

A socio-economic characterization of returnee households in the Nuba Mountains*

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ABSTRACT

The Nuba Mountains of Sudan, one of the most isolated areas of the country, have been affected by long periods of civil war. After the signature of the Comprehensive Peace Agreement (CPA) in 2005, hundreds of thousands of displaced persons started returning to their communities of origin, creating a challenge for the post-conflict recovery. In this study we present a detailed analysis of unique data gathered in 8 villages of the Nuba Mountains in 2008, during a short-lived interwar period. Our aim is to assess the characteristics of the returnee households vis-à-vis non-displaced households, and we find important differences between them. Returnees are more likely to have an extended family in the village and have clearer property rights over their lands and dwelling. Returned households have fewer assets than those who stayed during the conflict, both in terms of the size of the land and livestock ownership, and are less involved in the production of cash crops. Even though returnees seem to have worse economic conditions, we find evidence that they tend to have better health outcomes than *stayers*. We show preliminary support to the idea that the latter result may be related to the targeted support received from NGOs, as well as better sanitation habits and other attitudes possibly formed during displacement. Our results are not different in villages formerly controlled by the rebels as compared to those controlled by the government.

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1. Introduction

One of the most important effects of conflicts is the forced displacement of large civil population. According to UNHCR, in 2011 more than 42 million persons were either internally displaced (IDPs) or have crossed an international border and become refugees. When conflicts end, however, many of those who have left their homes return to their place of origin, facing the challenge of rebuilding their lives in post-conflicts areas where infrastructure and other public goods are scarce or inexistent. In most cases, returnees find that their properties and assets have been destroyed or seized by others.

In the present study we aim to contribute to the analysis post conflict recovery, analyzing a detailed household-level data collected in 2008 in the Nuba Mountains, Southern Kordofan. This region was one of the most affected during the latest civil war in southern Sudan, which lasted over two decades and ended with the signature of the Comprehensive Peace Agreement (CPA) in 2005. It is estimated that, in total, close to 4 million people were displaced during the conflict, and that half of them returned to their communities of origin in the first three years after the end of the hostilities (IOM, 2009). In the state of Southern Kordofan, 25% of the total population was constituted by returnee households in 2008, with around 280,000 returnees in the Nuba Mountains (IOM, 2009).

Previous studies have shown that displacement can have important social and economic consequences in the affected households. Ibanez and Moya (2010) show that in Colombia displaced households are behind others in terms of capacity to generate income, smooth consumption, and invest. In Northern Uganda, Fiala (2012) shows that returnee households have lower consumption and asset holding than the non-displaced comparison group, and that this is the case particularly for the poorest households. Outcomes, related to health and nutrition, are also affected, as in the case of food consumption and calories intake, which according to Verwimp (2012) are lower for returnees in Burundi.

But the consequences are not necessarily negative. For instance, Kondylis (2008) finds that in Rwanda returnees are more productive in agriculture than those who stayed during the conflict, an effect that cannot be attributed only to the special assistance to the former. One alternative to explain positive effects is the fact that households who return are different to those who decided to stay in the IDP camp or in the host community. For instance, Bonzzoli et al. (2011) show that households returning to their communities chose different economic activities than those staying in IDP camps in Uganda. Another alternative is that households returning have a change in attitude given the exposure to the host community or assistance inside the IDP camp. For instance, Hynes et al. (2002) find that, in a large dataset from 52 camps in 7 countries, refugees and IDPs had better reproductive health outcomes than the people in their country of origin and in the host community.

For the present study, we compare the social and economic conditions of returnee households vis-à-vis the non-displaced population (henceforth *stayers*) in 8 villages of the Nuba Mountains. The communities differ in terms of their status during the war, either controlled by the NCP (Government of Sudan) or the SPLM (the rebel group Sudan People's Liberation Movement). Our findings point out to important differences between returnee and stayer households in a number of dimensions. While many characteristics of the household are similar between both groups, we find that the returnees are more likely to have an extended family in the village and have clearer property rights over their lands and dwelling. Returned households have fewer assets than those who stayed during the conflict, both in terms of size of the land and livestock ownership. We also find differences in the composition of agricultural production between the groups, with stayers more involved in the cultivation of cash crops and returnees relying on staples. The data further indicates that returnees tend to have better health outcomes than the rest of the village, given they are less likely to have a member of the household affected by serious diseases. We relate this finding to the targeted support received from NGOs, as well as better sanitation habits and other attitudes possibly learned during displacement. Most of these differences are observed in all the villages, independently if they were formerly controlled by the NCP or the SPLM.

Our results must be taken as a description of the characteristics of returnee population in comparison to the stayers, but not as causal effects of displacement and return. Even though the data we analyze is unique in terms of including detailed household-level characteristics of Nuba villages heavily affected by the civil war, we do not have information about the situation of these households previous to the events which unleashed their exit from their community of origin. This drawback, jointly with the typical limitations of data collection in post-conflict areas, makes it difficult to address the causal direction of the conditional correlations which we describe. Nevertheless, we still think that our results are important in the understanding of the social and economic post-conflict conditions of the Nuba Mountains, particularly in light of the renewed conflict situation in the region.

The rest of the paper is organized as follows. Next section summarizes the main features of the conflict in the Nuba Mountains in the period of study. Section 3 introduces and describes the main data to be used in the analysis. Section 4 presents our main results, while a last section concludes.

2. The conflict in Nuba Mountains

2.1. Background

The Nuba Mountains, also called Nuba Hills, are a region located in the state of Southern Kordofan in the southern margins of current Sudan,¹ which, broadly defined, covers over 80,000 km. The area is inhabited by a majority Nuba population, often understood as one people but who in reality comprise of over 50 distinct ethnic communities with a number of distinct languages, dialects, and religious practices (Ylönen 2009).² However, the Nuba are often considered to constitute their own “social space” or “social world” (Komey 2010), due to the largely shared history of external oppression and subjugation involving violent dispossession and slave-raiding.

Although little is known about their origin, it has been established that the Nuba were driven to their current highland region throughout centuries of encroachment of Arabized Muslim nomadic groups. The Nuba practice mainly seasonal rain-fed subsistence farming and animal rearing. Although the climatic conditions that allow only small harvests even with the adoption of terraced farming methods, and intense slave-raiding and armed conflict, have maintained small population size in the Nuba Mountains (Ylönen, 2009), the total Nuba population today has been estimated at around 3,7 million majority of which majority lives in the region.

During the time of the Anglo-Egyptian Condominium (1899-1956), the slave-raiding practiced for centuries in the region largely ceased. However, the Nuba were instead subjected to military “pacification” campaigns and subsequently isolated according to the “Southern Policy” aimed at insulating Sudan’s southern territories, which the colonizers deemed as inherently culturally distinct, from northern Sudanese influences. In the course of decolonization of Sudan, some Nuba intellectuals began increasingly to challenge the institutionalized Arab-Muslim dominated hierarchy, and formed a political party, the General Union of the Nuba Mountains (GUN), which was eventually purged along with other opposition parties as a result of the 1969 military coup that brought the regime of Jaafar Nimeiri to power.

2.2. The civil war (1983-2005)

The early 1970s were times of relative prosperity and rapid economic development in some parts of Sudan. In the Nuba Mountains mechanized agricultural schemes were introduced and some Nuba found more employment in the area as well as elsewhere in northern Sudan. Yet, the aggressive expansion of

¹ Until the break-up of Sudan and the independence of South Sudan, Nuba Mountains were located in the geographical center of the country.

² The Nuba arguably form ten distinct linguistic groups (MacDiarmid and MacDiarmid 1931: 160-1), and they practice a number of religions, mainly Christianity, Islam and traditional beliefs.

mechanized farming threatened Nuba customary land rights and their livelihoods based on subsistence farming. This generated resentment which was heightened by the Baggara nomads', deprived from their pasturelands by the large-scale mechanized farms, guiding their cattle to Nuba lands and destroying crops. As a result, the relationship between the Baggara and the Nuba deteriorated. This situation coincided with re-strengthening of the Nuba underground political leadership during Nimeiri rule when Sudan had a one-party system. In this context, the Nuba intellectuals continued to be largely excluded from political positions, in part also due to the attitudes of the northern "Arab-Muslim" politicians, which led to frustration among them. This frustration led to a number of clandestine groups among Nuba leaders and inspired subversive activities against the state.

After the war in southern Sudan broke out in 1983, some Nuba leaders had become increasingly inclined to join. This was in part due to the long contacts between some Nuba intellectuals and the rebel leaders of the Sudan People's Liberation Movement/Army (SPLM/A) in southern Sudan, led some of the former to join the war in 1984. After an SPLA attack on a Baggara camp in al-Gardud in July 1985, the latter began organizing militias to attack the Nuba and conflict intensified. By the end of 1980s the SPLA-Nuba had fully established in the Nuba Mountains.

In 1989, the National Islamic Front (later the National Congress Party, NCP) took power in an army coup. In the early 1990s, as part of its counter-insurgency campaign which was declared as *jihad*, this Islamist government initiated an orchestrated effort to eradicate Nuba culture and Arabize and Islamize the Nuba Mountains (African Rights, 1995). Part of this campaign was targeted attacks on civilians to cause displacement to the government-run IDP camps, known as 'peace villages', where conditions of captivity and forced labor prevailed. According to some observers, in September 1992 these 'peace villages' numbered ninety one and contained over 160,000 persons, being not much different from concentration camps due to high malnutrition and ill-health, partially mitigated by the presence of international NGOs and UN agencies (Bradbury, 1998: 465, 467). In fact, many Nuba women in these villages became concubines of soldiers guarding the camp and bore children for them.

Overall, the conflict was devastating for the Nuba who fought in relative isolation from the outside world against the much more powerful Sudanese regime. Thousands of Nuba sought refuge, either in northern Sudan or abroad. Yet, the Nuba as a collective survived, and in January 2002 a ceasefire agreement was signed for the Nuba Mountains as the first of a series of treaties that led to the Comprehensive Peace Agreement (CPA) in 2005 that brought an end to the war in southern Sudan. The ceasefire agreement and the relative peace enforced through a remarkable cooperation between the former warring parties ended the large-scale violence. The Nuba Mountains was divided between the, much larger, NCP government

controlled and SPLM/A-Nuba administered areas with two distinct administrative, educational, and judicial systems (Ylönen, 2009).

After the 2005 CPA, a massive return to the Nuba Mountains began as many sought to return to their ancestral lands. By 2008-2009, almost 280,000 had returned to the Nuba Mountains and the region hosted approximately 60,000 IDPs (IOM, 2009). The returnees usually were forced to choose sides, depending on the group which controlled the community during the war.

2.3. Recent developments

After the CPA, the state of Southern Kordofan was designated altering governorship between the Sudanese governing party, the NCP, and the SPLM/A until general elections scheduled for 2010 would be held, and granted a “popular consultation” on the willingness of the population to be part of Sudan or Southern Sudan if the latter becomes independent in a referendum for self-determination. The delay in elections due to the contested population census conducted by the government provided a context for violence which escalated further after the independence of South Sudan in July 2011. The SPLM/A in the Nuba Mountains became one of the main opposition groups capable of staging an armed challenge to the government of Sudan locally, and it engaged in an armed struggle as a central armed wing of the newly formed SPLM/A-North. The relapse into violence in the Nuba Mountains a month before the independence of South Sudan (IRIN, 2011; OHCHR, 2011) marked the closing of the “peace window” and reversed the flow of returnees as thousands of people again were forced to leave their homes. By the end of 2011 the estimated number of IDPs in Southern Kordofan had reached 200,000 (IDMC, 2011).

The resettlement of the large returnee population was part of the issues that lead to the restart of the conflict, putting a strain on resources, particularly land, given the little development or improvement in the quality of life for the local people after the signing of the CPA (Abdel Rahim, 2010). During this period, the progress in the SPLM/A areas in the Nuba Mountains was largely dependent on the efforts of NGOs, which run services and small-scale development projects, while various organizations charged with the development of government areas were also largely ineffective.

3. Data

3.1. Data collection

The data was collected by one of the authors between May and June of 2008, as part of an assessment commissioned by CARE International. The selection of villages that participated in the survey was made by targeting those areas with high returnee populations. In the final sample, around 40% of the households in the data are returnees (Table 1). The subsample of returnees is composed by households that have returned to their community of origin after being IDPs during the conflict (very few were actually international refugees). They usually first sought refuge in the hills around their villages and then in other areas of Sudan. Many of them surrendered to the government or were captured and sent to the ‘peace villages’ in the NCP controlled areas of the Nuba region or in northern Sudan. The data is limited in terms of not providing information about the place where displaced households stayed during the conflict, but the identification of returnees is highly accurate, given the NGO that implemented the survey paid particular attention to this characteristic in order to target its support program.

Eventually, eight villages distributed across the territory in the Nuba Mountains (see Figure 1) were selected on the basis of heterogeneity in terms of ethnic composition (mainly Arab and Nuba tribes) and political authority after the conflict, either SPLM or NCP controlled area (see Table 1). Based on information of the South Kordofan 2008 census, 10% of the households of each village were randomly selected to participate in the sample. The target interviewee was the household head.

The data collection was limited by the complications of survey implementation in a post-conflict situation, where mistrust and post-war traumas seriously restrict the information that can be requested. In particular, a major drawback of the data is that for each household it is not possible to identify the specific ethnic group, and therefore if the interviewee was Nuba or Arab.³ Nonetheless, we follow the assumption, supported by observations on the field, that in villages denominated as “former SPLM controlled areas” all inhabitants were Nuba and the returnees were Nuba as well. In the case of “former NCP controlled areas”, households that declared to be stayers were mostly those that considered themselves as “Arabs” (but also some Nuba that stayed in the NCP controlled areas), while the returnees were most of the time Nuba.⁴

³ Another problem of the data collection relate to language gaps, given many of the communities interviewed do not speak or understand Arabic, so it was necessary to rely on translators from the villages. Also, it was reported by the enumerators that some households had been recently interviewed by other NGOs collecting data in the area, and therefore it was certain level of fatigue.

⁴ Ethnic identity is generally not linked to genetic differences, but cultural background. Most of the people that called themselves “Arabs” are decedents of Nuba or other tribes that have adopted Arab cultural practices.

3.2. Descriptive statistics

In the final sample, we have 352 households, 171 in former NCP controlled villages and 181 in villages that were controlled by the SPLM. 40% of the households are returnees in the former and 37% in the latter. Table 2 presents the characteristics of the interviewees (household head). Around half of them were women, which is explained by the fact that many of the households in the sample were *de facto* female headed, either by widows or divorced women (10% of the sample), single women (9% of the sample) or women who declared to be part of a monogamous household, but where the husband was not effectively present for several reasons (27% of the sample). Around half of the interviewees declared to be illiterate, with higher prevalence in SPLM villages, and 90% to be Muslims. There are almost no differences in the basic characteristics of the interviewee between returnees (which indicates that random sampling was effectively implemented). A t-test comparing the mean of the variables for both groups show differences that are not statistically significant at the conventional levels. The only exception is that returnees are less illiterate in SPLM villages and less likely to be polygamous in NCP villages. The latter result provides support to our assumption that most of the stayers in NCP villages were mainly “Arabs”.

In the lower panel of Table 2, households characteristics are compared for returnees and stayers. Again, both groups are similar along many dimensions: total number of members in the household, number of babies (less than 5 years old) and kids (between 5 and 14 years old), percentage of educated kids, and the existence of a household member with a salary from agricultural activities (t-tests for differences in these variables were never significant at conventional levels). Nevertheless, in some household-level characteristics returnees are different than stayers. More returnees declared that the dwelling where they live was inherited (as opposite to bought or built), that their houses are *better built* (as measured by the quality of the walls), that they have an extended family in the village, and that they have the right to sell their land. All these differences provide *prima facie* evidence that returnees are different than households that stayed in the village during the war. We interpret these differences as evidence of self-selection into return: households expecting that part of their family stayed in the village and that their ancestral rights over land and assets will be respected are those who returned. Nevertheless, we cannot rule out other interpretations of the results, for instance that households with more secured property rights are actually those that are more likely to seek out asylum out of the village, or that NGOs and members communities will promote a more secured position for the returnees.

Another interesting aspect of the differences in Table 2 is the fact that returnees have a lower average size of land. While returnees have a mean size of the plot of around 2 feddans (approximately 1 hectare), stayers in SPLM villages have an average of 5.5 feddans and those of NCP villages of 9.7 feddans. This

fact points out to another aspect of the differences between both groups: returnees are less endowed with assets than the stayers. More evidence of this fact is presented below.

3.3. Correlates of returnee status

In order to provide further evidence of the differences of returnees and stayers, in Table 3 we present multivariate models of the household-level variables that correlate with the returnee status. In particular, we estimate the following model:

$$returnee_{hv} = \alpha_v + X'_{hv}\gamma + u_{hv}, \quad (1)$$

where the dependent variable is a dummy that takes value one if the household h in village v is a returnee, zero if stayer. γ is a vector of coefficients related to the interviewee and its household characteristics and u_{hv} is the error term. The estimation is implemented either with a linear probability model (LPM) or a logistic regression, and in all specifications village fixed effects are included.

The results of the estimation of Equation 3 are shown in Table 3, including estimations for the subsample of villages controlled by different groups. Most of the findings from the simple t-tests are confirmed. In general, household-head characteristics are not different between groups, with the exception of the variables for polygamous family and Muslim faith, both negatively correlated to the returnee status. This is further evidence that households returning were Nuba and not “Arabs”.

When it comes to household characteristics, the only variables that are robust to the different specifications are *Extended Family*, which is always positive and statistically significant, and *Land size*, which has the opposite sign, but is not always statistically significant when the LPM is used. In the case of *Right to sell the land*, we also find positive and statistically significant coefficients, but we cannot include the variable in all specifications, given sample size is reduced due to missing answers.

4. Empirical analysis

4.1. Empirical strategy

As mentioned above, our data is limited by the circumstances in which were collected, where post-conflict conditions prevail. Not only sensitive questions were avoided, but accurate retrospective data was not possible to collect and, given that the conflict resumed soon after the survey was conducted, no follow-up to the interviewees was possible. These limitations imply that finding an identification strategy

to give causal interpretation to the results is very unlikely. In particular, it is expected that unobservable characteristics of the households will play a role in both the decision to seek out refuge outside the village and, after the end of the conflict, return to their community of origin. We will instead follow most of the previous literature in providing a descriptive analysis of the differences in several social and economic dimensions of returnee households as compared to those that stayed during the conflict.⁵

The basic model of our empirical strategy is the following:

$$y_{hv} = \alpha_v + \beta_{SPLM} \text{returnee}_h * SPLM_v + \beta_{NCP} \text{returnee}_h * NCP_v + X'_{hv}\beta + e_{hv}, \quad (2)$$

where y_{hv} is one of the economic and social outcomes described below, returnee_h is a dummy that takes value one if the household h is returnee, zero if stayer, $SPLM_v$ is a dummy taking value one if the village v was controlled by SPLM during the war, zero otherwise, and NCP_v takes value one if v was controlled by NCP, zero otherwise. Therefore, the coefficient β_{SPLM} provides an estimation of the difference in the level of the outcome y_{hv} associated to the returnee status in the subsample of SPLM villages, and β_{NCP} in the subsample of those formerly controlled by the NCP. X_{hv} is a vector of households level observables characteristics, described in Section 3, that are included in the estimation as covariates.⁶ In all specifications we control for village fixed effects (α_v).

In the following sub-sections, the results of the estimation of Equation 2 for different sets of outcomes of interest are presented.

4.2. Agricultural production

In Table 4.1, variables related to agricultural production are described, again comparing returnees vis-à-vis stayers households, in different sets of villages. In Table 2 has been shown that the former tend to have an average smaller land size than the latter, and therefore it may be expected that agricultural production will differ. The first row of Table 4.1 shows that the number of agricultural varieties (the seven most important were recorded) cultivated is higher for returnees than stayers in NCP villages. This finding is confirmed in Table 4.2, where the results of the estimation of Equation 2 are presented. The value of the coefficient β_{NCP} in the first row of Table 4.2 indicates that, after controlling for household

⁵ Some exceptions in the literature are studies that are able to collect rich data for both displaced and stayer communities and propose methodologies to deal with the bias of unobservable characteristics. This is the case of Blattman, C. and Annan, J. (2010), Fiala (2012) and Bonzzoli et al. (2010) in Northern Uganda, and Kondylis (2009) in Rwanda.

⁶ The only variables of Table 2 that are not included are *Own the land* and *Right to sell land*, because sample size gets reduced due to missing observations.

characteristics, the average returnee household in NCP villages will produce 0.3 more varieties than the average stayer.

The rest of the rows of Table 4.1 and 4.2 present a separate analysis of each of agricultural products. Rows labeled as “quantity” refer to the amount of each specific variety produced in the year before the survey, while “cultivates” is a dummy taking value 1 if a household cultivated the product, zero otherwise. From the coefficients of Table 4.2, it can be seen that returnees are more likely to cultivate basic staples as sorghum and millet, while the quantities produced are not different than those of the other villagers. The production of groundnuts also differs according to status. Returned households are much more likely to produce it, with those in SPLM villages 20% more likely and those from NCP villages 29% more likely.⁷ Nevertheless, in the former villages, the average quantity produced by returnees was lower than that of stayers. Groundnut is an easy to cultivate staple, which is less common in the area than sorghum or millet, but that may be part of NGOs support program. As we show below, NGOs were particularly active in supporting returnees in the form of seeds.

Returnee households are less likely to produce cash crops. In NCP villages they produce less and are less likely to cultivate sesame, a highly valued cash crop that can be sold in the form of oil, which is also more difficult to cultivate and requires better quality of soil than the staple crops. In terms of beans, in both type of villages returnees are less likely to produce them and the quantities are much lower. Finally, none of the returnees cultivate fruits, comparing to 12% of stayers in SPLM villages and 6% in NCP. The cultivation of fruits require periods longer than a year, larger land size, and stable means of irrigation, therefore refugees are in a worse position to invest in this crop.

4.3. Livestock ownership

Even though most of the interviewees described themselves as farmers, livestock rearing is an important activity and often household's wealth is measure in terms of cattle and goats. In fact, for many tribes livestock is used as a dowry.⁸ In Table 5.1 and 5.2, descriptive statistics and regression results, respectively, for outcomes related to livestock ownership are presented. The first row of both tables is for a variable that takes value one if the household head declared that he or she considers that owns livestock as an asset, zero otherwise. In both type of villages, around 32% returnees answered positively to the question, compared to 50% in the case of the stayers. These results are confirmed in the regression analysis of Table 5.2, with differences that are statistically significant after controlling for other

⁷ The coefficients can be interpreted as change in probability, given the equation is estimated using a LPM.

⁸ Given the fact that in some communities it was forbidden for women to own livestock, the answers were often based on enumerator observation instead of self-reporting.

household characteristics. This is in line with the previous finding of a smaller land size for returnees, showing that households that leave the village during the conflict have fewer assets than stayers. This can be related to the fact that their land and livestock were destroyed or seized during the conflict, but also can point out to the fact that households that left the village were those previously less endowed. Given the lack of pre-departure data, we cannot distinguish between both hypotheses.

The other variables in Tables 5.1 and 5.2 describe the differences in livestock ownership by type of animal. The rows labeled as “quantity” refer to the quantity of animals of each type owned by the household, while “own” is a dummy taking value 1 if a household own at least one animal of each type, zero otherwise. The main differences are related to the number of goats, the most common livestock in the region. From the regressions in Table 5.2, it can be seen that the average returnee household is estimated to have 5 less goats in SPLM formerly controlled villages and 9 less goats in former NCP villages, but only in the latter villages the probability to own a goat is also less, by 24%, for returnees. Returnees are also less likely to own cattle, a difference that is only statistically significant in NCP villages. None of the returnees owns a donkey, an important asset given its use for transportation and agricultural activities, as opposed to 10% of the stayers.

The only livestock that the returnees are more likely to own are sheep. On average, they own one sheep. This difference is likely to be driven by the support of NGOs that as part of their programs donated one goat or sheep to the returnees in order to secure access to milk for children consumption. They also donated poultry, a type of livestock where there are no differences in ownership between stayers and returnees.

4.4. Health and hygiene

Our database also contains information about a series of self-reported variables related to health and attitudes to prevent diseases. Given data is self-reported and not confirmed by clinic records or tests, measurement error can be an issue, but nevertheless we think it analysis provides useful information about the situation of returnees.

Table 6.1 summarizes the main variables related to this set of outcomes. The first five rows are a series of dummy variables taking value one if a household member was affected for each of the diseases in the last year, zero otherwise.⁹ While there are no significant differences in the prevalence of diarrhea, stayers have higher prevalence of the other diseases. Particularly important is the difference in the affected

⁹ Malaria was also included, but 91% of the sample declared to suffer from it, and therefore is not included in the analysis.

households by dysentery, with 17% and 9% of returned households in SPLM and NCP village, respectively, but 44% and 30% in the case of stayers. Even though the differences are less prominent, stayers are also more likely to be affected by respiratory and skin diseases. These results are confirmed in the coefficients from the estimation of Equation 2, presented in Table 6.2.

In contrast, returnees have more prevalence of malnutrition in both kinds of villages, with more than 30% of the households affected versus only 5% for stayers. Based on the observations of the enumerators, we can interpret that, while the other diseases are relatively easy to identify by most of the villagers (given the description of the symptoms made it clear each disease to them), malnutrition was more subjective, given it is a relative measure. It is possible that returnees learned to identify malnutrition with medical support during displacement or after return, but for stayers it was a common condition both during and after the war.

Overall, we take the results as evidence of better health conditions for returnees. This idea is confirmed with the results for the variable *Death by disease*, which takes value one if a member of the household has died of one of these diseases in the last three years, zero otherwise. In the coefficients of Table 6.2 it can be seen that the probability of this event is 33% lower for returnees in SPLM areas and 16% in NCP areas.

Why do returnees tend to have better health outcomes than stayers? A potential explanation is provided by the last two variables in Tables 6.1 and 6.2, where sanitation habits are recorded. The variable *Hygiene* is an index counting the number of sanitary measures taken by the household to avoid the mentioned diseases (a maximum of seven were included). In SPLM villages, returnees take 0.3 more sanitary measures than the rest, a result confirmed in the coefficient estimated in results of Table 6.2. In the same line, a question of the survey asked the number of situations in which the interviewees wash their hands (a maximum of seven were included). In both set of villages, returnees wash their hands in one more situation on average.

It is not straightforward to explain why returnees take better sanitation measures. One alternative is that their attitudes changed while they were displaced outside the village, given the exposure to different habits urban areas or the contact with personnel from NGOs and other international organizations, either in IDP camps or upon their return to the village. It can also be the case, given reverse causality is an issue of the estimation, that actually those households with more careful attitudes (risk averse) were those who decided to seek out asylum outside the village. We further explore this idea in the next section.

4.5. External support and attitudes

A final set of variables that will be analyzed relate to the external support and attitudes of the returnee households. We have mentioned above that a potential explanation for the differences in agricultural production, health outcomes and sanitary habits of returnees can relate to the support that NGOs provide to them. The first three variables of Tables 7.1 and 7.2 provide evidence that this is likely to be the case. While 69% of returnees in SPLM villages and 61% in NCP villages declared to receive support from a NGO, only 46% and 32% of the stayers, respectively, received external support. All the returnees mentioned that the support was given as a donation of seeds. These results are confirmed by the coefficients presented in Table 7.2, where it can be seen that returnees in NCP villages are 54% more likely to receive seeds from NGOs than the other residents (the difference is 25% in the case of SPLM villages).

In the last rows of Tables 7.1 and 7.2 we further explore the difference in attitudes of returnees and stayers, taking advantage of some other questions in the survey useful for this purpose. The variable *Garbage management* takes value one if the household takes some measures to manage wastes (either burning or collecting), zero otherwise. No differences between groups are observed. The variable *Group membership* takes value one if the household head is member in one of the village associations. 53% of returnees in SPLM villages declared to be members, compared to only 32% of the stayers. The difference of membership does not appear to be significant in NCP villages when the descriptive statistics of Table 7.1 are considered (both groups having on average 29% of membership), but the difference is statically significant in the coefficient estimated from Equation 2, as shown in Table 7.2. This can be reflecting that returnees have more pro-social attitudes,¹⁰ but also can be related to the reverse causality problem, meaning that more politically active households can decide to leave the village during the conflict. Another alternative is that NGOs ask returnees to be part of a group in order to provide support.

Another difference in attitude that can be studied from the data is *Family planning*, a variable taken value one if the interviewee declared have plans for having a certain number of children, and zero if the answer is “as many as God gives me”. While for all the stayers this variable takes value zero, in SPLM villages for 12% of the returnee respondents the value is one, a proportion that increase to 34% in NCP villages.

There are also differences in nutrition habits. *3 meals a day* is a variable that takes value one if the household usually has three meals a day, zero if only two or the number of meals was variable. *Can buy*

¹⁰ The fact that households affected by conflict can have more pro-social attitudes has been documented in previous literature. For instance, Bellows and Miguel (2009) show that in Sierra Leone individuals who experienced more intense war violence are more likely to attend community meetings, join local political and community groups, and more likely to vote.

food is a dummy that takes value one if the households can get part of their food from the market, zero if only self-cultivation. For both variables, a higher percentage of returnees have an answer taking value one, and the results from the regressions (last two rows of Table 6.2) show a significant difference for returnees, with the only exception of *3 meals a day* in SPLM villages. This partially confirms that returnees' higher prevalence of malnutrition, as observed in last section, can be misleading, given returnees declare to have access to food from markets and taking more meals per day, either because their changed their habits or given support from NGOs.

5. Conclusions

The two decades long civil war in Sudan was one of the deadliest of the last century. After the signature of the Comprehensive Peace Agreement (CPA) in 2005, millions of displaced persons started returning to their communities of origin, creating a challenge for the post-conflict recovery. In the present study, we have sought to analyze detailed data collected among heads of households in the Nuba Mountains, one of the most affected areas during the conflict. The data were collected 2008, a unique period part of the short-lived “peace window” between the end of the civil war and the beginning of yet another, connected, conflict.

Our focus is to compare the social and economic conditions of returnee households vis-à-vis the non-displaced population, and we find important differences in a number of dimensions. Returnees are more likely to have an extended family in the village and have clearer property rights over their land and dwelling. Returned households have fewer assets than those who stayed during the conflict, both in terms of size of the land and livestock ownership, and are less involved in the production of cash crops. Even though returnees have worse economic outcomes than stayers, we find evidence that the former tend to have better health outcomes than the rest of the village, given they are less likely to have a member of the household affected by a serious diseases. We relate this finding to the targeted support received from NGOs, as well as better sanitation habits and other attitudes possibly learned during displacement. Most of these differences are observed in all the villages, independently of the group that was in control during the war.

Even though our results are suggestive in informing the differences of the returnee households with the rest of the community, limitations of the data restrict the possibility of implementing empirical techniques to obtain unbiased estimators that can be interpreted as causal effects of displacement and return in conflict areas. Therefore, fundamental questions about the economic and social effects of the conflict in

the Nuba Mountains remain open. In particular, we cannot establish if the effects we find in returnee households are related to unobservable characteristics that make them different to stayers or to the direct influence of the displacement and return. Addressing this issue is a fruitful avenue for future research.

We expect that our analysis can help by providing directions for the post-conflict situation of the Nuba Mountains at the end of the ongoing conflict.

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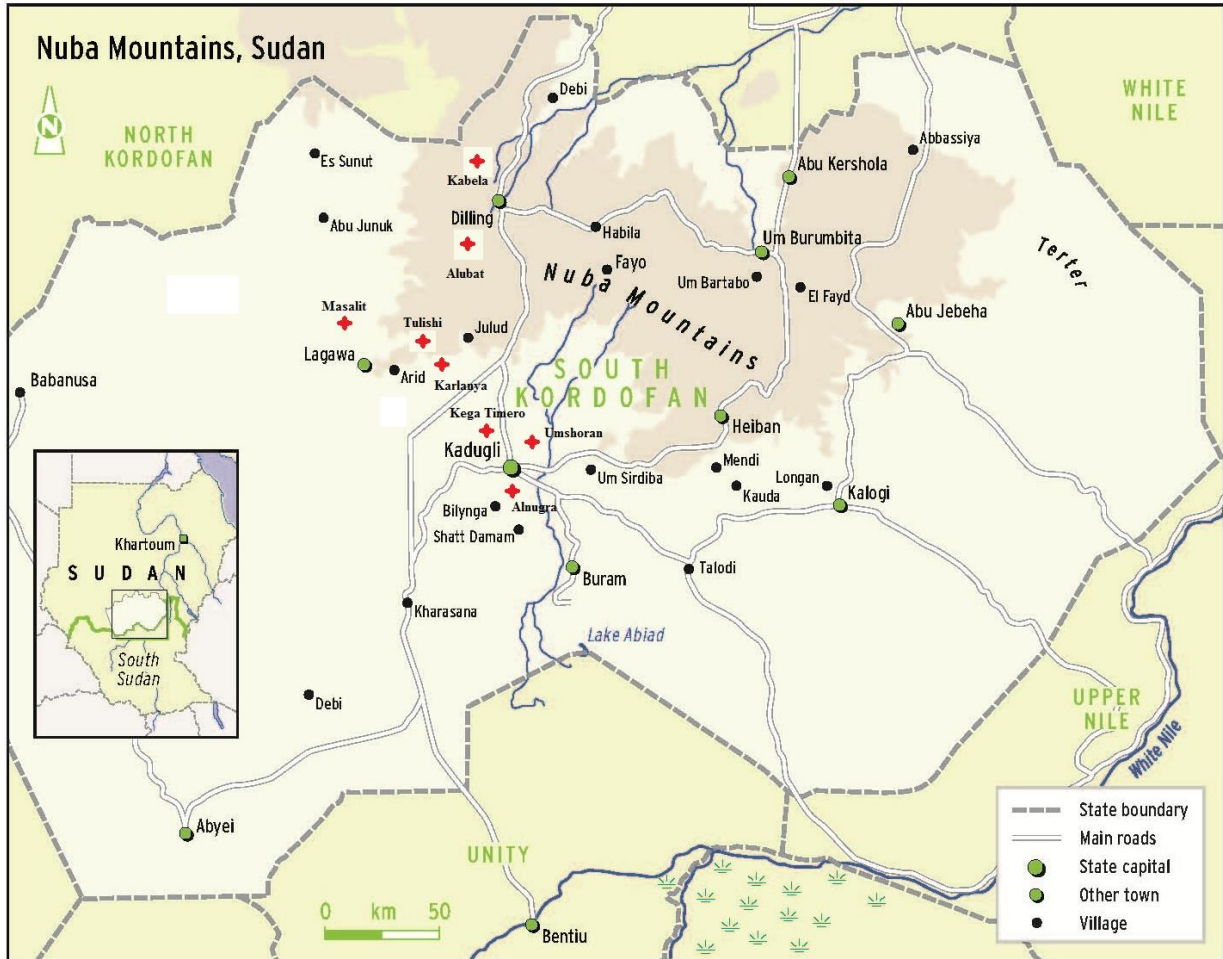
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FIGURE 1: MAP OF THE NUBA MOUNTAINS



Note: The red dots are the 8 villages of the study.

TABLE 1: VILLAGES IN THE SAMPLE

Locality	Villages	Formerly controlled by	Population	Households	Sample	returnees
Kadugli	Alnugra	SPLM	5,778	825	63	34%
	Kega timero	NCP	7,500	1,071	100	36%
	Umshoran	SPLM	7,590	640	19	38%
Dilling	Alubat	NCP	1,140	163	17	62%
	Kabela	SPLM	1,700	243	25	43%
Lagawa	Tulishi and Karlanya	SPLM	6,200	886	82	44%
	Masalit	NCP	5,000	714	59	33%

Note: The information about population and number of households comes from the South Kordofan census 2008. Sample and percentage of returnees comes from our data. The information for Tulishi and Karlanya villages was not disaggregated in the census data, but it is disaggregated in our database.

TABLE 2: HOUSEHOLD CHARACTERISTICS ACCORDING TO PROFILE AND VILLAGE

	(1)	(2)		(3)	(4)		
	SPLM controlled villages			NCP controlled villages			
	Returnees	Stayers	t-test (1)=(2)	Returnees	Stayers	t-test (3)=(4)	
Observations	72	109		64	107		
Household head characteristics	% male	0.431	0.404	0.721	0.516	0.533	0.830
	% young (18-35)	0.278	0.349	0.320	0.313	0.336	0.749
	% adult (36-50)	0.472	0.377	0.210	0.453	0.449	0.954
	% elder (>50)	0.250	0.274	0.728	0.234	0.215	0.769
	illiterate	0.556	0.694	0.058	0.453	0.430	0.769
	Muslim	0.903	0.890	0.784	0.906	0.925	0.664
	polygamous	0.097	0.128	0.524	0.141	0.234	0.142
	single	0.167	0.220	0.380	0.156	0.084	0.148
	Divorced/widowed	0.125	0.147	0.680	0.094	0.047	0.228
Household characteristics	Household members	6.569	6.404	0.765	7.563	9.150	0.118
	Nr. Of babies (< 5)	1.431	1.385	0.820	1.875	1.729	0.750
	Nr. Of kids (5-14)	2.194	2.101	0.719	2.094	2.617	0.117
	% educated kids	0.570	0.589	0.691	0.692	0.640	0.244
	Inherited house	0.514	0.376	0.068	0.797	0.523	0.000
	House with firm walls	0.250	0.119	0.022	0.266	0.187	0.229
	Extended family	0.528	0.339	0.012	0.609	0.449	0.042
	Paid agric. workers	0.208	0.235	0.686	0.188	0.190	0.968
	Own the land	0.938	0.917	0.631	1.000	0.804	0.000
	Land Size	1.979	5.538	0.000	1.992	9.708	0.206
	Right to sell land	0.583	0.211	0.000	0.484	0.290	0.010

The t-test compare the null hypothesis that the mean value of the subsamples of returnees and stayers is the same. P-values of the t-tests are presented.

TABLE 3: CORRELATES OF RETURNEE STATUS

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Male	0.006 (0.061)	0.832** (0.407)	0.163 (0.124)	1.310** (0.513)	-0.058 (0.078)	0.139 (0.489)	0.087 (0.051)	2.409*** (0.605)
Adult	0.064 (0.068)	0.385 (0.310)	0.092 (0.064)	0.501 (0.367)	0.049 (0.101)	0.557 (0.471)	0.071 (0.038)	0.336 (0.517)
Elder	0.060 (0.049)	0.654 (0.434)	0.121* (0.055)	0.824 (0.529)	0.008 (0.051)	0.383 (0.602)	0.137** (0.025)	0.597 (0.752)
Illiterate	-0.049 (0.074)	-0.248 (0.288)	-0.097 (0.088)	-0.446 (0.327)	-0.150 (0.072)	-0.902** (0.455)	0.054 (0.082)	0.577 (0.470)
Muslim	-0.069 (0.067)	-2.893*** (0.935)	-0.254 (0.173)	-2.246** (0.979)	-0.271** (0.081)	-2.381** (1.160)	-0.146 (0.093)	-6.048*** (1.146)
Polygamaous	-0.129** (0.042)	-0.749* (0.416)	-0.176*** (0.042)	-0.949** (0.484)	-0.125 (0.074)	-0.970 (0.613)	-0.151 (0.055)	-1.045 (0.658)
Divor./widow	-0.018 (0.138)	-0.296 (0.463)	0.031 (0.143)	0.128 (0.560)	-0.166 (0.182)	-1.010* (0.604)	0.263 (0.186)	0.908 (1.192)
Members	-0.015 (0.013)	-0.110* (0.063)	0.008 (0.027)	0.008 (0.086)	-0.002 (0.015)	0.034 (0.119)	-0.027* (0.008)	-0.225*** (0.081)
Nr. Of babies	0.025 (0.015)	0.153* (0.080)	0.008 (0.046)	0.070 (0.130)	-0.018 (0.030)	-0.077 (0.177)	0.043** (0.005)	0.303*** (0.104)
Inherited house	0.120* (0.052)	-0.243 (0.327)	0.101 (0.068)	0.230 (0.370)	-0.058 (0.067)	-0.423 (0.452)	0.256 (0.095)	0.404 (0.592)
Firm walls	0.225*** (0.048)	0.091 (0.469)	-0.026 (0.071)	-0.706 (0.478)	0.225* (0.086)	0.802 (0.705)	0.153** (0.034)	-0.623 (0.617)
Extended family	0.170*** (0.041)	1.661*** (0.417)	0.240*** (0.068)	1.545*** (0.469)	0.205** (0.064)	1.378** (0.539)	0.113 (0.052)	2.427*** (0.506)
Agric. Workers	-0.067 (0.055)	0.269 (0.423)	0.011 (0.095)	0.331 (0.443)	-0.026 (0.094)	0.051 (0.598)	-0.029 (0.013)	0.303 (0.695)
Land Size	-0.001 (0.001)	-0.409*** (0.095)	-0.001 (0.001)	-0.233** (0.118)	-0.034** (0.008)	-0.378*** (0.115)	-0.000 (0.000)	-0.638*** (0.124)
Right to sell land			0.092* (0.044)	0.433** (0.217)				
Model	LPM	Logit	LPM	Logit	LPM	Logit	LPM	Logit
Observations	344	344	260	260	174	174	170	170
R ²	0.109		0.203		0.226		0.173	
Pseudo R ²	.	0.218	.	0.218	.	0.240	.	0.313
Sample	ALL	ALL	ALL	ALL	SPLM	SPLM	NCP	NCP

Standard errors clustered at village level in parentheses. *** p<0.01, ** p<0.05, * p<0.1

The dependent variable is a dummy that takes value one if the household is returnee, zero if stayer. All specifications include village fixed effects. The variables *Single* and *Nr. Of kids* were also included in the estimation, but are not reported (were never statically significant).

TABLE 4.1: AGRICULTURAL PRODUCTION ACCORDING TO PROFILE AND VILLAGE

Observations	(1) (2)			(3) (4)		
	SPLM controlled villages			NCP controlled villages		
	Returnees	Stayers	t-test (1)=(2)	Returnees	Stayers	t-test (3)=(4)
	72	109		64	107	
Nr. of agricultural varieties	2.417	2.404	0.942	2.578	2.206	0.073
sorghum: quantity	133.111	129.119	0.777	98.750	93.430	0.707
cultivates	0.931	0.881	0.276	1.000	0.794	0.000
millet: quantity	0.833	0.917	0.922	1.875	2.804	0.611
cultivates	0.056	0.018	0.173	0.047	0.056	0.796
maize: quantity	0.556	0.881	0.560	1.406	1.682	0.821
cultivates	0.056	0.064	0.813	0.047	0.056	0.796
groundnut: quantity	44.306	53.495	0.287	59.047	41.215	0.033
cultivates	0.764	0.505	0.000	0.859	0.467	0.000
sesame: quantity	16.111	13.486	0.474	5.063	16.813	0.001
cultivates	0.472	0.477	0.949	0.469	0.505	0.652
beans: quantity	0.139	14.771	0.000	1.391	10.318	0.004
cultivates	0.139	0.339	0.002	0.156	0.271	0.084
fruit: quantity	0.000	2.385	0.002	0.000	1.121	0.054
cultivates	0.000	0.119	0.002	0.000	0.056	0.054

The t-tests compare the null hypothesis that the mean value of the subsamples of returnees and stayers is the same. P-values of the t-tests are presented.

TABLE 4.2: AGRICULTURAL PRODUCTION ACCORDING TO PROFILE AND VILLAGE

	β_{SPLM}	s.d.	β_{NCP}	s.d.	R^2
Nr. of agricultural varieties	0.154*	(0.074)	0.338**	(0.108)	0.476
sorghum: quantity	7.572	(7.286)	-0.939	(3.096)	0.384
cultivates	0.100**	(0.034)	0.196***	(0.035)	0.475
millet: quantity	0.603	(0.469)	-0.705	(1.117)	0.094
cultivates	0.063**	(0.019)	0.004	(0.023)	0.120
maize: quantity	0.300	(0.370)	-0.078	(0.776)	0.097
cultivates	0.042	(0.033)	0.005	(0.022)	0.124
groundnut: quantity	-16.085***	(2.274)	6.219	(6.993)	0.310
cultivates	0.198***	(0.031)	0.285***	(0.028)	0.506
sesame: quantity	1.219	(4.743)	-14.999***	(1.242)	0.277
cultivates	-0.021	(0.027)	-0.070**	(0.021)	0.449
beans: quantity	-12.851***	(0.991)	-9.664***	(0.701)	0.469
cultivates	-0.120***	(0.028)	-0.076**	(0.023)	0.276
fruit: quantity	-2.153***	(0.355)	-0.110	(0.322)	0.162
cultivates	-0.108***	(0.018)	-0.005	(0.016)	0.162

S.d. are standard errors clustered at village level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Estimation of Equation 2 for outcomes related to agricultural production. Each row is a separate regression.

“Quantity” refers to the amount of each specific product produced in the year before the survey, while “cultivates” is a dummy taking value 1 if a household cultivated the product, zero otherwise. In all different regressions, village fixed effects and the household-level variables described in Section 3 are included. 344 observations for each specification.

TABLE 5.1: LIVESTOCK OWNERSHIP ACCORDING TO PROFILE AND VILLAGE

	(1)			(2)			(3)			(4)		
	SPLM controlled villages			NCP controlled villages			SPLM controlled villages			NCP controlled villages		
	Returnees	Stayer	t-test (1)=(2)	Returnees	Stayer	t-test (3)=(4)	Returnees	Stayer	t-test (1)=(2)	Returnees	Stayer	t-test (3)=(4)
Observations	72	109		64	107							
Livestock as asset	0.333	0.505	0.023	0.313	0.505	0.014						
cow: quantity	1.778	1.872	0.896	3.252	4.243	0.401						
own	0.319	0.257	0.363	0.266	0.383	0.117						
goat: quantity	1.667	4.862	0.066	2.969	10.832	0.003						
own	0.306	0.339	0.636	0.234	0.458	0.003						
poultry: quantity	0.500	0.358	0.378	0.250	0.486	0.268						
own	0.153	0.174	0.705	0.063	0.140	0.119						
sheep: quantity	0.972	0.413	0.047	0.984	0.514	0.124						
own	0.139	0.101	0.438	0.141	0.103	0.459						
donkey: quantity	0.000	0.128	0.005	0.000	0.103	0.008						
own	0.000	0.110	0.003	0.000	0.103	0.008						

The t-tests compare the null hypothesis that the mean value of the subsamples of returnees and stayers is the same. P-values of the t-tests are presented.

TABLE 5.2: LIVESTOCK OWNERSHIP ACCORDING TO PROFILE AND VILLAGE

	β_{SPLM}	s.d.	β_{NCP}	s.d.	R ²
Livestock as asset	-0.262***	(0.040)	-0.150***	(0.018)	0.451
cow: quantity	-1.350***	(0.301)	-1.709***	(0.223)	0.534
own	-0.045	(0.086)	-0.188***	(0.017)	0.255
goat: quantity	-5.314***	(1.037)	-8.846***	(1.369)	0.558
own	0.008	(0.064)	-0.243***	(0.026)	0.217
poultry: quantity	0.320	(0.197)	-0.002	(0.086)	0.148
own	0.060	(0.052)	-0.045**	(0.018)	0.219
sheep: quantity	0.695**	(0.233)	0.796***	(0.089)	0.533
own	0.057*	(0.025)	0.085***	(0.012)	0.600
donkey: quantity	-0.131***	(0.018)	-0.099***	(0.007)	0.632
own	-0.110***	(0.009)	-0.097***	(0.009)	0.662

S.d. are standard errors clustered at village level. *** p<0.01, ** p<0.05, * p<0.1.

Estimation of Equation 2 for outcomes related to livestock ownership. Each row is a separate regression. “Quantity” refers to the amount of each specific animal owned by the household, while “own” is a dummy taking value 1 if a household own at least one animal of each type, zero otherwise. In all different regressions, village fixed effects and the household-level variables described in Section 3 are included. 344 observations for each specification.

TABLE 6.1: HEALTH , NUTRITION AND HYGIENE ACCORDING TO PROFILE AND VILLAGE

	(1)	(2)		(3)	(4)	
	SPLM controlled villages			NCP controlled villages		
Observations	Returnees	Stayers	t-test (1)=(2)	Returnees	Stayers	t-test (3)=(4)
	72	109		64	107	
Diarrhea	0.361	0.339	0.766	0.469	0.308	0.036
Dysentery	0.167	0.440	0.000	0.094	0.299	0.002
Skin diseases	0.139	0.183	0.432	0.016	0.196	0.001
Respiratory diseases	0.194	0.275	0.217	0.125	0.243	0.062
Malnutrition	0.319	0.055	0.000	0.375	0.047	0.000
Death by disease	0.097	0.294	0.002	0.250	0.299	0.492
Hygiene	1.764	1.505	0.045	1.594	1.505	0.553
Wash hands	3.264	2.294	0.001	3.078	2.121	0.001

The t-tests compare the null hypothesis that the mean value of the subsamples of returnees and stayers is the same. P-values of the t-tests are presented.

TABLE 6.2: HEALTH , NUTRITION AND HYGIENE ACCORDING TO PROFILE AND VILLAGE

	β_{SPLM}	s.d.	β_{NCP}	s.d.	R ²
Diarrhea	-0.029	(0.024)	-0.053	(0.035)	0.561
Dysentery	-0.166***	(0.029)	-0.063**	(0.026)	0.594
Skin diseases	-0.028	(0.029)	-0.062**	(0.022)	0.392
Respiratory diseases	-0.070*	(0.035)	-0.178***	(0.035)	0.309
Malnutrition	0.236***	(0.038)	0.300***	(0.025)	0.254
Family death by disease	-0.332***	(0.039)	-0.156***	(0.032)	0.499
Hygiene	0.363***	(0.074)	0.152	(0.143)	0.237
Wash hands	1.121***	(0.094)	1.258***	(0.064)	0.241

S.d. are standard errors clustered at village level. *** p<0.01, ** p<0.05, * p<0.1.

Estimation of Equation 2 for outcomes related to health, nutrition and hygiene. Each row is a separate regression. In all different regressions, village fixed effects and the household-level variables described in Section 3 are included. 344 observations for each specification.

TABLE 7.1: EXTERNAL SUPPORT AND ATTITUDES ACCORDING TO PROFILE AND VILLAGE

	(1)			(2)			(3)			(4)		
	SPLM controlled villages			NCP controlled villages			SPLM controlled villages			NCP controlled villages		
Observations	Returnees	Stayers	t-test (1)=(2)	Returnees	Stayers	t-test (3)=(4)	Returnees	Stayers	t-test (1)=(2)	Returnees	Stayers	t-test (3)=(4)
	72	109		64	107							
NGO support	0.611	0.459	0.045	0.688	0.318	0.000						
Support as donation	0.361	0.367	0.937	0.422	0.229	0.008						
Support as seeds	0.611	0.413	0.009	0.688	0.324	0.000						
Garbage management	0.486	0.505	0.809	0.531	0.598	0.395						
Group membership	0.525	0.317	0.009	0.298	0.286	0.869						
Family planning	0.153	0.000	0.000	0.344	0.000	0.000						
3 meals a day	0.268	0.163	0.095	0.406	0.114	0.000						
Can buy food	0.583	0.422	0.034	0.297	0.336	0.594						

The t-tests compare the null hypothesis that the mean value of the subsamples of returnees and stayers is the same. P-values of the t-tests are presented.

TABLE 7.2: EXTERNAL SUPPORT AND ATTITUDES ACCORDING TO PROFILE AND VILLAGE

	β_{SPLM}	s.d.	β_{NCP}	s.d.	R ²
NGO support	0.191**	(0.069)	0.547***	(0.032)	0.533
Support as donation	0.081	(0.074)	0.356***	(0.039)	0.418
Support as seeds	0.251**	(0.084)	0.540***	(0.036)	0.554
Garbage management	-0.060*	(0.030)	-0.014	(0.053)	0.224
Group membership	0.213***	(0.035)	0.156***	(0.018)	0.491
Family planning	0.119**	(0.047)	0.320***	(0.029)	0.508
3 meals a day	0.114	(0.062)	0.321***	(0.030)	0.421
Can buy food	0.255***	(0.033)	0.125***	(0.015)	0.673

S.d. are standard errors clustered at village level. *** p<0.01, ** p<0.05, * p<0.1.

Estimation of Equation 2 for outcomes related to external support and attitudes. Each row is a separate regression. In all different regressions, village fixed effects and the household-level variables described in Section 3 are included. 344 observations for each specification.