Social capital in war-thorn Peruvian communities

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Abstract: Entire communities were abandoned in the Peruvian highlands during the guerrilla war of the 1980-90's. People later returned in spite of the lack of resources in their original communities. An econometric analysis on data from 49 rural communities - a questionnaire survey conducted by the author - discloses a significant positive income effect in such return communities compared to communities that were never abandoned when controlling for land and other basic production inputs. Both data and fieldwork observations indicate that social capital effects, through the "push" of discrimination and mistrust in host residences, the "pull" of homogeneity in the original communities and improved organization skills through the return process, are important causal explanations for this return. Furthermore, this estimated social capital effect is not biased due to the simultaneity problems apparent in most migration studies as displacement and return represents a "natural experiment" in this district.

Code-words: Social capital, Human capital, Emigration, Return, War, Peru

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1 Introduction

Most people in developing countries now live in urban centers and the share continues to grow[1]. The underlying migration pattern is still complex. People do not only move from the countryside to the cities. There is also a considerable rural-rural and even urban-rural emigration flows that has attracted little attention by practitioners and academics within development economics[2]. These countercurrent migration patterns are often thought to be poverty driven as people move to the frontier of civilization in search for agricultural lands and other natural resources. Some simple facts indicate that the process is more complex. Emigrants have often quite a lot of resources available (which is needed in order to settle down somewhere else) and those could alternatively be invested in economic activity in the cities. Furthermore, people with rather similar economic and professional background emigrate in both directions. This indicates that other income related and social phenomena than the basic production factors play an important role.

It is important to understand the underlying explanatory factors as the emerging population structure might be unsustainable even though there is a seductive aura of "back-to-the-roots adventure" over the rural-rural and urban-rural emigration movements. Such movements might improve life for a short while, but still represent a detour to development[3] since a more concentrated population is probably the characteristic of a modern and economically efficient society[4]. Economies of scale are considerable both in public services and production, and the transformation to a highly efficient modern agriculture will probably make most of the population in the

[1] The rural population in Latin America decreased from 43 percent in 1970, to 35 percent in 1980 and 29 percent in 1990. Similar figures for Peru is 43 percent, 35 percent and 30 percent according to United Nations calculations reproduced in Roberts (1995).

[2] The few cases of public interest most often carry a negative connotation, for example deforestation and conflicts with the indigenous population as colonists move further into the Amazon.

[3] Development is in this paper interpreted as economic growth and increased consumption opportunities. This is a highly contested assumption in the development research community. First of all can other aspects like culture, influence, freedom, etc. be important elements of human happiness that are not necessarily correlated with the income level as discussed by Sen (2000) in his capability concept. Secondly, the correlation between income and consumption related states like malnutrition is surprisingly low. Meanwhile, it is not possible to measure human happiness and I will in this paper satisfy with the lesser aim of explaining differences in income level.

[4] The Modernization literature as presented by its main advocate Rostow (1990) emphasizes a dynamic development from rural agriculture to urban industry. A main fallacy in the interpretation of his work is to assume increased population concentration is a sufficient condition for economic growth rather than a necessary condition. Just moving people to urban areas does not necessarily raise income in itself. Another aspect of urbanization is the composition of production sectors. Manufactures as share of GDP is reduced considerably in most developed (and developing) countries. This is due to technological growth and the entry of some highly efficient and populous countries (e.g. China) in the world economy. This raises the question whether it is possible to pass the industrial stage, leaping directly from agriculture to a service based society.

countryside redundant within this sector. It is difficult to create other forms of employment in sparsely populated areas[5].

Empirical studies of emigration patterns are often troubled by an expected interdependence of income and emigration. Emigrants might be better educated or have other inherent characteristics that entail higher income than the people who stays behind in general, but they still choose to go because the payoff from these characteristics are higher in other places. This self-selection bias distorts the estimated coefficients in econometric analysis and we need to control for this mechanism one way or another if we want to understand how emigration in itself affects income. This article studies a very special emigration experience in Peru where the self-selection problem is thought to be minimal due to historical reasons. It hence represents a "natural experiment" where the estimated effects can be interpreted to come directly form the emigration process itself.

The armed conflict between the communist Shining Path guerrilla and the Army in the 1980 and 1990s led entire communities in the highlands to abandon their homes and lands temporarily. This displacement (i.e. forced emigration) of entire communities depended more on location than the income level of the population. Furthermore, nearly all communities are now repopulated again. The selection of communities in the sample does hence not depend on the income level itself. The tautology "all individuals left as the communities were completely abandoned" underlines the important fact that there was no self-selection problem at an individual level in the decision to leave or not. The history of return in this specific situation led individuals of most income categories to go back. The institutions further strongly advised returnees to also bring elderly, disabled and other less work capable individuals with them. It was further often

[5] Perception of future possibilities are unfortunately often based on historical experiences, and this might explain the emphasis on land as an important element to escape poverty. This influences for example the Landless Workers Movement (MST) organization in Brazil, which helps the landless people obtain land and take part in cooperative solutions. Another example is the purchase of large estates by the government and NGOs in Guatemala in order to resettle war refugees that are already established in Mexico. Ironically, this old idea of fairness and equality through redistribution of land is now actually possible because there is hardly any money left in traditional agriculture. The land-rent is approaching zero as coffee prices are slumping in Guatemala and gene-manipulation increases productivity in modern large-scale farms manifolds in Brazil. This process is also driven from the consumption side as people start to buy their food products in the supermarkets. Their share of the food market has risen from 10-20 percent to 50-75 percent for the Latin American countries in just 20 years according to Reardon et al. (2003). Small-scale farmers are seldom capable of producing the standardized quality for this market. Even though peasants are finally "working for themselves" instead of serving in serfdom for the hacienda owner, the small scale and technically less advanced agriculture might soon end up to represent just another poverty trap for the poor, while state subsidies to buy overpriced land fuels the pockets of the wealthy. Even the World Bank takes part in this process by subsiding the calculated difference between the land-rent, i.e. the productivity of land itself, and the actual sales price. This overprice due to several types of imperfections in the economy constitute 70 percent of the sales price of land in Colombia, according to Deininger (2003).

an indirect prerequisite for governmental financial support. This implies that the self-selection problem is neither present at the individual level.

I conducted a questionnaire survey in the 49 communities that constitute the district of Tambo in the department of Ayacucho in the Peruvian highlands, where I collected statistics on production, sales, institutions, cooperation and war experience. Of these, 31 communities were completely abandoned during the violent conflict and later repopulated by returnees. These communities hence constitute examples of rural-rural and urban-rural emigration. The remaining 18 communities were never abandoned and also served as the residence of the refugees from the surrounding communities for an average of 10 years. Any fixed costs in connection to the uprooting process should be regarded as a sunk cost, and it was possible to stay in the more populous clusters since the travel distance to farm their original lands was reasonable. Still, nearly all Internally Displaced People (IDP) have preferred to return to their home communities and this puzzle of "urban"-rural emigration is the main motivation for this study.

An additional motivation is to study the process of rebuilding war thorn societies. The number of IDPs in the 1990's in Peru was 600,000 individuals from 114,000 households, according to figures calculated by the non-governmental organization (NGO) CEPRODEP, as quoted in Kirk (1993). The official authorities now consider that there is no IDP problem because they have either returned to their original communities or chosen to resettle permanently somewhere else. Official figures at the world level today is 25 million in developing countries due to armed conflicts, Project (2004). In addition come considerably more cross-border refugees. How should governments and the international society use their limited resources to help these vulnerable people rebuild their future when the violence is over? The return of abandoned communities is only one of several options. We hence need to understand why people leave their refuges even though it would probably take several years of hardship in order to reach the same level of both private and communal infrastructure in their places of origin. We also need to understand how the experience of forced migration affects people's behaviour. The traditional approach in the literature is to stress unfortunate sides like increased violence, social breakdown, economic hardship, etc. This makes it all the more important to search for positive effects, being it the IDP's increased knowledge of how a modern society works, extended social networks, improved language knowledge and the knitting of a common destiny between the returnees.

The claim of this paper is actually that forced migration experience involves positive income effects. The returnees have become better adapted and more capable to exploit the new possibil-

ities that come with the market integration, i.e. human capital. It is further possible to trace a positive social capital effect since the war experience facilitates cooperation in order to organize the return and reconstruction and apply for government and NGO sponsorship. Barr (2003) finds a similar positive effect in game experiments in resettlement communities in Zimbabwe. The people were more willing to trust others in order to "build the community", i.e. the example of being trustworthy oneself influences others to act in a similar pattern later.

Econometric analysis of the 49 communities in the Tambo district supports the claim of positive human capital and social capital effects. The OLS regression model gives a positive and significant dummy for being a return community compared to a resistant community[6]. Finding total income to be higher when controlling for the most important production inputs in this mainly agricultural economy is a counter intuitive result that contrasts the negative effects often stressed in both the emigration and the conflict literature. Anecdotal evidence from the area further supports both the human capital and social capital interpretation. The return communities have more experience in how the society works and are able "rent-seekers" since they are more experienced in lobbying the larger society for help in their reconstruction effort.

Social capital hence seems to be both a "push" and a "pull" effect. The trust between members of different communities was originally low. So when the resistant communities became a mixture of original community members and people who had fled from several surrounding communities, the level of mistrust increased considerably and collective action efforts broke down. This influenced also the level of trust between the original community members as a subgroup, and this has unfortunately not improved very much after the IDPs returned home. The return communities are on the other hand more homogenous since all share the same displacement experience. The need for common efforts to "community build" is an additional element of trust and cooperation.

The main contribution of this study is to test empirically the effect of a displacement and return experience on income in an environment were emigration and return is probably independent of income since the civil war experience is a natural experiment. The estimated positive effect of being a return community compared to resistant communities further represents a novel finding as most of the literature stresses the drawbacks of war related experiences.

[6] People who stayed in their original communities during the whole conflict define their communities as "resistant" communities. It does not necessarily mean they fought the guerrilla, but rather sought a balance between both sides in the armed conflict in order to stay put. This applied term for the non-displacement communities bears no connotation to resistance to top-down state enforcement as often discussed in the anthropological literature.

2 Economic aspect of return

2.1 IDP policy in general

The first impression of Tambo is a vibrant and living society. You will find people anywhere, even on the most remote mountain slope. The men are strong and well-built from manual labour in the fields, children walk in groups on the paths crossing the steep valleys sides on their way to the school, women herd sheep and goats on the pastures close to the mountain peaks at nearly 5,000 meters above sea level. The joy of finding a living traditional society is mixed with the impression of no economic progress. The scene looks like any rural society in the western world in the 18th century. Today it is hard to find people in such places at all. The previous wheat fields in the hills of New Hampshire are now covered by forests, agricultural machinery sweep the enormous fields in the Mid-West, the heavily subsidized agriculture in Norway is done by single individuals as a part-time profession, while people in isolated areas of Sweden were actually paid by the government to move to urban centers in the 1950's. The picture of Tambo today is simply not the future if the poor countries are to follow in the footsteps of the western world.

Ironically, 10 years ago the situation was completely different and more in line with a modern society. The population was concentrated in the valley bottoms after the exodus from the highland communities. Why did they return to their original communities? Institutional aspects are part of the answer. Foreign donors, NGOs and government tend to see return as the solution to the "problem of displacement", rather than displacement as a "golden opportunity" to speed up the modernization process through centralizing the population. The term Internally Displaced People (IDP) was introduced in Peru as late as the 1990 even thought the majority actually left their communities in mid 1980's, with the aim to increase the attention to the refugee problem. The definition of IDP given by the United Nations Office for the Coordination of Humanitarian Affairs (OCHA) uses the words "...forced or obliged to flee their home..", so bringing them back home actually reduces the numbers of IDP. Voilà, problem solved! Ironically again, this was achieved using a milder form of pressure in form of economic incentives.

There was a large presence of different NGOs, state agencies and foreign donors doing a number of small and large projects in the district according to García-Godos (2003) who did fieldwork in Tambo in 1999. The governmental organization Program in Support of the Repopulation (PAR), which financed most of the reconstruction process in the area, would at first only give financial and in-kind support to war affected people who returned to their original com-

munities. Neither people who had remained in their communities, nor the IDPs who intended to stay in their host communities, would receive any help. This changed as late as 1997 when the discrimination that caused jealousy and conflicts between the groups became too obvious. But there were still no special initiatives to make life easier for the IDPs wherever they ended up, for example by buying land in the valleys, improving irrigation, constructing houses with a purpose to improve the connection between communities, etc. The aim of the practitioners in the field was quite simple: get the displaced people back to the communities of origin[7].

This often created a conflict between organizations and the displaced people themselves. A study by Stepputat and Nyberg Sørensen (2001) followed a group of people who fled collectively to the urban slums[8] of the city Huancayo in Central Peru. They applied but did not receive any help. However, they were offered support if they organized a return to their original community. The organizations in this case indicated (incorrectly) that no help would be given to the returnees if not all chose to return and this way turning group pressure on the individuals. The authors further stress that temporal migration is a part of the Andean culture. It was hence a viable option to let the family stay in town, while the men went back to work in the field in the main agricultural seasons. However, PAR put the return of the whole family as necessary condition to obtain support. The evaluation of PAR in PROMUDEH (2001) also underlines how people tend to "live on two feet", one in the countryside and one in urban areas. During my own fieldwork, I often came across people who had houses in different places. One in the community were the family lived and farmed the land, one in district capital where they send their elder offspring for (not obligatory) secondary education, to sell products in the market and meet friends to drink a bottle of beer in the weekends, and one in the department capital Ayacucho for alternatively higher education and business trips. The houses in urban areas further represent escape possibilities in event that the political violence erupts again.

[7] The present director of PAR (and former director of CEPRODEP, which pioneered the work on IDPs in Peru) Elisabeth Coral confirms return and not centralization in more efficient units to be the main aim in the reconstruction work. Besides the bureaucratic need for "simple solutions" other aspects play an important underlying role. (i) President Fujimori reduced coordination between state agencies in order to obtain direct power, for example by dissolving the Planning Ministry, which earlier had the coordinating responsibility. This made any connection between development in general and reconstruction less obvious. (ii) The Army emptied the countryside in the 1980's in order to remove potential guerrilla support bases. Later they gained control of the peasants who were organized in self-defense groups against SL. Their return would hence reduce the free movement of the guerrilla fighters in the highland. (iii) The return became the symbol of winning the war, the main card in the President election campaign of Fujimori in 1995 and 2000.

[8] "Young villages" is a common term for slums in Peru and it brings a positive connotation of optimism towards the future. With hard work and investments at both individual and community level, the neighborhood will become a lower middleclass area in due time.

It is hence not given that returning to the original communities is the optimal development strategy. Besides the effort by the community members themselves there is considerable public resources put into community infrastructure: schools, medical centers, public houses, churches, roads, water and sanitary systems, etc. Alternatively, this money could have been invested other places and in other projects. Reasoning and simple cost-benefit analysis of the different alternatives of which return is only one of many is conspicuously missing, not only in Peru but also at the international level.

To my knowledge, there is no economic literature on the phenomenon of returning communities after forced migration. There are few examples within other social scientific disciplines even though the refugee problem receives a lot of attention. The related term resettlement is in the literature given a different significance than return. It is used to describe the (forced) movement of people from the place of origin to a new and distant area (from A to B, and not going back to A again which would be the content of the term return). The reason for such movement is either violent conflicts or development projects like building hydroelectric dams. The latter is especially given consideration, probably as academic spin-offs from consultancies that are done in connection to the specific development project.

The resettlement communities in Zimbabwe described in the study of Barr (2003) are anyway close to the return community concept since the movement is a deliberate choice by the individuals. 18 out of 24 small communities in the study were created in the early 1980's on state confiscated land and the inhabitants are a mixture of former employees on the commercial farms and newcomers. The author conducted economic experiments and found that the trusting behaviour in the resettled communities was less responsive to variations in revealed trustworthiness. Her interpretation is that people in this situation are "community building", i.e. they are willing to involve in trust based projects even though they do no expect others to do their share since their intention is to teach their companions to trust others by making a good example themselves.

Hammond (1999) is an anthropological study of Tigrerian refugees that underlines the significance of basic economic conditions. Original community members had not only stuck together in the refugee camps of Sudan, but also when they were forced to return to Ethiopia. They willingly accepted to be resettled in sparely populated lowlands, rather than in their original highland district where the competition for agricultural land was strong. This way they could keep the community as a social and productive unit, while achieving access to more production

inputs. The author's impression was that the Tigrerian refugees were not very attached to the geographical spot of their original community as such, but rather considered the economic and social opportunities of the different alternatives at hand. She also stresses that the refugee experience made people more entrepreneurial as they had to search for new opportunities of survival. Being more open to new solutions, they would rather choose the unknown with a higher expected income potential than the original that would imply a tolerable but more secure income[9].

2.2 Return and social capital in Tambo

Members of the Maoist communist guerilla Shining Path (SL) bypassed all communities and attacked the police station in the district capital Tambo throwing dynamite and firing automat rifles early in the morning October 11th, 1981. This incursion marked the initiation of the civil war in the district of Tambo, about one year after the first violent SL attach in Peru. Two policemen and one peasant that happened to be in the police station were dead when the guerilla members left some hours later, the first of 498 war related deaths in the district estimated by CVR (2003)[10]. All 15,000 inhabitants of today were affected by the conflict one way or another. Houses were burned down, animals slaughtered, people forced to abandon their house, land was lost, etc. The idyllic highland area with 49 communities spread over a highland area of 335 km^2 - from the fertile valley bottoms at about 2,800 meter above sea levels to the naked pastures reaching the often snow-covered peaks at about 4,500 - was the very heartland of the conflict that lasted for nearly two decades in Peru. People still have problems freeing themselves from the grip of fear[11].

[9] Hammond (1999) however emphasizes how the refugees tended to look at the insecurity in the settlement process as a negative stress factor rather than a positive experience of creating a new society. She describes how people longed for fixed norms and rules that would make human behavior more predictable. This further supports that the return in my sample of communities in the Andes might have been driven by the same longing for known rules as perceived to have functioned in the past in their original communities.

[10] The appointment of the Truth and Reconciliation Commission (CVR) was one of the first initiative of the post-Fujimori government. It carried out a large-scale interview program in war-affected areas and concluded that about 70,000 people were killed in war related actions (with the guerrilla as the major culprit). This number is well above the 28,000 that had been the official figure until then. In the district of Tambo Antesana and García-Godos (1999) cooperated with the local Committee of Self-Defense (CAD) to make a similar registration four years earlier. Their result of 349 deaths and 65 disabled is in line with the CVR investigation since they did not include deaths caused by the Army because their motive was to apply for governmental compensations for guerrilla harassment.

[11] Technically, the conflict is still going on, as a few hundred guerillas are still active in some remote jungle areas. The capture of the main guerrilla leader Abimaél Guzman in 1992 was an important turnaround, but the guerilla war still affected Tambo for several years to come. As late as 1996 confrontations with SL groups lead to casualties and death of local peasants, and other sporadic episodes kept the population alert. The state of emergency was first lifted in 2000 and the military replaced by police (although special war-fare units) in the local garrison in 2003. The same year, a SL group made a spectacular attack on a construction site of the national

The saying "History is written by the victors" is probably a valid description of the post-war discussions in Peru. The successful quelling of the guerrilla uprising was the main trump card in the elections of 1995 and 2000 for president Fujimori. Shining Path is considered to have been exceptionally cruel, only comparable with the Khmer Rouge in Cambodia, even by traditionally left-wing revolutionary romantics in other parts of the world. The army on the other hand hit extremely hard during the first years of insurrection. Drafted soldiers from other parts of country - who often did not speak the Indian language Quechua nor understood the local costumes - were allowed to kill indiscriminately and punish whole communities collectively. The CVR (2003) indicates that both factions were about equally violent and cruel. However, the question of "guilt" is not relevant for the analysis in this paper. It is sufficient to note that the lawlessness and reign of terror in the area probably implied that there was only one possible strategy in order to survive: to play both sides at the same time in order to fall down on the victorious side in the end[12]. This fundamental insecurity breeds mistrust, as people could not be sure of their fellow community members anymore. Even family members could be informants for one of the sides. This was the reality in all parts of the district[13].

However, there is one major difference between the 49 communities that were part of the questionnaire survey conducted by the author in spring of 2002. Two thirds are return communities, i.e. abandoned completely during the war and where the population has returned afterwards, and one third are defined as resistant communities, i.e. its population has lived there throughout the conflict. Anecdotal evidence from Tambo and analysis by other social scientists in Peru indicate a fundamental difference in the process of both the breakdown and then the reconstruction of social capital for the two types of communities. People in the return communities tend to be more closely knit than the inhabitants in the resistant communities. This facilitates cooperation in various ways. People in return communities have a stronger sense of sharing the same destiny for better and worse. Highland communities were often the first

gas pipeline taking nearly 100 hostages in a neighboring district. The guerilla fighters were said to have passed undetected through Tambo and to have been given shelter for the night in one of the communities.

[12] There are accounts of several important CAD members who actually started out fighting for the Shining Path. Pretending to be neutral is nearly impossible during civil war. Loughna (1998) describes how a rural community in Colombia that officially announced neutrality in the ongoing conflict between the army, the left guerrillas and the right wing paramilitary forces ended up being badly treated by all sides. 37 community members were killed within three months. In Tambo were all defense groups inactive in 1989-1991 and the whole area declared a "red zone". Then CAD representative from neighboring districts infiltrated secretly to reorganize the groups again, see Fumerton (2002).

[13] As late as 1989-1991 all defense groups were inactive and the whole area declared a "red zone". Then secrete infiltration by CAD representative from neighboring districts were able to reorganize the groups again, see Fumerton (2002).

to be abandoned. This could happen because the peasants found the situation too insecure. More often they were forced to leave by the army who wanted to concentrate the population in places that were easier to control. This "scorched earth tactic" would leave no houses intact. The displaced were met by a deep mistrust by the residents in the resistant communities that were normally in the more fertile valley bottoms. Not only did they carry with them original prejudices against the more traditional highland peasants, but also considered them to be the root cause of the ongoing violence. IDP's were either suspected to be members of the SL, or at least to have sympathized with them earlier on. They were often isolated in their communities of refuge, had no land, little resources and were hence open for exploitation by the original residents. "We had access to an enormous amount of cheap workers in those days, and we made a lot of money by starting the more labour intensive onion production" as an original member of a resistant community told me. Incursions by SL, killing people or forcefully recruiting teenagers, could lead to serious conflicts between the groups after the guerilla fighters had left the scene.

The traditional system of communal work disintegrated under these conditions of mistrust. Working together with suspected SL sympathizers, for example by repairing irrigation systems or maintaining schools, would create suspicion and could hence be dangerous. Keeping to oneself was one way of minimizing the risk since the notion of collective guilt was strong especially in the earlier days of the conflict. Monje (2000) describes how on third of the population in a community suspected to be a SL stronghold in Tambo was killed indiscriminately - men, women and children alike - by the military in helicopters from the air. The survivors fled to the nearest community, but experienced complete isolation as the original inhabitants did not want to be associated with them in fear of being assaulted in a similar indiscriminately manner as well. Cooperation and common work in larger groups hence became the exception rather than the rule as it had been in the past.

The main wave of return took place in the mid 1990's, even though SL incursions still occurred sporadically. It would have been possible for the returnees to live in the resistant communities and keep on farming their original land by walking to the field for the day or staying overnight in improvised houses during the most intensive periods if they chose, since the maximum walking distance is about two hours[14]. The isolation and bad treatment of the IDPs constituted a strong

[14] Anthropologists often claims that the family members are spread on the different plots in order to protect the crop from theft in the Andes region. I seldom experienced such need for protection in this district, probably due low tension between communities today and all belong to the same ethnic group. Furthermore, such strategies do not actually prevent the choice of permanent housing in the valley bottom, the effect is rather the contrary.

"push" SC factor explaining their eagerness to break up from their "new" communities. This experience had further knitted people of the same origin together and this hence constitutes a strong "pull" SC factor. The combined effect was to make it easier to cooperate in order to improve their livelihood returning home rather than staying put. The very process of organizing the return further knitted people together since this was seldom an individual decision. People who had emigrated to the most distant places in the jungle or the cities were contacted through informal networks as radio and newspapers, and many then joined the movement. The resistant communities had little access governmental funds even though they too had more or less to start all over again, and they had hence less motivations to coordinate their actions[15].

There were also considerable numbers of people who had fled from the resistant communities during the conflict, but their return had a fundamentally different impact than in the return communities. These IDP had come home mainly from urban areas where they had become more educated and obtained more contacts. The people who had stayed resented giving up privileges - land and power - to people who "cowardly" had escaped not fighting for their rights as they had done, see Fumerton (2002) and Monje (2000) who made anthropological studies in some communities in Tambo. The process of integrating returnees from distant places ended in conflicts in the resistant communities, while knitted people together in the return communities. This creates a fundamental difference in how their social and economic activities are handled in their daily lives.

Other aspects are knowledge and external networks. Most people in the abandoned communities just moved down to the resistant communities, but a lot also went further to the jungle, to the district capital, department capital and Lima itself. More people living in the return communities hence have a history in distant places. These people have better knowledge of Spanish and have learned how the markets work. Furthermore, they have more contacts in the cities that might inform them market developments, prices, opportunities to obtain assistance from governmental and NGO sources and represent them in long distance trading operations, etc. The external networks of the community as such are simply larger. Furthermore, the attained knowledge and improved understanding of how a modern society works by the returnees from distant places is also more important. They constitute a larger share of the population and are more respected due to less power contests between groups within the community as discussed

[15] PAR changed strategy when this unfair treatment of different groups of war victims became too obvious and started to hand out food supplies, building materials, etc. to all communities that applied for it.

above. This should hence give more spillover effect by the returnees from distant places in the return compared to the resistant communities.

3 Empirical analysis in Tambo

3.1 Effects on income

Only the district capital were excluded when I made the questionnaire survey in the 49 communities of Tambo[16]. One or more authorities, either president and/or members of the community council, CAD, irrigation committee etc. was interviewed with a standard questionnaire about income potential, resources, institutions and cooperation within the community. The use of representatives made it possible for me to visit all 49 communities and make the interviews myself (just supported by a local research assistant in the few cases when translation from Quechua were needed). This statistical collection method makes the data more coherent and thus easier to discover inconsistencies by the respondents. Household information is further not necessary when the aim is to study how the community functions as a unit[17]. All figures in this analysis are hence average numbers per person living in the community.

Agriculture is the main economic activity in this highland region. Of total income for the whole estimated rural population (13,500 inhabitants) 48 percent is due to land cultivation, 36 percent animal herding, 7 percent other sales (often processed agricultural products) and 7 percent paid labour income outside the community. Paid labour constitutes a surprisingly low share of total income, as commuting to the jungle (cash crops, mainly coca) and urban areas (construction) is thought to constitute a pillar in their cash-economy[18]. Sales of agricultural products in fact seem to be more import for their integration to the market economy since on average nearly half of the crop was actually sold. The rather high level of market integration, between 25 percent and 87 percent sold of total agricultural production value, is surprising as the farmers on average only have 0.5 hectare of good land equivalents per person available. This

[16] In follow-up fieldwork, spring 2004, there were about 8 more on the official list of communities made by the Municipal authorities. Some were genuine returns, while others were probably a formal split between sectors of a given community as for example illustrated in ACRAVIMP (2003). This was done to appear as a union of communities rather than a single community, since the government and NGOs have in the latter years become more willing to support a group of communities rather than a single community (even if it is larger).

[17] Household surveys might actually give rise to serious multicollinearity problems if social capital is actually a characteristic of the society rather than the individual.

[18] One explanation is the minimal amount of wage labour within the communities. Work exchange is supposed to take place through often traditional and often complex transactions not applying money as the mean of exchange, see discussion of work exchange in the companion paper Wiig (2005).

indicates that pure subsistence farming is something of the past as the peasants have become more integrated to the markets[19].

Due to the overwhelming importance of the three agricultural related sectors, it is reasonable to use the normal production inputs for agriculture as explanatory variables in a regression model explaining total income. The results from a standard OLS regression that explains total income and its components is hence as follows in table (1) below:

Ln(*-income)	Total		Agri		Animal		Other sales		Work	
Variables	Coef.	St.d.	Coef.	St.d.	Coef.	St.d.	Coef.	St.d.	Coef.	St.d.
Constant	6.10***	0.42	4.99***	0.70	5.09***	0.44	4.34***	1.19	2.64*	1.39
ln(Land)	0.22***	0.07	0.16	0.12	0.20**	0.07	0.03	0.19	0.21	0.17
ln(Water+0.5)	0.92*	0.51	1.51*	0.84	0.76	0.53	2.87**	1.21	-1.57	1.86
ln(Ecology)	0.37	0.29	0.70	0.48	0.02	0.31	-0.16	0.87	0.01	0.67
Road	0.34*	0.18	0.72**	0.30	0.10	0.19	0.71	0.55	0.41	0.38
Return	0.35*	0.21	0.41	0.34	0.63***	0.22	0.62	0.65	-0.09	0.46
N	49		49		49		49		49	
R^2	40%		29%		43%		26%		12%	
$Adj\ R^2$	33%		21%		36%		12%		-6%	

Table (1): Results of a OLS regression on log-linear models. The logarithmic transformation of the *Total income* and the four subcategories *Agri*, *Animal*, *Other sales* and *Wage* income per person is explained by the logarithmic transformation of *Land*, *Water* and *Ecology* where the latter is an indicator of soil fertility. *Road* is a dummy for road connection, while *Return* is a dummy variable equal to unity if it is a return and not resistant community (see variable description in table A.1 in the appendix). *** indicate significant at 1 percent level, ** at 5 percent level and * at 10 percent level. *St.d.* is the stand deviation of the estimated coefficient.

Each model has a separate type of income. *Income*; average total income per person which is calculated by dividing the calculated total income for the community by the number of inhabitants (all average figures are calculated the same way). It is an aggregation of the following different sources of income. *Agri income* is the cultivation of crops for both sales and home validated at farm gate prices. *Animal income* is animal husbandry. *Other-sales* is the production of goods for sales (mainly processing of farm products like cheese and freeze dried potatoes and some handicrafts). *Wage income* is wage labour outside the community, which normally implies outside the district of Tambo (as discussed above).

[19] Sales varies a lot depending on the harvest. A good harvest in 2002 made people sell a lot to the market (and similarly low prices), while there were for example hardly any potatoes to be bought in spring 2004 due to a disastrous harvest. The farmers sold minimal even though the prices increased more than five times.

The model is log-linear due to an assumed homogeneity of degree one in the main production inputs. *Land*; denominated in units of cultivated land equivalents per person. The shares of productive lands are supposed to be different in the three types of land (valley bottoms, valley slopes and highlands). *Water*; the calculated amount of irrigation water available per person. About one third of the communities do not have any irrigation system at all. A constant is hence added to the variable in order to make a log-linear transformation and this transformation implies that the model differs slightly from the homogeneity assumption. *Ecology*; indicator of soil fertility calculated on the weighted average of crop lands in valley bottoms, i.e. lowlands are supposed to be more fertile than highlands.

There are no figures of labour and capital in the data set due to problems in collecting reliable information on these inputs. However, this omitted variable bias is probably of minor importance. People tend to work all day anyway (with different productivity) and farmers who are rather poor in this district only use traditional tools like the hand plow (Chaquitaclla). There are more draught oxen in the valley bottoms and this bias implies that the estimated effect of *Return* is actually lower than it should have been. A more extensive discussion of the omitted variable problems in this data set is given in Wiig (2005).

The productivity of the basic production inputs will however depend on several aspects of human capital, social capital and public infrastructure. These are added as scale variables in the income function that is log-linear in the main production inputs. *Road*; a positive dummy for community that is connected with roads in contrast to footpaths and animal tracks. The road connection does not only imply cheaper transport of products to and from the community, but also easier access to information. *Return* is defined above.

The results of the OLS model estimating total income is given in the first column in Table (1). All coefficients have the expected sign and *Land*, *Road* and *Return* are significant at better than 10 percent level. The results are considered to be reasonably close to the expectations as the degrees of freedom is rather small in this sample of 49 communities. The coefficients then represent elasticities in this log-linear model. The sum of the coefficients for the basic inputs is 1.5. The literal interpretation of increasing return to scale is not realistic, but the sum is not very far apart from the more reasonable assumption of homogeneity of degree one. The relative size between coefficients is however realistic with the major emphasis on irrigation water, which constitutes an important production input in this rather dry district. The coefficient value for *Return* is surprisingly high. It implies that people in a return community earn 35 percent more

than people in a resistant community given the same amount of basic production inputs.

The econometric models do not distinguish between the social capital and human capital effects of *Return*, and there are no variables in the data set that might reveal their relative importance. However, it is possible to run the regression model on the separate income components. The results reveal that it is especially income from animal herding (*Animal income*) that is higher in the return communities (see table 1). The natural conditions for animal husbandry are probably better in the return communities since most are in the highlands where the pastures are better and more plentiful. However, the pasture area is already controlled for with the inclusion of the variable *Land*. The effect should hence be due to something else, e.g. social capital and human capital. The estimated coefficient for *Return* has a positive sign for the other agricultural related income components *Agri income* and *Other sales* but the significance is rather low. It is hardly possible to trace any difference between the two types of communities for migrant labour income (*Wage income*). This implies that migrant work income is equally important in all communities. On the other hand the rather low average share of monetary income from wage labour of 7 percent (see table A.2) indicates that off-farm work is less important than what is commonly assumed in the literature on Andean peasants. The different income sources are expected to be negatively correlated due to a substitution effect. If natural conditions for farming are missing, people will tend to put their efforts on animal herding instead, try to make a living producing handicrafts or use their labour as migrant workers.

It might further be argued within the Malthusian tradition that population size depends endogenously on productive resources like land, water, etc. The family will multiply until the carrying capacity is reached and then some will be forced to leave. In this case the intended analysis would be less interesting as the average income per person would be just above the survival level in the long run in all communities. The large spread in income in this data set indicates the opposite. Modern migration theory finds migration to depend positively on income. The extended family invests by sending some of their members to the cities in order to diversify income. Migration will then deepen the difference between poor and the not so poor, since the Malthusian argument is valid for the former and there will be more production resources in the latter. Since my econometric analysis controls for production inputs will this argument not matter much in one or the other direction. Other sources of bias in the estimated coefficient for *Return* are more important. I will in the following argue that they probably do not represent a serious problem in this data set.

The first objection is a simultaneity problem between income and being a return community in the decision of abandoning the community in the first place. Since a left wing guerrilla nearly by definition would harass "rich" communities more than poor and more often force them to leave, it becomes natural to assume return communities to have higher income potential. Even though rich individuals fled more easily, the same does not apply at the community level. The communities were most often abandoned voluntarily and collectively due to the general insecurity created by incursions of both the Army and SL. Compulsive abandonment was actually most often induced by the army. Their "scorched earth tactic" was applied in the certain geographical areas they found especially important to prevent guerrilla support.

The second objection is a similar simultaneity in the selection of communities choosing to return. Refugees are often assumed to go back if the economic basis is sound, but stay if they do not expect a better living back home. The three main reasons why this potential positive simultaneity is not a problem are as follows: (i) Nearly all communities are actually resettled. The 49 communities included in my sample constitute nearly all the communities included in list of pre-war existent communities given in Vílchez Amésquita (1961). (ii) People from the few communities that are not resettled are incorporated in other communities, both resistant and return communities. This "merger" hence implies that most land is utilized and that the population (as well as land) has increased in some communities. (iii) Most return communities are anyhow situated in less favorable ecological zones than the resistant communities. The regression model further controls for production inputs and market connection. There is no reason to believe that income should be higher in the return communities than in the resistant communities, even though it should be higher than in the few communities that are not resettled at all.

The third objection is that people who return represent the more workable share of the population. Since labour is not included in the regression model, a positive correlation between the latent variable and *Return* will give a positive estimation bias for the coefficient of the latter. This might have been true very early in the return process as the men started the reconstruction process by building provisional housing. Woman, children and elderly soon followed. Their return was actually a prerequisite to obtain further governmental and NGO assistance in the reconstruction process according to Stepputat and Nyberg Sørensen (2001) and my own personal interviews with PAR representatives. Still, war widows and disabled have probably been less able to return and have chosen to carve out a living in the resistant communities or more distant places. However, a negative selection mechanism is also present. The most able did probably

prefer to stay on wherever they settled down. Anecdotal evidence shows that most returnees did not acquire major production assets neither in the resistant communities, the jungle nor the cities.

The fourth objection is a potential difference in soil productivity since the land was supposedly laid idle during the war. This latent variable problem implies a positive estimation bias in the *Return* coefficient. However, many people seeking refugee in the resistant communities kept on farming the land in their original communities. Many were willing to walk for hours in order to reach the plot and then work during the day until returning in the evening. This way it was possible to escape if either the Army or SL appeared. The animal herds were on the other hand decimated as the warring factions slaughtered animals to feed themselves. Furthermore, there were many accusations of plain theft by SL, the Army and peasants both from neighboring communities as well as fellow community members, in order to sell the animals to the market in this age of lawlessness. The peasants were further forced to take the animals home for the night and this way prevented them from using the more distant pastures. But the fallow effect is probably less important since the pastures even close to the resistant communities are not severely degraded by overgrazing anyway. Differences in governmental financial support would also bias the result if the money were used to purchase production inputs not included in the econometric model. However, the return communities needed to spend more money in the reconstruction and the total effects should hence be less use of such production inputs like fertilizers.

There is hence no reason to suspect any estimation bias in the simple log-linear regression models given in table 1 above. The models could be expanded by other variables that might affect income - for example work exchange and other social capital effects as shown in Wiig (2005) - but this approach will lead to a unnecessary reduction in degrees of freedom in this small sample data set.

3.2 Effects on cooperation

The discussion above emphasizes social capital and human capital as the link between *Return* and the different sources of income. There are unfortunately no indicators of human capital in the data set. On the other hand, community institutions and traditional cooperation constituted the core of the questionnaire survey. The results from separate regression models explaining cooperation indicators and simple correlations with *Return* are given in the table 2 below.

Cooperation	Work exchange		Assembly		Infrastruct		Voluntary		Water	
Variables	Coef.	St.d.	Coef.	St.d.	Coef.	St.d.	Coef.	St.d.	Coef.	St.d.
Constant	262***	56	1.07	0.15	25*	13	0.26	0.18	-0.09	0.13
Ecology	-67***	19	-0.03	0.05					0.04	0.05
Ass-sanc	12	25	-0.11	0.07	11	8				
Inequality	-44	58	-0.02	0.15	-2	18	-0.63*	0.33	0.17	0.16
Road	2	23		0.06	-10	7	0.23*	0.13	-0.05	0.06
Organization	-38*	22	-0.07	0.06	-16**	7	0.24*	0.12	-0.01	0.07
Return	-39	25	-0.05	0.15	10	7	-0.13	0.13	0.07	0.06
Irr-sanc									0.07	0.08
N	49		49		49		49		33	
R^2	35%		10%		28%		21%		19%	
Adjusted R^2	26%		0%		20%		14%		0%	
Corr(Return,*)	-0.04		0.00		0.30		-0.30		0.24	

Table 2: Indicators of traditional cooperation in OLS regression models (see variable definitions in table A.1). The given results are the coefficient value and the significance of their t-value as the probability of wrongly rejecting the zero-hypothesis that the coefficient value is zero. N is number of observations, R^2 and *Adjusted* R^2 are measures of the models explanatory power, while Corr(Return,*) is the simple correlation between Return and the different traditional cooperation indicators. *** indicate significant at 1 percent level, ** at 5 percent level and * at 10 percent level. *St.d.* is the stand deviation of the estimated coefficient.

Return communities hardly cooperate more than the resistant communities when I control for characteristics that are common in the literature to explain traditional cooperation, such as ability to sanction, inequality, market connection, institutional organization and natural conditions. The dummy coefficient for return is actually significantly negative in the regression model explaining reciprocal work exchange (*Work exchange*) between individual community members. This might actually have a positive income effect, as the cooperation level is often higher than what is economically optimal. The regression analysis in the companion paper Wiig (2005) gives a hump-shaped effect of work exchange on income and the marginal effect is negative for 40 percent of the communities. The effect is significantly positive on a 10 percent level for the days of participation in public works (*Infrastruct*) like construction of roads, schools, public houses, etc.

Both the coefficient for assembly turn-up (*Assembly*) and irrigation system (Water), the latter which is supposed to a have a direct effect on income, are on the other hand insignificant. Assembly turn-up is often used in the literature as an indicator of social capital, but the estimated

effect is insignificant in this data set. It turns out that it is probably not a good social capital indicator in Tambo. One reason might be that absence due to work outside the community is accepted as long as the individual pays a working day's wage in fine. This implies that more economic activity actually reduces the assembly turn-up rate and hence constitutes a simultaneity problem to be solved in the econometric analysis. Irrigation water is an important input factor as shown in table 1 which is set by natural conditions and the quality itself. Only land inequality has a significant impact on this variable and *Return* has no real impact.

The significant effect of return on total income hence does not seem to be channeled through the variables of traditional cooperation included in the questionnaire. However, other social capital aspects that unfortunately were not included in the survey might matter more. Peasants in the Tambo communities are very poor and exposed to rather large income swings due to changing natural conditions. Even though they are living in the same community, the idiosyncratic individual element is quite large due to different plots, plants and access to production inputs like irrigation water, etc. The closer to the survival line, the more important are insurance arrangements between the individuals[20]. Such arrangements are in the social capital literature often supposed to emerge endogenously. Lending and monetary support is also more common when social capital is high. A more efficient use of this "resource", for example through the purchase of commercial fertilizers to be applied on the plots where it yields the most, will hence entail higher average income. Rent seeking and lobbying for support from government and NGOs was important during the reconstruction period. The very process of organizing a collective return gave a better insight to how these help organizations work and how to lobby for their support, for example by collecting contributions for the costs of sending a representative to influence the decision makers in governmental and NGO offices in town.

These indirect social capital effects are in some cases difficult to distinguish from human capital. It seems reasonable to assume the return communities have a relatively larger share of the population living outside the community. The correlation between the number of people who have left to a distant place like the jungle or the cities and stayed is high. There is both a social capital and human capital side to this. Contacts outside the community are important to get information and this hence increases knowledge and represents networks to do things on the community members' behalf, either as counterparts in long distance trade arrangements or as

[20] People who have had their crops destroyed, for example by local frosts, can often take part in the harvest of others and get a disproportionate large share of the products, compared to the work contribution, according to Blum (1995).

a business exchange in itself. Monetary remittances are often thought of as gifts. They might actually be considered as parts of exchange operations, for example a monetary contribution as brothers and sisters take the daily responsibility of the family's elders. Or they function as a part of a common agricultural production operation, where they put in the money of the purchased inputs and then took care of the marketing later. A separate regression model using general emigration and not return gives some evidence of this effect, see table A.3 in the appendix. The coefficient for *Emigration* (the number of community members who have emigrated to distant places and not returned compared to the population today) is positive for both agricultural income and total income, but only the former is significant at more than 10 percent.

An interlinkage variable between *Emigration* and the dummy for private land ownership in the community denominated *Emig-Org* is negative in both regression models, see table A.3 in the appendix. However, only the effect on agricultural income is significant at an acceptable level. This result indicates that communities with common property rights to land, i.e. Legally Registered Peasant Communities, benefit more from their emigrants than people in communities with private property rights to land. The bonds to the emigrants are for some reason tighter. At the surface both systems are similar. Even with private property to land, the individual will still depend on the acceptance of the community at large since coercive means by the state are missing. Each plot is individually controlled under common property rights to land to such degree that it is even passed on within the family in bequest.

However, anecdotal evidence indicates that the two legal property systems influence the contact with emigrants differently. (i) The community with common property rights to land is obliged to give returning emigrants a possibility to support themselves, for example a piece of land. The emigrants are hence more willing to support their community fellows as an insurance mechanism in case they have to return at a later stage. (ii) An advanced land entitlement program financed by the Inter-American Development Bank (IDB) has just started. Anyone who can prove they have farmed a plot of land for more than five years is given the land title. Emigrants, who either lent their plots to family, or rented it to neighbors, might suddenly discover that someone else claims their property and thereby might actually end up loosing it. Heavy quarrels and broken ties with family and fellows in their original community have often been the result. No such entitlement program has taken place in the Legally Registered Peasant Communities since land is already entitled to the whole community as a legal subject. There is hence no increase in conflicts between emigrants and inhabitants of their old communities due to external interference in matters of the community. Mutual help relationships are thus lest

likely to be broken.

4 Conclusions

Civil war and armed conflicts still ravage many regions in the developing world. People living in the countryside are especially exposed and seek refuge in more central areas. This could actually speed up the process of development as people are concentrated to a smaller area, something that is thought to be consistent with a modern society based on free market economy. When sunk cost of breaking up from the old traditional life is paid, a new life is possible. It is hence puzzling to find people actually going back to the most remote areas when peace returns. From the development perspective it is a "golden opportunity" to speed up the modernization process lost. On the contrary, the process is probably further delayed compared to a normal evolution since people tend to invest more in the reconstruction of their communities than they would have done under normal circumstances. Without conditions for a livelihood present, they will sooner or later end up leaving the communities individually. However, rather than moving to the neighboring communities they will then go to the big cities where overpopulation is a real problem.

The major contribution of the econometric analysis in this article is to show that the choice of return probably depends on something else that the access to basic production inputs like land, water, etc. The significant positive coefficient for the dummy representing return communities compared to resistant communities shows they are actually able to earn more with a given amount of resources. Furthermore, this econometric result is probably not contaminated by the self-selection bias that normally appears in migration studies. The displacement in the Peruvian highlands represents a "natural experiment", as the decision of both fleeing and afterward returning is probably exogenous and independent of the income level. Harassment by the guerrilla movement Sendero Luminoso (SL) and the Army took place independent of income level in the community, and nearly all abandoned communities have later been populated with returnees.

However, we should not necessarily interpret this result as evidence that it is good to send people back to their places of origin. The main problem of the centralization during the war was that different communities were forced to live too close to each other. The result was a deep mistrust between them and the inability to cooperate representing a "push-SC" factor making people return to their original communities even though it was possible to actually farm their old

land from their new residences. The "pull-SC" factor was the expected population homogeneity in return communities. A contrary process took place in the resistant communities leading to less trust. The return of IDPs from distant places did in contrast then create conflicts in the resistant communities since their war experience was so different from the people who had stayed behind.

This experience illustrates the importance of segregating the population into sub-groups of people who trust each other and are able to cooperate. The resulting positive social capital and human capital effects could have been achieved in a more efficient way than encouraging people to go back to their original communities. The geographical site itself can be compared to a "meeting point" sign. People returned because they knew they will find fellow community members to trust in this place. An intervening government could try to create this "meeting point" effect in a place that is more in line with economic development, for example by constructing roads only to given places, purchasing land and construct irrigation channels in the right spots instead of supporting return by paying for building materials. Then, soft persuasion might convince the community to resettle not to far from the other communities[21]. This way they would be segregated enough to achieve cooperation, but still enjoy the economies of scale for example by a sharing larger and better functioning schools with the others communities. New generations would then probably learn to trust people from other communities too in due time.

[21] Heavy-handed top-down planning experiments, for example the creating of the Ujamaa villages of Tanzania, have discredited governmental intervention and social engineering in rural areas. It is hence important to remember there are different degrees of interventions. Even if people are free to move where they want, the construction of infrastructure will actually influence their choices. Communication between the government and the people, even when they are left with no actual choice and the meetings only serves as "window dressing", might facilitate the process and reduce the degree of resistance to such changes in the population. The reconstruction of the northern part of Norway where everything was burned down during the last phase of the World War II is an illustrative example of how enforced changes might backfire. The government at first meant to centralize this population of fishermen in just a few large cities and then introduce large trawlers as the main fishing technology. This proposition only fueled the locals' determination to rebuild their houses on the tofts of the old ones, just as scattered as before. When economic realities hit a few years later, many people emigrated from their new built houses according to Brox (2005).

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5 Appendix

5.1 Variable definitions

Variable	Definition
Total Income	Income from all sources, #soles/year/person
Agriculture	Income from agriculture crop production, #soles/year/person
Animals	Income from animal husbandry, #soles/year/person
Other sales	Income from sales of products, #soles/year/person
Wage	Income from wage labour outside community, #soles/year/person
Households	Households in the community, #households
Population	Persons including children in the community, #individuals
Work exchange	Reciprocal work arrangements per male adult, # days/year
Assembly	Household turn up at community assembly, %
Infrastruct	Work on public infrastructure, #days/adult/10 years
Voluntary	Existence of music or dance group, dummy
Road	Community with road connection, dummy
Ecology	Weighed share of land in valley bottoms, indicator between 1 and 3
Land	Estimated sum of valley bottom crop land equivalents, #hectares
Water	Water, amount needed to irrigate well # hectares of land
Return	Communities first abandoned and then repopulated, dummy
Emigration	Number of emigrated people compared to population today, share
Organization	Registered peasant com. with common land property rights, dummy
Ass-sanc	Communities fining households not present at assemblies, dummy
Inequality	Land inequality in community measured with gini coefficient, %
Irr-sanc	Communities fining households not participating in irrigation work, dummy

Table A.1: Variable definitions

5.2 Variable summary

Variable	Mean	St. dev.	Min	Max
Total Income	436	279	41	1468
Agriculture	210	206	7	955
Animals	161	124	0	719
Other sales	32	60	0	366
Wage labour	32	48	0	259
Households	60	37	12	180
Population	277	224	50	1200
Work exchange	90	79	0	300
Assembly	0.83	0.18	0.2	1
Infrastruct	25	23	0	75
Voluntary	0.22	0.42	0	1
Road	0.48	0.50	0	1
Ecology	1.74	0.57	1	3
Land	0.52	0.62	0.01	2.67
Water	0.11	0.15	0	0.76
Return	0.63	0.48	0	1
Emigration	0.28	0.39	0	2
Organization	0.63	0.48	0	1
Ass-sanc	0.79	0.42	0	1
Inequality	0.35	0.18	0.03	0.67
Irr-sanc	0.84	0.36	0	1

Table A.2: Summarizing information on main variable values. Data set consists of 49 communities in Tambo with the exception of *Water* and *Irr-sanc* where the number of observation is 33.

5.3 OLS with Emigration

	ln(Income)		ln(Agri-income)	
Variables	Coef.	St.d.	Coef.	St.d.
Constant	6.52***	0.36	5.44	0.57
ln(Land)	0.24***	0.08	0.11	0.12
ln(Water+0.5)	1.00*	0.54	1.94**	0.85
ln(Ecology)	0.18	0.28	0.46	0.45
Road	0.22	0.17	0.65**	0.27
Emigration	0.26	0.28	0.97**	0.44
Emig-Org	-0.34	0.34	-0.76	0.54
N	49		49	
R^2	37%		34%	
Adjusted R^2	29%		25%	

Table A.3: OLS regression models on *Income* and *Agri* (see definition of variables in table 1), were *Return* is exchanged for emigration related variables, i.e. *Emigration* is the number of community members who have emigrated to distant places and not returned compared to the population today and *Emig-Org* is the interlinkage variable between *Emigration* and a positive dummy for private land ownership in the community.