65	0.86	0.67	0.81	0.65	1.1
Residence 5 or more years (dummy) (%)	0.84	0.88	0.84	0.89	0.85	0.84
Ethnicity-changana (%)	0.90	0.72	0.86	0.82	0.86	0.79
Ethnicity-Ronga (%)	0.08	0.18	0.10	0.13	0.11	0.11
Ethnicity-Chope (%)	0.01	0.03	0.01	0.02	0.01	0.04
Ethnicity-Other minorities (%)	0.01	0.07	0.03	0.03	0.02	0.05
No religion (%)	0.12	0.07	0.11	0.10	0.12	0.04
Wealth index (d)	-0.41	0.56	-0.2	0	-0.27	0.61
Urban area (%)	0.17	0.38	0.23	0.21	0.20	0.36
Community characteristics						
Ethnic fractionalization index	0.18	0.27	0.2	0.23	0.21	0.18
Religion fractionalizaiton index	0.66	0.6	0.64	0.65	0.65	0.63
Community with pave-road (%)	0.13	0.20	0.18	0.08	0.14	0.22
Community with elementary school (%)	0.75	0.80	0.81	0.65	0.80	0.58
Community with a Bank (%)	0.03	0.12	0.07	0.02	0.05	0.07
Community with a market (%)	0.42	0.43	0.49	0.27	0.42	0.46
	Panel B					
	Current Migration		Remittances		Return Migration	
	No	Yes	No	Yes	No	Yes
Formal Group participation (%)	0.29	0.26	0.26	0.32	0.22	0.40
Informal exchange (give or receive) (%)	0.26	0.30	0.23	0.41	0.24	0.35
Expenses in cerimonies (%)	0.13	0.17	0.11	0.24	0.10	0.25
Mutual help (give and receive) (%)	0.04	0.06	0.03	0.11	0.04	0.08

Notes: (a) Formal group is a binary variable equal to 1 if any household member participates in any of the following formal groups: ROSCAs, bank, farmers association, burials association, NGOs actions, self-help religious group, political group, women group, civic group, youth group, others. **(b)** Give or receive a binary viariable equal to 1 if the HH gived or received products or services from at least one of the following important persons in the community: traditional leader, elected leader, teacher, agricultural agent, priest, neighbours, health provider, healer, employer. **(c)** Expenses in ceremonies is a binary variable equal to 1 if the HH spent any money or product in community's ceremonies and festivals in the last year. **(d)** The wealth index is the first component of a principal component analysis that uses household dwelling conditions and assets ownership.

Table 8

Impact of migration and remittances on group participation

Linear probability models (standard errors in brackets)

	(1)	(2)	(3)
N. of current migrants in the HH	-0.047**	-0.039**	-0.035**
	(0.017)	(0.018)	(0.016)
HH receives remittances	0.120***	0.146***	0.153***
	(0.043)	(0.048)	(0.039)
Female HH head		0.038	0.047
		(0.041)	(0.031)
Age of HH head		0.003	0.003
		(0.006)	(0.004)
Age of HH head squared		-0.000	-0.000
		(0.000)	(0.000)
HH head education- primary		0.021	0.011
		(0.036)	(0.033)
HH head education- secondary or more		0.252***	0.236***
		(0.064)	(0.054)
HH head occupation- farmer		0.069*	0.088***
		(0.039)	(0.031)
HH operating land		0.023	0.015
		(0.048)	(0.039)
HH size		0.014	0.007
		(0.009)	(0.009)
N. of females in the HH		-0.039***	-0.036***
		(0.010)	(0.013)
N. of children in the HH (<5years-old)		0.049*	0.047**
		(0.026)	(0.020)
Residence 5 or more years (dummy)		0.074**	0.068*
		(0.035)	(0.041)
Ethnicity-Ronga		0.142**	0.155***
		(0.052)	(0.050)
Ethnicity-Chope		0.249	0.183
		(0.182)	(0.122)
Ethnicity-Other minorities		0.232***	0.189**
		(0.086)	(0.088)
Religion-Catholic		0.006	0.067
		(0.056)	(0.055)
Religion-Presbyterian		-0.126*	-0.028
		(0.070)	(0.093)
Religion-Methodist		0.212**	0.230***
		(0.104)	(0.079)
Religion-Anglican		-0.118**	0.035
		(0.056)	(0.161)
Religion-Baptist		-0.064	0.104
		(0.116)	(0.126)
Religion-Adventist		0.151	0.203*
		(0.133)	(0.118)
Religion-Islam		-0.034	-0.036
		(0.177)	(0.144)
Religion-Tradition spiritsm		0.108**	0.090*
		(0.051)	(0.047)
Religion (NS/NR)		-0.112***	-0.021
		(0.039)	(0.062)
Wealth index		0.030***	0.020**
		(0.009)	(0.009)
Urban area (dummy)		0.167***	0.371
		(0.059)	(0.333)
Community with paved-road		-0.060	
		(0.088)	
Community with primary school		0.116**	
		(0.051)	
Community with a Bank		-0.009	
		(0.099)	
Community with a market		-0.052	
		(0.090)	
Community with health facility		0.058	
		(0.095)	
Constant	0.273***	-0.156	-0.113
	(0.049)	(0.120)	(0.133)
Obs.	905	905	905
R-squared	0.012	0.220	0.127
N. of community fixed effects			42

Robust standard errors clustered at community level in parentheses; *** p<0.01, ** p<0.05, * p<0.1.

Notes: (a) The dependent variable is a binary variable equal to 1 if any member of the household has participated in any of the following groups: ROSCAs, farmers' association, burials association, ONGs actions, self-help religious group, political group, women group, civic group, youth group, others. **(b)** Remittances variable is a dummy equal to 1 if the HH has received remittances, in money or in-kind, in the last year. **(c)** Wealth index is the first component of a principal component analysis, which uses dwelling conditions and assets ownership of the HH. **(d)** Column 3 shows estimates with fixed effects at the community level. The excluded categories are: no education, Changana, no religion.

Table 9

Impact of migration and remittances on informal social interaction (c)

Linear probability models (standard errors in brackets)

	Daily talk frequency	Give or receive (a)	Expenses on ceremonies (b)
N. of current migrants in the HH	-0.014	-0.026	-0.005
	(0.017)	(0.016)	(0.013)
HH receives remittances	0.020	0.139***	0.055*
	(0.043)	(0.040)	(0.033)
Female HH head	-0.030	0.029	0.019
	(0.033)	(0.031)	(0.026)
Age of HH head	0.001	-0.001	-0.007**
	(0.004)	(0.004)	(0.003)
Age of HH head squared	-0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)
HH head education- primary	-0.074**	0.009	-0.012
	(0.036)	(0.034)	(0.028)
HH head education- secondary or more	-0.083	0.009	-0.064
	(0.059)	(0.056)	(0.045)
HH head occupation- farmer	0.101***	0.036	0.070***
	(0.033)	(0.032)	(0.026)
HH operating land	0.062	0.021	0.009
	(0.042)	(0.040)	(0.033)
HHsize	-0.022**	0.002	0.016**
	(0.010)	(0.009)	(0.007)
N. of females in the HH	0.023*	-0.017	-0.026**
	(0.014)	(0.013)	(0.011)
N. of children in the HH (<5years-old)	0.034	0.024	0.035**
	(0.021)	(0.020)	(0.016)
Residence 5 or more years (dummy)	-0.032	0.080*	0.004
	(0.044)	(0.042)	(0.034)
Ethnicity-Ronga	0.159***	0.080	0.017
	(0.055)	(0.052)	(0.042)
Ethnicity-Chope	0.295**	0.071	0.194*
	(0.132)	(0.125)	(0.102)
Ethnicity-Other minorities	0.049	0.199**	0.100
	(0.095)	(0.090)	(0.074)
Religion-Catholic	-0.032	0.029	0.005
	(0.060)	(0.057)	(0.046)
Religion-Presbyterian	-0.191*	-0.019	-0.072
	(0.101)	(0.095)	(0.077)
Religion-Methodist	-0.144*	0.013	0.132**
	(0.086)	(0.081)	(0.066)
Religion-Anglican	-0.201	-0.327**	-0.104
	(0.174)	(0.165)	(0.134)
Religion-Baptist	-0.269**	-0.186	-0.147
	(0.136)	(0.129)	(0.105)
Religion-Adventist	-0.255**	-0.306**	0.269***
	(0.128)	(0.121)	(0.098)
Religion-Islam	0.121	-0.137	-0.117
	(0.156)	(0.148)	(0.120)
Religion-Tradition spiritsm	-0.090*	0.028	-0.004
	(0.051)	(0.049)	(0.039)
Religion (NS/NR)	-0.157**	0.010	0.012
	(0.067)	(0.063)	(0.051)
Wealth index	0.000	-0.006	0.015**
	(0.009)	(0.009)	(0.007)
Urban area	0.056	-0.131	0.232
	(0.360)	(0.341)	(0.278)
Constant	0.813***	0.189	0.205*
	(0.144)	(0.136)	(0.111)
Observations	905	905	905
R-squared	0.064	0.057	0.083
N. of community fixed effects	42	42	42

Robust standard errors clustered at community level in parentheses; *** p<0.01, ** p<0.05, * p<0.1.

Notes: (a) Give or receive is a binary viariable equal to 1 if the household exchanged (i.e. give or receive) any good or service with any important person in the community in the last month, i.e. with the traditional leader, elected leader, teacher, agricultural agent, priest, neighbors, health provider, healer, employer. **(b)** Expenses in ceremonies is a binary variable equal to 1 if the HH has espent money or goods on community ceremonies in the last year. (c**)** All regressions use fixed effects at the community level. The excluded categories are: no education, Changana, no religion.

Table 10

Impact on the Direction of informal social inrections

Linear probability models (standard errors in brackets)

	Give	**Receive**	**Give & receive (mutual help)**
N. of current migrants in the HH	-0.032**	-0.015	-0.021**
	(0.014)	(0.012)	(0.008)
HH receives remittances	0.127***	0.092***	0.080***
	(0.035)	(0.031)	(0.021)
HH and community Controls	yes	yes	yes
Community fixed effects (42)	yes	yes	yes
Obs.	905	905	905

Robust standard errors clustered at community level in parentheses; *** p<0.01, ** p<0.05, * p<0.1.

Notes: (a) Give (receive) is a binary viariable equal to 1 if the HH gave without receiving (received without giving) any good or service to any important person in the community in the last month, i.e. with the traditional leader, elected leader, teacher, agricultural agent, priest, neighbors, health provider, healer, employer. **(b)** Give&Received (mutual help) is a binary variable equal to 1 if the HH exchanged something (gave&received) with any important person in the community. (c**)** All regressions use fixed effects at the community level. The excluded categories are: no education, Changana, no religion.

Table 11

Impact of return migration on group participation and informal social interactions

Linear probability models (standard errors in brackets)

	Group particip.	**Daily talk frequency**	**Give or receive**	**Expenses on ceremonies**	**Give**	**Receive**	**Give & receive (mutual help)**
Return migration (c)	0.058***	-0.023	0.064***	0.073***	0.088***	0.020	0.044***
	(0.021)	(0.022)	(0.021)	(0.017)	(0.018)	(0.016)	(0.011)
Controls	yes	yes	yes	yes	yes	yes	yes
Observations	905	905	905	905	905	905	905
N. of communities	42	42	42	42	42	42	42

Robust standard errors clustered at community level in parentheses; *** p<0.01, ** p<0.05, * p<0.1.

Table 12

PANEL A: IV regression estimates of the impact of migration and remittances on group participation

	(1) 2SLS [(a)]	(2) 3SLS [(b)]	(3) 2SLS [(a)]	(4) 3SLS [(b)]	(5) 2SLS [(a)]	(6) 3SLS [(b)]
Number of current migrants in the HH	-0.313**	-0.432***	-0.199**	-0.239**	-0.231*	-0.361***
	(0.134)	(0.130)	(0.089)	(0.093)	(0.136)	(0.122)
HH receives remittances	1.068**	1.287***	0.627**	0.605*	0.872*	1.206***
	(0.524)	(0.477)	(0.309)	(0.335)	(0.514)	(0.459)
HH Controls	yes	yes	yes	yes	yes	yes
Community Controls	yes	yes	yes	yes	no	no
Community fixed effects (42)	no	no	no	no	yes	yes
Observations	905	905	905	905	905	905
Overid. Sargan test (Chi-sq.)	2.612		2.469		6.242	
P-value	0.271		0.291		0.0125	

PANEL B: First stage results of 2SLS

	Dependent variable					
	Migration	**Remittances**	**Migration**	**Remittances**	**Migration**	**Remittances**
Instruments:						
Relatives migrated before the war	0.165***	0.077**	0.164***	0.076**	0.177***	0.081***
	(0.064)	(0.028)	(0.064)	(0.028)	(0.061)	(0.029)
N.of male hh members age 20-30 in 2005	0.376***	0.073***	0.373***	0.068***	0.345***	0.057***
	(0.049)	(0.022)	(0.50)	(0.022)	(0.038)	(0.018)
Short-run rainfall deviation	2.145	3.217**				
	(3.760)	(1.837)				
Permanent jobc ontract of migrants	0.837***	0.249***	0.835***	0.248***	0.888***	0.266***
	(0.095)	(0.039)	(0.095)	(0.038)	(0.067)	(0.032)
Community remittances rate			0.003	0.006**		
			(0.004)	(0.002)		
HH Controls	yes	yes	yes	yes	yes	yes
Community Controls	yes	yes	yes	yes	no	no
Community fixed effects (42)	no	no	no	no	yes	yes
Observations	905	905	905	905	905	905
Joint F-test on all instruments [(a)]	43.5	23.59	44.81	24.54	112.7	35.07
P-value	0.00	0.00	0.00	0.00	0.00	0.00
Joint F-test on two instr. (3SLS results)[(b)]	42.36	4.31	42.36	7.1	42.36	6.57
P-value	0.00	0.02	0.00	0.00	0.00	0.01

Robust standard errors clustered at community level in parentheses; *** p<0.01, ** p<0.05, * p<0.1.

Notes: (1) and (2) Instruments include migration experience before war, the number of male household members beween 20 and 30 years old in 2005, whether household migrant members have a permanent job contract at destination and short-run rainfall deviation (measured as rainfall in 2007 minus the average historical rainfall since 1979). (3) and (4) replace the latter instrument with the remittances rate in the community of residence. (5) and (6) use household level instruments only (i.e. migration experience before war, the number of male household members beween 20 and 30 years old in 2005, whether household migrant members have a permanent job contract at destination). (a) All instruments for each endogenous variable are excluded. (b) Two different instruments for each endogenous variable are excluded (migration experience before war and the number of adult males beween 20 and 30 years old in 2005 are always excluded from the migration equation).

Table 13

Impact of migration and remittances on group participation by heterogeneous communities

Linear probability models (standard errors in brackets)

	Panel A: Inequality			
	Gini Inequality (b)		Subjective Inequality (a)	
	Low	**High**	**Low**	**High**
N. of current migrants in the HH	0.004	-0.026	-0.047**	-0.019
	(0.027)	(0.030)	(0.019)	(0.030)
HH receives remittances	0.158***	0.070	0.184***	0.095
	(0.061)	(0.064)	(0.053)	(0.062)
Fixed effects	yes	yes	yes	yes
Observations	398	333	465	440
R-squared	0.186	0.193	0.189	0.144
N. of communities	18	16	23	19

	Panel B: The way land is allocated (c)	
	Community (leader)	Government
N. of current migrants in the HH	-0.041**	0.099
	(0.017)	(0.100)
HH receives remittances	0.174***	-0.536*
	(0.041)	(0.278)
Fixed effects	yes	yes
Observations	752	85
R-squared	0.132	0.421
N. of communities	35	4

	Panel C: Ethnicity and religion			
	Ethnic fractionalization index (d)		Religion fractionalization index (d)	
	Low	**High**	**Low**	**High**
N. of current migrants in the HH	-0.023	-0.051	-0.037	-0.053**
	(0.023)	(0.034)	(0.026)	(0.022)
HH receives remittances	0.136**	0.146*	0.105	0.096**
	(0.057)	(0.083)	(0.076)	(0.039)
Controls included	yes	yes	yes	yes
Fixed effects	yes	yes	yes	yes
Observations	342	365	368	351
R-squared	0.185	0.148	0.184	0.230
N. of communities	17	16	16	18

Robust standard errors clustered at community level in parentheses; *** p<0.01, ** p<0.05, * p<0.1.

Notes: (a) Objective Inequality is measured with the Gini coefficient of the wealth index at the community level- we use the two first quantiles of the wealth distribution for equal communities and the last two quantiles for inequal ones (b) Subjective Inequality is a binary variable equal to 1 if the community leader reports that altmost all community members have the same linving standards (equal) and 0 if he reports large differences among people (inequality). (c) Dummy vars. how the land is allocated in the community, reported in the community questionnaire: either by the community leader or community councils (traditional law) or by the government (modern law). (d) Ethnic and religion fractionalization indexes measuring community diversity (when equal to 1 the community is completely heterogenous). In this sense equal communities are represented by the two first quantiles of each index distribution and inequal communities are in the top two quantiles.

Appendix

Table A.1.
Summary statistics at household level

	Mean	s.d.
Number of current migrants in the HH	1.59	(1.18)
HH receives remittances	24%	(0.43)
Female HH head	39%	(0.49)
Age of HH head	46.27	(17.5)
HH head education- primary	46%	(0.5)
HH head education- secondary or more	11%	(0.31)
HH head occupation- farmer	43%	(0.5)
HH operating land	79%	(0.41)
HHsize	5.03	(2.87)
Number of females in the HH	2.91	(1.89)
Number of children in the HH (<5years-old)	0.71	(0.88)
Residence 5 or more years (dummy)	85%	(0.36)
Ethnicity-Ronga	11%	(0.31)
Ethnicity-Chope	1%	(0.11)
Ethnicity-Other minorities	3%	(0.17)
Religion-Catholic	17%	(0.38)
Religion-Presbyterian	3%	(0.17)
Religion-Methodist	5%	(0.22)
Religion-Anglican	1%	(0.08)
Religion-Baptist	1%	(0.11)
Religion-Adventist	2%	(0.12)
Religion-Islam	1%	(0.1)
Religion-Tradition spiritsm	48%	(0.5)
Religion (NS/NR)	12%	(0.32)
Wealth index	-0.14	(2.13)
Urban area	22%	(0.42)
Community with paved-road	15%	(0.36)
Community with primary school	77%	(0.42)
Community with a Bank	6%	(0.23)
Community with a market	43%	(0.49)
Health service provider	27%	(0.45)

Table A.2
Impact of migration and remittances on group participation (a)
Probit Marginal effects (standard errors in brackets)

	1	2	3 (b)
N. of current migrants in the HH	-0.056**	-0.048**	-0.040*
	(0.024)	(0.024)	(0.021)
HH receives remittances	0.135***	0.178***	0.193***
	(0.048)	(0.065)	(0.062)
Female HH head		0.052	0.058
		(0.044)	(0.039)
Age of HH head		0.004	0.005
		(0.007)	(0.006)
Age of HH head squared		-0.000	-0.000
		(0.000)	(0.000)
HH head education- primary		0.030	0.016
		(0.039)	(0.042)
HH head education- secondary or more		0.300***	0.276***
		(0.081)	(0.093)
HH head occupation- farmer		0.075*	0.096**
		(0.043)	(0.040)
HH operating land		0.028	0.023
		(0.053)	(0.047)
HHsize		0.016	0.010
		(0.010)	(0.011)
N. of females in the HH		-0.042***	-0.044***
		(0.010)	(0.015)
N. of children in the HH (<5years-old)		0.049*	0.050**
		(0.027)	(0.025)
Residence 5 or more years (dummy)		0.086**	0.072*
		(0.039)	(0.042)
Ethnicity-Ronga		0.151**	0.188**
		(0.062)	(0.091)
Ethnicity-Chope		0.270	0.173
		(0.224)	(0.198)
Ethnicity-Other minorities		0.271***	0.205
		(0.102)	(0.129)
Religion-Catholic		0.023	0.117
		(0.067)	(0.087)
Religion-Presbyterian		-0.120*	-0.007
		(0.072)	(0.116)
Religion-Methodist		0.270**	0.310*
		(0.129)	(0.163)
Religion-Baptist		-0.082	0.171
		(0.145)	(0.205)
Religion-Adventist		0.192	0.299*
		(0.183)	(0.165)
Religion-Islam		-0.002	0.005
		(0.180)	(0.158)
Religion-Tradition spiritsm		0.132**	0.116*
		(0.064)	(0.059)
Religion (NS/NR)		-0.139***	-0.048
		(0.049)	(0.076)
Wealth index		0.035***	0.023**
		(0.009)	(0.010)
Urban area		0.192***	0.001
		(0.065)	(0.113)
Community with paved-road		-0.067	
		(0.094)	
Community with primary school		0.123**	
		(0.052)	
Community with a Bank		-0.039	
		(0.093)	
Community with a market		-0.065	
		(0.104)	
Health service provider		0.065	
		(0.124)	
Observations	905	905	905
N. of communities			42

Robust standard errors clustered at community level in parentheses; *** p<0.01, ** p<0.05, * p<0.1.

Notes: (a) The dependent variable of all regressions is a binary variable equal to 1 if any member of the household has participated in any community group. **(b)** Column 3 shows estimates with fixed effects at the community level.

Table A.3
Impact of migration and remittances on informal social interactions

Probit Marginal effects (standard errors in brackets)

	Daily talk frequency	Give or receive	Expenses on ceremonies	Give	Receive	Give & receive (mutual help)
Number of current migrants in the HH	-0.021	-0.017	0.001	-0.039**	-0.003	-0.010**
	(0.019)	(0.021)	(0.014)	(0.016)	(0.015)	(0.005)
HH receives remittances	0.038	0.177***	0.072*	0.157***	0.124***	0.074***
	(0.046)	(0.055)	(0.040)	(0.052)	(0.044)	(0.027)
HH controls included	yes	yes	yes	yes	yes	yes
Community controls included	yes	yes	yes	yes	yes	yes
Observations	905	905	905	905	905	905

Robust standard errors clustered at community level in parentheses; *** p<0.01, ** p<0.05, * p<0.1.

Notes: (a) All dependent variables are defined as in table 7 and directions. (b) By using probit regressions, some community fixed effects perfectly predict failures, requiring us to drop many observations from probit regressions. Adjusting the sample for each different regression specification would make it difficult to compare results across specifications, so that in this table we present probit regressions using our baseline set of community controls instead of fixed effects.