

The Impacts of Refugee Repatriation on Receiving Communities

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Abstract

Using longitudinal data from Burundi, we explore the consequences of refugee repatriation for stayee households in a context in which returnees faced restrictions on economic activities and mobility while abroad. We use geographical features of the receiving communities, including altitude and distance to the border, for identification. We find that a 1 percentage point increase in the local share of the population accounted for by returnees leads to a reduction in the livestock of stayee households which is equivalent to 1 fowl per adult member or a 5% with respect to the mean. A higher share of returnees in a community also leads to less land access, lower subjective well-being and higher food insecurity for stayees. The negative effects on subjective well-being and food security disappear over the rounds of the survey (five years), likely as a consequence of stayee households adjusting their economic activities in response to the presence of returnees.

Keywords: conflict; migration; refugee repatriation

JEL: F22; R23; Q15

1. Introduction

There are three durable solutions to international displacement envisaged by the international community: local integration, resettlement, and repatriation. Local integration is an unpopular alternative in most refugee-hosting countries and resettlement to third countries is uncommon and has decreased substantially in recent years (Garnier et al., 2018). Repatriation is typically the preferred solution to international displacement by host countries and international organisations (Warner, 1994; Morello, 2018). While popular in policy circles, repatriation might bring challenges for the receiving country. Some have even argued that repatriation could be a threat to economic and political stability in receiving communities which are just recovering from conflict (Black and Koser, 1999; Harild et al., 2015). However, there is scarce evidence on the economic and social consequences of refugee return.

Understanding the implications of repatriation is important, among other reasons, because the number of refugees returning home could be substantial and increase suddenly. As shown in Figure 1, the worldwide number of refugees returning home, as recorded by the United Nations High Commissioner for Refugees (2019), increased from 1.2 million during 1984-1989 to over 8 million in 1990-1994. Some countries such as Afghanistan, Iraq, Mozambique, Rwanda, and Sudan experienced the return of over 350,000 former refugees in a single year during the early 1990s. The number of returnees decreased substantially during the 2000s, as a result of the increase in the number of protracted emergencies (Crisp and Long, 2016). However, the repatriation of refugees has once again become an important topic in the international policy agenda because of the increase in global displacement during recent years, and plays a key role in the recent Global Compact on Refugees (United Nations High Commissioner for Refugees, 2018).

This paper uses longitudinal data to explore the consequences of repatriation for communities of return. Just a handful of recent papers have focused on the broader impacts of

repatriation for receiving communities and the receiving country.¹ For instance, Bahar et al. (2018) explored the impact of refugee return from Germany to the former Yugoslavia on export performance. Their results suggest positive impacts of refugee return for export performance, a result that is driven by the fact that refugees exposed to particular industries in Germany brought back knowledge which translated into higher productivity in those same industries. This is consistent with the literature for different countries on the impact of returning economic migrants who typically bring new knowledge and capital with them, are more likely to be entrepreneurs than stayees and have a substantial positive economic impact on the country of return (Démurger and Xu, 2011; Hausmann and Nedelkoska, 2018; Piracha and Vadean, 2010; Wahba, 2015).

[Figure 1]

Contrary to the case of Germany during the Yugoslavian conflict and situations of economic migration, in many situations of forced displacement, particularly in neighbouring developing countries, refugees face strong limitations on the types of economic activities that they can engage in and on their mobility. In particular, refugees often do not have the right to work and are required to live in camps. In these cases, refugees are unlikely to accumulate much physical capital, gain business experience or increase their knowledge of production techniques. In these situations, the benefits of return migration for receiving communities and countries found in other studies may not materialise to the same extent.

In this paper, we use data from a country which experienced large scale conflict-led emigration and substantial post-war repatriation, to explore the consequences of refugee repatriation in a context in which refugees faced strong restrictions on economic activities and mobility while abroad. The analysis explores the impact of repatriation on multiple outcomes of

¹ Instead, existing research has focused on the outcomes of returnees themselves (Fransen et al., 2017; O'Reilly, 2015; Verwimp and Muñoz-Mora, 2018). These studies have shown that the economic outcomes of returnees tend to be worse off in comparison to those who did not move during the conflict.

stayees, including livestock levels, land access, subjective well-being, food security, health, and crime.

We also explore the adjustments of individuals in communities receiving returnees. For instance, in the case of high income countries there is evidence of out-migration movements from communities or cities in response to immigration flows (Borjas, 2006). A similar dynamic could occur in the case of low-income countries, in which communities with higher levels of repatriation may experience higher levels of out-migration due to greater demographic pressures on limited resources like land and food. There is scarce research on this type of adjustment in the context of a low-income country. Likewise, the arrival of the returnees could also lead to a re-adjustment in economic activities. For instance, the inflow of returnees could lower the reward to farming activities relative to the reward to non-farming activities. This could encourage more stayees to engage in non-farming activities. Again, there is evidence in high-income countries showing that immigration changes the relative rewards to different activities and leads to a re-distribution of workers across tasks (Peri, 2016), but there is scarce evidence on this type of mechanism in low-income countries.

The empirical analysis relies on data from a longitudinal survey conducted in Burundi in 2011 and 2015. This country experienced a conflict from 1993 to 2005, which led to approximately 10% of its population to be internationally displaced. Tanzania, the main host country of Burundian refugees at the time, put pressure for refugees to return home and eventually closed the refugee camps, repatriating the remaining refugees from the 1993 conflict. Between 2000 and 2016 close to 600,000 former refugees returned to Burundi (United Nations High Commissioner for Refugees, 2016). The agreement which put an end to the Burundian conflict stated that former refugees had the right to recover their land (Republic of Burundi, 2000). This led most returnees to settle back in their communities of origin. Therefore, we explore a case in which refugees did not have the option to stay in the host country and returned to their communities of origin.

A difficulty with our estimations is that communities which initially had a large number of people who left the country and, therefore, more returnees later on, are likely to have been wealthier than other communities. This corresponds with the evidence in the forced migration literature that households from wealthier regions tend to leave the country during a conflict, while households from poorer regions rely on other strategies to cope with violence (Van Hear, 2006; 2014). To deal with this potential source of endogeneity, we rely on instrumental variables based on the geographical features of the communities, including altitude and proximity to the border with Tanzania. In Burundi, most of the displacement occurred by foot and distance to the border and altitude affected the level of international displacement from any given community. We check the plausibility of the instrument by using pre-war characteristics of the individuals, households and communities, such as height, education, livestock, and land.

Our results suggest that a greater share of returnees in a community is associated with less livestock ownership for stayee households. In particular, a 1 percentage point increase in the share of the population accounted for by returnees leads to a reduction in the livestock of stayee households which is equivalent to 1 fowl per adult member or about 5% with respect to the mean. Additional exploration suggests that repatriation has a negative impact on land access, food security and subjective well-being for stayees. The presence of returnees has no statistically significant effect on health outcomes or the likelihood of being a victim of theft. The impacts on subjective well-being and food insecurity disappear across rounds of the survey. In particular, we show that the presence of returnees leads to changes in economic activities of stayees across rounds of the survey and a decrease in reliance on land harvesting for household food consumption in the second round of the survey. The presence of returnees had no impact on out-migration of stayees.

The rest of the paper is as follows. Section 2 discusses the historical background. Section 3 introduces the data and explains the empirical approach. Section 4 presents the main results,

while Section 5 presents the results for adjustments related to the presence of returnees. Section 6 presents the robustness checks. Finally, Section 7 presents the conclusion.

2. Historical background

In 1993, Melchior Ndadaye became Burundi's first democratically elected Hutu president. He was assassinated a few months after his election by Tutsi soldiers. The assassination led to a civil war that lasted from 1993 to the mid-2000s (Ngaruko and Nkurunziza, 2005). The conflict had negative consequences on health (Bundervoet et al., 2009), schooling (Fransen et al., 2018; Verwimp and Van Bavel, 2014) and child mortality (Verwimp, 2012). Hundreds of thousands of Burundians fled to neighbouring countries, particularly Tanzania (Ruiz and Vargas-Silva, 2015; 2016). Figure 2 shows that there were close to 150,000 Burundians in Tanzania before the onset of conflict in 1993, these having fled a previous conflict episode in the early 1970s, whereas after 1993 the number of Burundian refugees increased to almost 600,000.

Burundian refugees who fled to Tanzania from 1993 onwards resided in camps in the Western part of the country (Hovil and Kweko, 2009). These refugees were not given land for agricultural activities and the Tanzanian government restricted their movement to four kilometres from the camps and imposed limitations on the economic activities the refugees could engage in (Millner, 2013). Refugees could not legally work outside of the camps or own farms in the camp areas. As a result, many were largely dependent on international aid (Harild et al., 2015).

[Figure 2]

The Arusha Peace and Reconciliation Agreement was signed in 2000, helping to set up the end of the conflict. Large-scale return migration to Burundi started almost immediately after the signing of the agreement. Close to 600,000 officially registered former refugees returned to Burundi between 2000 and 2016, with the majority doing so prior to 2010 (United Nations High Commissioner for Refugees, 2019).

The process of repatriation was driven by the Tanzanian government's reduction of services in refugee camps, such as the end of the provision of schooling for refugee children

(Fransen et al. 2018), and eventual closure of refugee camps. Tanzania also expelled thousands of Burundians who remained in the country after the end of the conflict, given that they were considered to no longer have the right to protection and to be illegal immigrants. Many of those expelled had spent a large portion of their lives in Tanzania (Harild et al. 2015).

Returnees were only allowed to bring between 50 and 100 kilograms of personal belongings with them (Fransen and Kuschminder, 2012), meaning the amount of physical capital that they could bring was limited. Likewise, there is no indication of a considerable transfer of health capital using age as a proxy, given that both returnees and stayees in our sample are, on average, around the same age. Several studies also suggest that returning refugees were at a substantial disadvantage compared to stayees. For instance, Fransen et al. (2017) find that returnee households had significantly lower levels of wealth than other households.

Unsurprisingly, the restitution of property, particularly agricultural land, was the main return-related problem in Burundi. The Arusha Peace and Reconciliation Agreement stated that refugees must be able to recover their property, “especially their land” (Protocol IV, Chapter 1, Article 8, p. 80). This was an important incentive for former refugees to return to their communities of origin, as this is the place in which they could claim land. In many cases, the recovery of agricultural land posed a problem for returnees. Many found their land occupied by others or sold by family members who had returned to Burundi earlier (Hovil, 2009; Van Leeuwen, 2010). In other cases, land abandoned by refugees was allocated to other households by the government (Fransen and Kuschminder, 2012). The main challenge with the peace agreements’ conditions was that in practice there was insufficient land available to give returnees a land holding equivalent to their pre-exile land (Van Leeuwen, 2010).

The National Commission on Land and Other Properties (Commission Nationale des Terres et Autres Biens in French, or CNTB) was established in 2006 to deal with land and related disputes. The large majority of these cases were filed by returnees and involved claims

related to land (Fransen and Kuschminder, 2012). Many of the decisions of the CNTB involved land-sharing agreements without compensation (Ndayirukiye and Takeuchi, 2014).

3. Empirical approach

3.1 Data

The analysis relies in data collected during January and March 2011 and 2015. The first round of data collection took place after the majority of former refugees had returned. As shown in Figure 2, by 2010, the main process of return to Burundi had finished. In April 2015, Burundi's President announced that he was running for a third term in office. For many, a third term in office was a violation of the peace agreements. Figure 2 illustrates how the political tensions created by the President's announcement led to a new increase in the number of Burundian refugees in Tanzania in 2015. These events did not affect our data collection and, actually, the events started six weeks after we finalised the second round of data collection.

For the 2011 round, the primary sampling unit was the *colline* ("hill" in French), which is the smallest administrative unit in Burundi. One hundred *collines* were selected for enumeration, which were distributed over the seventeen provinces of the country according to the demographic weight of each in the 2008 Census. Within each *colline*, a *sous-colline* (or community) was randomly chosen (total 100 communities). Within each selected *sous-colline*, 15 interviews were conducted with randomly selected households and one community representative. Each *colline* in Burundi is run by an elected *chef de colline* (i.e. village chief) and in most cases respondents to the community leaders' survey were the *chef de collines*. A household representative, in most cases the household head, provided information on all household members, including general individual characteristics (e.g. age, gender, education) and their migration histories. The 2015 round of the survey re-interviewed the same households and, when possible, community leaders. The re-interview rate of households outside Bujumbura was over 90%. Figure 3 shows the location of the one hundred communities surveyed in Burundi.

We use the community and household components of the survey. We are interested in households comprised of members who have never migrated abroad (i.e. stayees) to isolate the influence of return flows within a community. Therefore, we limit the sample to only those households. We also exclude from the analysis households from Bujumbura. Due to logistical difficulties the survey included two cross-sections of households in Bujumbura (i.e. different households in each round), while in the rest of the country the same households were interviewed in 2011 and 2015. It is common for studies about displacement in Burundi to exclude Bujumbura (e.g. Fransen et al., 2017; Verwimp and Van Bavel, 2014).

[Figure 3]

After these exclusions we are left with a total of 754 stayee households living in 87 communities for which we have complete data in 2011 and 2015 (i.e. a total of 1,508 observations). Please note that for ethical and methodological reasons, no information on ethnicity was collected in the survey.

3.2 Estimation and key variables of interest

The purpose of the analysis is to provide a comprehensive overview of the impacts of refugee return in different communities in Burundi. For this purpose, we start by estimating a series of equations along the following lines:

$$Y_i = \delta_j + \beta R_c + \theta X_{ic} + \varepsilon_i, \quad (1)$$

where Y_i is the outcome of interest for household i , δ_j is the province dummy, R_c represents the share of community (c) residents that are returnees, X_{ic} are a series of household and community level controls, and ε_i is the random error. We conduct the estimations separately for 2011 and 2015 and pooling data for both years. When we pool data for both years, we also include a time dummy in the estimation. In the main estimations, the share of community residents that are returnees is estimated using the information from the interview roster, but we also show the results with alternative measures in the robustness section. The share of returnees in the population varies from 0% to 62%, with a median of 4.5% and a mean of 11.2%.

In the Online Appendix we replicate the results of the paper using different approaches to clustering, such as clustering at the community level and at the community and period level. The results of the paper are consistent under the different clustering approaches. Please refer to Tables A9 to A12 in the Online Appendix.

The variables in X_{ic} include controls for the age, education and gender of the household head, household size, child to adult ratio, dummy for IDP experiences, and a control for deaths during the conflict at the community level. Table A1 in the Online Appendix reports the detailed definitions of all the variables included in the estimations. Table 1 reports the means of the variables in X_{ic} for households in communities with a share of returnees below and above the median. Households in communities with a below and above the median share of returns are broadly similar in 2011. Unsurprisingly, the main difference is with regards to the deaths in the community during the conflict. This variable is a dummy equal to one if at least 10% of the residents of the community were killed during the conflict, which is about double the national average. This is the case for 32% of the communities with below the median returnees and 56% of the communities with above the median returnees.

[Table 1]

We start the analysis by focusing on the impact of return on broad aggregate measures of economic well-being. The first of these measures refers to livestock. Livestock is considered the principal form of capital accumulation in Burundi and acts as the main savings and insurance mechanism in the country (Bundervoet, 2009). We make use of Tropical Livestock Units (TLUs) in order to create a livestock index. TLUs allow animal species of different average size to be compared by a common unit. Following Bundervoet (2009, 2010) and Fransen et al. (2017), we use the following units as weights: 1 cow/ox = 1 TLU, 1 sheep = 0.17 TLU, 1 goat = 0.17 TLU, 1 pig = 0.25 TLU and 1 fowl = 0.01 TLU. We divided the TLUs for each household by the number of adult members, defined as individuals who are 14 years of age or older. Table 2 reports the mean value of livestock for communities with a share of returnees below and above the median.

Both groups have higher TLUs values in 2015 than in 2011, but the gap between the two groups has increased from 0.03 to 0.06 TLUs between the two periods.

As a second broad measure of economic conditions, we focus on a subjective measure of well-being. This subjective measure is based on the question “*Which of the following descriptions comes closest to how you see this household’s current economic situation?*” The answers are given on a five-point scale, which ranges from one: “*Finding it very difficult*” to five: “*Living very comfortably*”. As also presented in Table 2, stayees in communities with an above the median share of returnees report worse subjective economic conditions in average.

[Table 2]

After looking at the broad aggregate measures of economic well-being, we focus on land holdings and food insecurity. In land scarce countries, such as Burundi, frequently most of the land in a community is being used during the pre-return period, which means that there is little land available for returnees (Van Leeuwen, 2010). As explained above, the return of refugees in this scenario often results in land sharing agreements in which stayees are left with smaller plots (Bruce, 2013; Hovil, 2009; Huggins, 2009; Van Leeuwen, 2010). As such, large-scale refugee repatriation in this context could result in a reduction in land access, which is likely to have negative implications for food production in this type of economy and could lead to food insecurity (Mabiso et al., 2014).

We construct three measures of food insecurity based on the response to the question “*How often does your household have difficulty in meeting its food needs?*”. This first variable is a dummy indicating that the household typically experiences difficulties in meeting its daily food needs. This variable reflects major food insecurity. The second variable is a dummy indicating that the household typically experiences food difficulties at least once a week, while the third variable indicates food difficulties at least once every few months. As reported in Table 2, land access has increased and food insecurity decreased over the two rounds of the survey with the changes being slightly more marked for households with a below the median level of returnees.

The last two factors that we looked at in the main analysis are health and thefts. We only collected information on these factors for 2011. The evidence suggests that the presence of refugees is associated with an increased likelihood of communicable diseases in host regions and repatriation can have major implications for health conditions in areas of return. This could be particularly true in the case of Burundian returnees. For instance, comparing data for nine countries, Anderson et al. (2011) found that the highest incidence of malaria was in refugee sites in Tanzania, the main destination of Burundian refugees. There the annual incidence of malaria was 399 confirmed cases per 1,000 refugees (728 confirmed cases per 1,000 refugees under five years of age). This is not an isolated case. Montalvo and Reynal-Querol (2007) show a strong association between the presence of refugees and the rate of malaria in the hosting region. A similar dynamic could be in place in the case of repatriation.

The presence of refugees has also been associated with increases in criminality. For instance, there is a literature for high-income countries which has linked the presence of asylum seekers and, particularly, the limitations for them to enter the labour market to a rise in property crime (Bell et al., 2013). This could be a possibility in the context that we explore as the lack of work opportunities for returnees can increase the relative rewards to criminal activities and therefore lead some returnees to engage in those activities.

Table 2 suggest that there are only small average differences in terms of health and thefts between households in communities with a returnee share above and below the median. The only difference is livestock theft which is actually higher in communities with a below median share of returnees. This could simply be a reflection of more opportunities (i.e. higher livestock holdings in the first place).

4.3 Identification

As shown in Figure 4, although there was some initial displacement to Rwanda and the DRC, Tanzania was by far the main host of Burundian refugees from the 1993 conflict (over 90% from 1996 onwards). During the mid-1990s the conflict had spread to Rwanda and the DRC and those

countries were no longer an option for many Burundians escaping the conflict. This is also confirmed by our survey data in which the large majority of the returnees came from Tanzania.

[Figure 4]

As mentioned above, Tanzania mandated the return of all Burundian refugees from the 1993 conflict. Therefore, there is no selection in terms of returning to Burundi or staying in Tanzania. Returnees also had a very strong incentive to return to their communities of origin as this is the place in which they were entitled to land, a very scarce resource in the country. We checked this in the sample and over 85% of returnees were in their community of origin, a share that increases to over 90% when we allow for moves between neighbouring communities. Also, substantial evidence indicates that exposure to conflict in Burundi was generalised and indiscriminate and therefore it was largely random (Uvin, 1999). In particular, the evidence suggests that it was unrelated to political allegiances or wealth levels (Voors et al., 2012). Fearing for their safety, Hutus launched pre-emptive attacks against members of the Tutsi-dominated army and Tutsi civilians. The army responded with indiscriminate attacks against the population to demonstrate power and used fear as a method of control (Krueger and Krueger, 2007).

A potential concern about the estimation is that communities which initially had a large number of people which left the country could have been wealthier than other communities. The survey collected information on pre-war livestock for those households which were formed before the war. This information suggests that communities that experienced higher levels of international displacement (and return) had higher levels of pre-war livestock than communities with lower levels of displacement. This coincides with the evidence from the forced migration literature, which suggests that factors related to wealth and class tend to be positively associated with international displacement (Van Hear, 2006; 2014). Individuals from poorer regions often rely in other coping mechanisms to deal with conflict, while those from wealthier regions are more likely to leave the country.

In the estimation, we use the geographical characteristics of the communities of origin for identification purposes. In particular, we use the logarithm of the inverse of distance to the border of Tanzania (proximity) and the logarithm of the inverse of altitude (flatness) as instruments for the share of returnees in the population. In Burundi, most of the displacement occurred by foot and distance to the border and altitude are likely to have affected the level of international displacement from any given community.² In order to highlight this, Figure 5 reports UNHCR data on the number of refugees in Tanzania in 2005 per province of origin [brackets] and as a share of the province's population in the 1990 Burundian Census (parenthesis). Those provinces which are closer to Tanzania generally had higher levels of international displacement than other provinces.

[Figure 5]

The Online Appendix reports the results of the first stage estimation along with relevant tests. The estimation also complies with the traditional tests, including over-identification tests. The main concern about the instruments is that proximity and flatness could relate to unobserved factors that affect variables related to wealth, food security, land access, etc. We conduct several analyses to explore this possibility. First, for older households, i.e., those that were established before the onset of the conflict in 1993, we collected pre-conflict livestock and land ownership data. As explained by Bundervoet (2010), there was a significant decrease in livestock levels in Burundi because of the war. However, pre-war livestock levels and size of land plots should provide a good idea of the household's economic background. As shown in columns 1 and 2 of the top panel in Table 3, there is no statistically significant relationship of proximity and flatness with pre-war livestock and pre-war land.

Another possibility is to look at education levels, which provide information about wealth status and estimate its relationship with proximity and flatness. Primary education in Burundi is

² Please note that the empirical analysis controls for conflict level in the community of origin during the war.

compulsory for children between the ages of 7 and 12. However, the war destroyed a substantial portion of the country's schools, many of the teaching staff was killed, and recruitment of new teachers was interrupted during the conflict (Fransen et al., 2018). We focus on the years of education among those who were 14 years of age and older at the start of the conflict in 1993. The war should not have affected the educational outcomes (i.e. primary school education) of this group. As shown in Table 3, there is no significant impact of proximity and flatness on years of education or the likelihood of finishing primary school for this group.³

[Table 3]

In the community survey we asked community leaders about the quality of the soil and the availability of land before the start of the conflict. In particular, there are two questions that provide information in this regard: “*Before the war in 1993, how would you rate the average soil quality in this community?*” and “*Before the war in 1993, how was the availability of land in this community?*” with possible answers going from very bad/very low to very good/very high. Hence, these questions provide information about pre-conflict quality and quantity of land at the community level. In the bottom panel of Table 3, we present regression results in which the dependent variable indicates that there was poor soil quality and low land availability during the pre-conflict period. There is no statistically significant relationship between these variables and the instruments.

Finally, we use data from Burundi's 2010 Demographic and Health (DHS) survey to provide additional support for our instrument. In particular, this is a national dataset which contains information on adult's height and education. The DHS is also geocoded which means that we can replicate our two instruments for this dataset. In Table 4, we show the regression results of height and education on the two instruments for individuals who were 14 years of age or older at the start of the conflict (height information is only available for females). The results suggests that there is no statistically significant relationship between these variables and the

³ In order to further control for potential pre-existing or differing trends, we also tried controlling for community level exposure to conflict in Table 3 and this does not affect the results.

instruments. The samples are large for these estimations (over 1,000 observations for females), hence the results are unlikely to be due to lack of power. In the Online Appendix we also show that there is not statistically significant relationship between the instruments and pre-war trends in height at the community level.⁴

[Table 4]

5. Main results

5.1 Impact on livestock and subjective well-being

Table 5 reports on the impact of refugee return on livestock. The estimates suggest that the impact of refugee return on the livestock holdings of stayee households is negative. Looking at the combined 2011 and 2015 estimation in column (3), the results suggests that a 1 percentage point increase in the share of the population accounted for by returnees leads in average to a reduction in TLUs of about 0.01 (the equivalent of 1 fowl). This represents a 5% reduction with respect to the mean of the dependent variable. Also, note that the coefficients are almost twice as large in 2015 than in 2011, suggesting that the negative impact of refugee return on livestock has become larger over time. Note that this is not the result of additional repatriation given that, as explained above, the share of returnees in the country and in the different communities was similar in 2011 and 2015.

[Table 5]

In order to account for the number of zeros in the dependent variable, columns 4 to 6 of Table 5 repeat the same estimation but using an inverse hyperbolic sine (IHS) transformation of the TLUs. The results are in the same direction of those discussed above and suggest that a 1 percentage point increase in the share of the population accounted for by returnees leads to a reduction in TLUs of about 0.8%.

⁴ In particular, we explore community level differences in the average height of females born in the 1970s and females born in the 1960s. See Table A4 in the Online Appendix for further details.

Table 5 also reports on the subjective measure of well-being (columns 7 to 9). The results suggest that communities with more returnees report lower values of subjective well-being. Note that the results are not statistically significant for 2015 and the coefficients are substantially smaller in that round.⁵ This contrasts with the results for livestock, and suggest that there could be an adjustment in expectations or in terms of economic activities over time on the part of stayees. We explore this possibility later in the paper.

5.2 Impact on land holdings and food insecurity

As explained above, land is likely to be a key factor explaining the impacts of refugee return and Burundi is a land scarce country in which there was a policy that, at least in theory, provided returnees with their pre-war land or equivalent. We measure land as hectares and conduct the examinations using both the amount of land and the IHS transformation of this amount. Table 6 presents the results from regression estimations in which the land holdings indicator is the dependent variable and the returnee share of the population is one of the independent variables. The estimates suggest that refugee return has a negative impact on land access. In particular, a 1 percentage point increase in the share of returnees in the population leads in average to a 0.05 hectares reduction in the land holding of stayee households, which is close to a 4% reduction with respect to the mean land holding.⁶ The estimation with the IHS transformation suggests that a 1 percentage point increase in the returnee share of the population leads to a 2.5% reduction in land holdings.

[Table 6]

Table 7 reports the results for variables related to food insecurity. The results suggest that refugee return increases food insecurity, at least in the short-term. In particular, a 1 percentage

⁵ Moreover, as reported in the Online Appendix, depending on the clustering approach the coefficient for the combined 2011 and 2015 sample can also be insignificant.

⁶ As reported in the Online Appendix, the significance level of the coefficient for the 2011 round is sensitive to type of clustering used.

point increase in the share of returnees in the community leads to a 0.9 percentage point increase in the likelihood of experiencing food difficulties on a daily basis (combined 2011 and 2015 sample). However, note that the effect is large and significant for 2011, but not for 2015. The coefficients are smaller when we look at a broader measure of food insecurity (i.e. every few months or more), but are still statistically significant in 2011.

Overall, these results again suggests that while the negative consequences of the presence of returnees on objective measures such as livestock and land access stay present in the longer term (in fact, worsened across rounds of the survey), this is not the case for the more subjective measures (i.e. subjective well-being and food insecurity).

[Table 7]

5.3 Impact on health and criminality

Table 8 reports the results for health and crime. There is no evidence that the presence of returnees affects the health or crime outcomes of stayees (i.e. member of the household experiencing a serious illness or being the victim of theft). The information on health and crime is only available in 2011 and any impacts could have manifested over the longer term.

[Table 8]

We also conducted additional estimations with the dependent variable being the height for age z-scores of children under 5 years of age. There is no significant impact of the presence of returnees on these scores.⁷

6. Adjustments to the presence of returnees

The results presented above suggests that while the negative impact of returnees on livestock and land access have become more serious across rounds of the survey, aspects such as subjective well-being and food security have improved. This suggests that stayees have adjusted in some way to

⁷ No information on the height of adults was collected in the survey.

the presence of the returnees. In this section, we explore some of these possible adjustments putting emphasis on out-migration and changes in economic activities.

6.1 Out-migration

There is evidence of out-migration movements from communities or cities in response to immigration flows in high-income countries. This out-migration has sometimes been found to be a response to racial considerations, that is, to avoid living in racially or ethnically diverse neighbourhoods (Boustan, 2010). To the degree that the returnees are from a different ethnic group (i.e. Hutus vs Tutsis) than stayees, there could be a similar dynamic in Burundi. Moreover, even among those from the same ethnic group it is possible for stayees to consider returnees as different as many have spent a decade or more abroad.

The other possibility for which we could see out-migration is because of economic competition between returnees and stayees. In fact, out-migration has been highlighted as one of the factors attenuating the empirical estimates of the labour market impacts of immigration on previous residents in high income countries (Borjas, 2006). A similar dynamic could occur in the case of low-income countries, in which communities with higher levels of return migration may experience higher levels of out-migration because of greater demographic pressure on limited resources like land and food. In this context, out-migration refers to population movement between communities in Burundi. There is scarce research on this type of adjustment in the context of a low-income country.

Table 9 reports the impact of the presence of returnees on out-migration of household members between 2011 and 2015. The results suggest that a higher share of returnees in a community has no significant impact on out-migration. This is somewhat unsurprising given the low levels of spatial mobility in rural Burundi that we found during the fieldwork.

[Table 9]

6.2 Economic activities

The arrival of the returnees could also lead to a re-adjustment in economic activities. The evidence for high-income countries suggests that immigration changes the relative rewards to different activities and leads to a re-distribution of workers across tasks (Peri, 2016), but there is less research on this mechanism in low-income countries. Among the limited research in the topic, there is evidence that the presence of Burundian refugees affected the economic activities of their hosts in Tanzania (Ruiz and Vargas-Silva, 2015; 2016). Refugee return could also lead to new business opportunities for stayees, leading to further engagement in entrepreneurial activities. For instance, Maystadt and Verwimp (2014) suggest that many locals in refugee hosting regions of Tanzania took advantage of the business opportunities created by the refugee inflow.

In the survey, households could report and rank up to six main income generating activities. These activities were then coded into thirty different categories. The top panel of Table 10 reports the results from an estimation in which the dependent variable is a dummy equal to one if the household reported a different main income generating activity between the rounds of the survey (i.e. first ranked activity). The results suggest that a 1 percent point increase in the share of returnees in a community leads to a 1.4 percentage point increase in the likelihood of changing main economic activity across rounds of the survey.

In order to explore this result further, we conduct a series of related estimations including ones in which the dependent variable is a dummy which indicates that: (a) the top activity in 2011 was different from the top two activities in 2015; (b) the top two activities in 2011 were different from the top activity in 2015; (c) the top two activities in 2011 were different from top two activities in 2015. The results for all these estimations suggest that households in communities with more returnees were more likely to change economic activities. We also checked if this change in activities involved a change in the skill level of activities, but most changes are across lower skill activities (e.g. from crop production to shepherding).

[Table 10]

It is possible for this change in economic activities to also involve a change in the dependence on their own land for food consumption. This would help explain the decrease in food insecurity between 2011 and 2015 when at the same time that there was a decrease in land access. In Table 11, the dependent variable is a dummy equal to one if part or all of the household food consumption is provided by harvesting the household land.⁸ In 2011, there is no significant relationship between the presence of returnees and the use of household land for food production. However, the results for 2015 suggests that a 1 percentage point increase in the share of the population accounted for by returnees leads to a 0.5 percentage point reduction in the use of land for food production destined for household consumption.

[Table 11]

7. Robustness

7.1 Alternative measure of the returnee share

One potential concern with the estimations is that the share of returnees in the population is constructed with information from the survey roster. This information is more accurate for some communities than others. We interviewed 15 households in each community, but the number of households in each community ranged from 34 to more than 100. Therefore, we also present results with an alternative measure of the share of returnees. This information is constructed from the information provided by the community leaders, which includes information on the number of returnees in the community as well as overall population.

Table A5 in the Online Appendix presents the results regarding the impact of refugee return on livestock using the share of returnees constructed from the information provided by the community leaders. The overall story is similar to the results in Table 5. One difference is that now the coefficients from the OLS estimations are significant. The coefficients from the IV estimations are also slightly larger, but all results are in the same direction. We also conducted all the main

⁸ The specific question is “*How much of this household’s food consumption is provided for by harvest from this land?*” and one of the possible responses is nothing. This question is only asked of households with land holdings.

estimations using this alternative measure of the share of returnees and results are overall consistent with previous results. For those interested, these estimations are also included in the Online Appendix of the paper.

7.2 Provinces

Another possible concern with the analysis is that the results are driven by the dynamics in a few provinces. As shown in Figure 4, there were major differences in the share of international displacement across the different provinces. Table A7 in the Online Appendix reports the results of the analysis for livestock and subjective well-being if we drop households in Ruyigi and Makamba from the sample. These are the two provinces with a larger number and share of returnees. The results are consistent with previous analysis. We also conducted all the other estimations in the paper excluding households from these provinces and the results are overall consistent with previous results. These estimations are also included in the Online Appendix of the paper.

7.3 Within community selection

One limitation to our analysis that cannot be addressed with the current data is the possibility of selection into displacement within communities. In order to shed light on this issue we re-estimated the regressions excluding the top quartile and the top decile of the returnee share from the estimations. The idea is that selection should be stronger in those communities with lower levels of initial out-migration and, in turn, fewer returnees (as share of the population). The results suggest that indeed the coefficients are larger when we exclude the top quartile or decile. Therefore, the results should be interpreted in light of this possible type of selection. Please see the Online Appendix for further details about this estimation (Table A13).

8. Conclusion

There is scarce evidence on the implications of refugee repatriation for receiving communities. This is an important omission in the literature as repatriation is not only the most preferred durable

solution to refugee situations, but also the process repatriation has the potential to affect many factors ranging from food security to health outcomes and therefore it is an important factor for post-conflict economic and political stability. This paper provides evidence in this context by looking at the effects of repatriation on stayee households in Burundi, a country that experienced high levels of refugee return during the previous decade. Burundi is an interesting case because, among other reasons, Burundians faced strong restrictions on economic activities and mobility while residing in refugee camps abroad. This suggests that many of the potentially positive economic impacts of return migration, such as returnees bringing work experience, capital and knowledge may not be present.

Our results suggest that a higher share of returnees in a community has a negative impact on livestock ownership, land access, and subjective well-being and it leads to food insecurity. This contrasts markedly with the substantial evidence showing positive economic effects of return migration in general (Wahba, 2015), including cases of refugee repatriation in which refugees were able to work while in displacement (Bahar et al., 2018).

While these results paint a grim picture of the impacts of repatriation, even in this adverse context, some aspects of the consequences of refugee repatriation for stayee households dissipate over time. In particular, the impacts on subjective well-being and food security largely disappear in the five years between the two rounds of our survey. This occurs at the same time that the negative effects on household livestock and land access become stronger over time. Additional exploration suggests that stayee households adjust to the presence of returnees by changing income generating activities and relying less on land harvesting to produce food for household consumption. This coincides with the evidence in high-income countries that locals adjust to the presence of migrants by changing their economic activities. However, there is scarce evidence of these adjustments in the case of low-income countries.

In addition to Burundi, our analysis has implications for other situations of forced displacement across the world. In particular, the analysis is relevant for situations of repatriation

in which refugees were subjected to restrictions on economic activities and mobility while in displacement and can claim land and related resources upon return. Restricting the right of refugees to work is a relatively common practice across the globe (Zetter and Ruaudel, 2016). The legal right to land is also a common feature in peace agreements. For instance, it is an important feature of the recent peace agreement in Colombia (Presidencia de la Republica, 2016). However, the possibility of claiming land after conflict could also relate to more informal arrangements such as cultural and traditional structures, including ethnic/clan links or ancestral land rights (e.g. Afghanistan, Somalia). On the other hand, situations in which refugees are allowed to work abroad and receive substantial assistance related to their return, could lead to a very different impact upon return.

There is substantial support in policy circles to promote the return of refugees to their countries of origin as a long-term solution to their situation (e.g. United Nations High Commissioner for Refugees, 2015). This support stems in part from the perception that the presence of refugees represents a burden for hosting states, particularly for neighbouring countries. However, our results suggest that refugee return can also lead to hardship for communities experiencing return. In that sense, promoting (or forcing) large-scale repatriation at times may not provide a sustainable solution to the “problem”, but may simply relocate it. There is, as such, an argument for providing substantial support to countries receiving large number of returnees while economic and social adjustments take place in order to secure long-term economic and political stability.

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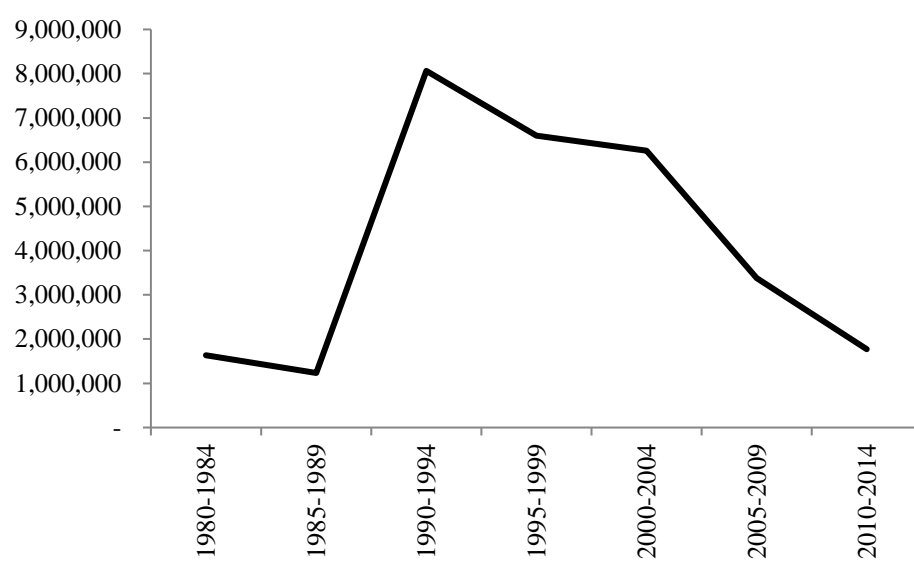
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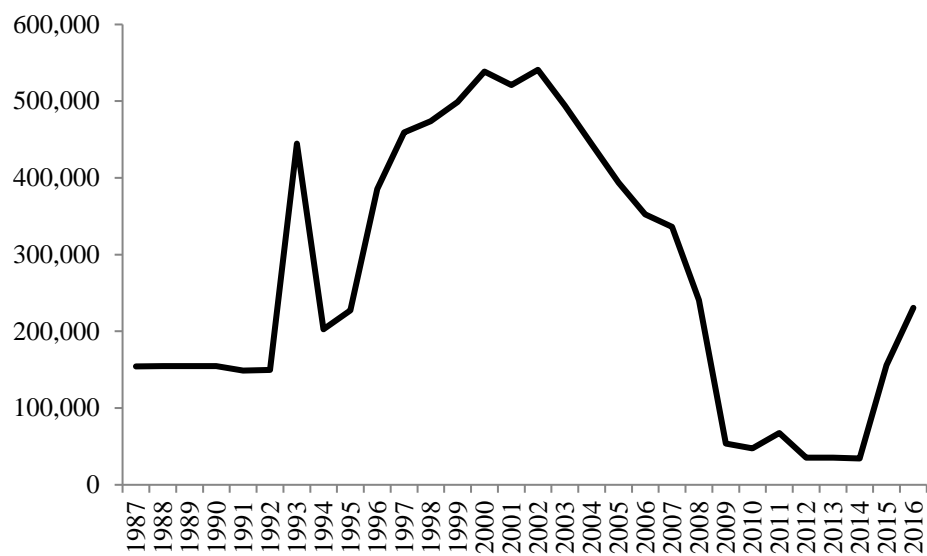
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Figure 1. Number of refugees returning home worldwide



Source: United Nations High Commissioner for Refugees (2019).

Figure 2. Number of Burundian refugees in Tanzania



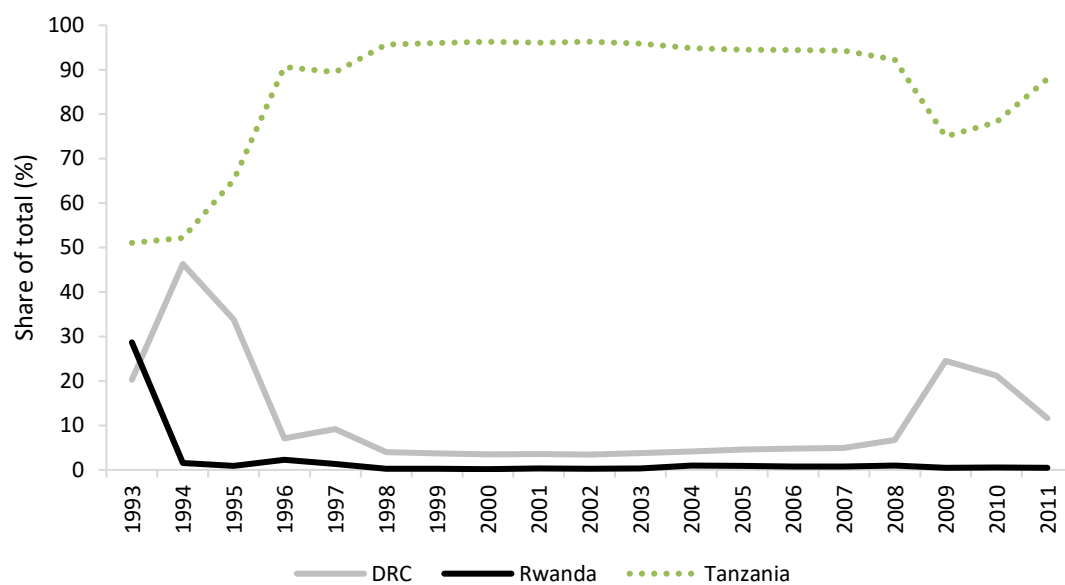
Source: United Nations High Commissioner for Refugees (2019).

Figure 3. Location of the communities surveyed



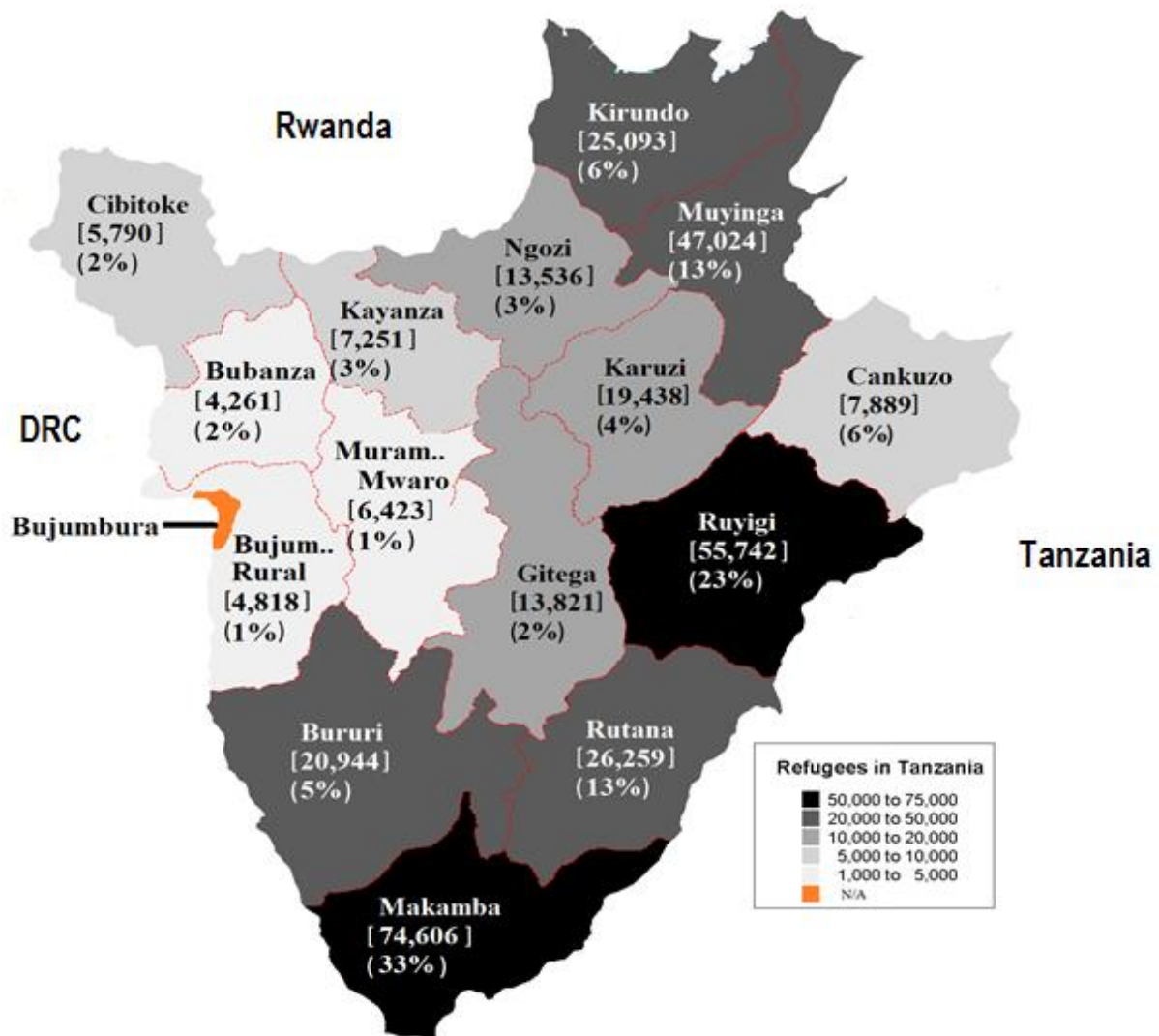
Note: The data collection for this study took place between January and March of 2011 and 2015 in all 17 provinces of Burundi. The communities sampled were selected according to the demographic weight of these provinces in the 2008 Burundi Census. The Figure above shows the distribution of the communities across Burundi.

Figure 4. Share (%) of Burundian refugees in the DRC, Rwanda and Tanzania



Source: United Nations High Commissioner for Refugees (2019).

Figure 5. Number of refugees in Tanzania in 2005 per province of origin [brackets] and as a share of the province's 1990 population (parenthesis).



Note: The number in brackets is the number of refugees in Tanzania at the time which was originally from the given province in Burundi. This information comes from UNHCR. The number in parenthesis is that number as a percentage share of the population of the provinces as estimated in 1990 Burundi Census.

Table 1 – Mean values for household and community level controls

Variable	Below median returnee share			Above median returnee share		
	2011	2015	2011 and 2015	2011	2015	2011 and 2015
	(1)	(2)	(3)	(4)	(5)	(6)
Age head	45.20	49.29	47.25	42.24	46.19	44.21
Primary edu head	0.27	0.34	0.31	0.21	0.25	0.23
Female head	0.16	0.17	0.17	0.16	0.14	0.15
Household size	5.78	5.80	5.79	5.29	5.60	5.45
Child to adult ratio	0.86	0.83	0.84	0.83	0.90	0.87
IDP household	0.27	0.27	0.27	0.31	0.31	0.31
Deaths in conflict	0.32	0.32	0.32	0.56	0.56	0.56

Table 2 – Means for main dependent variables

Variable	Below median returnees			Above median returnees			t-test of difference		
	2011	2015	2011 and 2015	2011	2015	2011 and 2015	2011	2015	2011 and 2015
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Livestock (TLUs)	0.15	0.25	0.20	0.12	0.19	0.15	1.33	3.02***	3.13***
Current economic situation (worse = 1 to better = 5)	2.54	2.54	2.54	2.45	2.42	2.43	1.41	1.88*	2.32**
Amount of land (hectares)	1.11	1.59	1.35	1.09	1.37	1.23	0.18	1.58	1.40
Food difficulty daily (yes = 1)	0.39	0.11	0.25	0.38	0.13	0.26	0.30	-1.06	-0.32
Food difficulty weekly (yes = 1)	0.48	0.31	0.39	0.50	0.33	0.42	-0.61	-0.85	-1.00
Food difficulty every few months (yes = 1)	0.67	0.60	0.64	0.72	0.66	0.70	-1.67*	-1.86*	-2.49**
Any illness (yes = 1)	0.09			0.10			0.56		
Adult illness (yes = 1)	0.06			0.07			1.12		
Child illness (yes = 1)	0.05			0.05			0.70		
Livestock theft (yes = 1)	0.05			0.02			1.92*		
Agricultural tools theft (yes = 1)	0.01			0.01			-0.05		
Other assets theft (yes = 1)	0.01			0.02			-1.32		
Households	383	383	766	371	371	742	754	754	1,508

Note: “Current economic situation” is a subjective measure of well-being. *** indicates that the difference is significant at the 1% level. ** indicates that the difference is significant at the 5% level. * indicates that the difference is significant at the 10% level.

Table 3 – Impact of proximity and flatness on pre-war household and community characteristics

Variable	Pre-war household characteristics			
	Pre-war livestock	Pre-war land	Pre-war years education	Pre-war primary school
Proximity	-0.0414 (0.0701)	0.6753 (0.6262)	0.4438 (0.3234)	-0.0534 (0.0583)
Flatness	-0.2080 (0.1339)	-0.7541 (0.9495)	-0.7902 (0.7117)	-0.0406 (0.1102)
Households	368	368	550	572
	Pre-war community characteristics			
	Poor soil quality	Low availability of land		
Proximity	0.0129 (0.0469)	-0.0838 (0.0641)		
Flatness	-0.1309 (0.2165)	-0.0259 (0.0385)		
Communities	87	87		

Notes: Pre-war livestock and land only available for households that were established before the war. Education is for household heads who were 14 years of age or older at the start of the war in 1993. Analysis of community characteristics is based on responses to the community survey. Standard errors are included in parenthesis.

Table 4 – Impact of proximity and flatness on height and education for those who were 14 years of age or older at the start of the conflict, DHS data

Variable	Height	Years of education
Females		
Proximity	-0.0135 (0.0109)	0.2106 (0.3470)
Flatness	-0.0016 (0.0038)	-0.0375 (0.1097)
Individuals	1,541	1,292
Males		
Proximity		-0.1636 (0.4067)
Flatness		0.0500 (0.1600)
Individuals		867

Notes: Analysis conducted with Burundi's 2010 DHS dataset. Height information is only available for females.

Table 5 – Impact of returnee share on household livestock and subjective economic indicator

Variable	Livestock (TLUs)				Livestock (IHS of TLUs)		Current economic situation (worse = 1, better = 5)		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
2011									
Returnee share	-0.0978	-0.6084***	-0.5871**	-0.0855	-0.5631***	-0.5400**	-0.3220	-2.5069**	-2.1072**
	(0.0692)	(0.2359)	(0.2376)	(0.0634)	(0.2140)	(0.2155)	(0.2756)	(1.0289)	(0.9735)
Households	754	754	754	754	754	754	754	754	754
2015									
Returnee share	-0.1122	-1.1491***	-1.0849***	-0.0998	-1.0547***	-0.9877***	-0.3025	-1.6619	-0.8958
	(0.0884)	(0.2830)	(0.2770)	(0.0804)	(0.2581)	(0.2518)	(0.2600)	(1.0290)	(0.9578)
Households	754	754	754	754	754	754	754	754	754
2011 and 2015									
Returnee share	-0.1057*	-0.8788***	-0.8301***	-0.0937*	-0.8089***	-0.7588***	-0.3145*	-2.0844***	-1.5448**
	(0.0558)	(0.1845)	(0.1822)	(0.0509)	(0.1679)	(0.1656)	(0.1912)	(0.7303)	(0.6858)
Households	1,508	1,508	1,508	1,508	1,508	1,508	1,508	1,508	1,508
Controls	X		X	X		X	X		X
OLS	X			X			X		
IV		X	X		X	X		X	X

Notes: table shows results from separate regressions. “Returnee share” = share of community population who are returnees. *** indicates that the coefficient is significant at the 1% level. ** indicates that the coefficient is significant at the 5% level. * indicates that the coefficient is significant at the 10% level. Standard errors are included in parenthesis. In estimations in which we pool both rounds of the survey, we add a time dummy.

Table 6 – Impact of returnee share on household's land holdings

Table 3. Impact of returnee share on household's land holdings						
	Amount land (hectares)			IHS transformation		
Variable	2011					
Returnee share	0.6947*	-4.2112**	-3.3696*	0.2127	-2.8204***	-2.3671***
	(0.3914)	(1.8610)	(1.8022)	(0.1846)	(0.7435)	(0.7181)
Households	754	754	754	754	754	754
	2015					
Returnee share	-1.4162***	-6.7507***	-5.6923***	-0.4790**	-3.1033***	-2.7385***
	(0.5357)	(2.0110)	(1.8465)	(0.1951)	(0.7325)	(0.6768)
Households	754	754	754	754	754	754
	2011 and 2015					
Returnee share	-0.3978	-5.4810***	-4.5048***	-0.1429	-2.9618***	-2.5531***
	(0.3379)	(1.3795)	(1.2970)	(0.1362)	(0.5236)	(0.4962)
Households	1,508	1,508	1,508	1,508	1,508	1,508
Controls	X		X	X		X
OLS	X			X		
IV		X	X		X	X

Notes: table shows results from separate regressions. "Returnee share" = share of community population who are returnees. *** indicates that the coefficient is significant at the 1% level. ** indicates that the coefficient is significant at the 5% level. * indicates that the coefficient is significant at the 10% level. Standard errors are included in parenthesis. In estimations in which we pool both rounds of the survey, we add a time dummy.

Table 7 – Impact of returnee share on food insecurity

Variable	Daily difficulty		Weekly or more frequent difficulty		Every few months or more frequent difficulty	
	2011					
Returnee share	-0.2072 (0.1517)	1.5490*** (0.5217)	-0.2524 (0.1611)	1.8923*** (0.5689)	-0.0735 (0.1513)	1.0107* (0.5290)
Households	754	754	754	754	754	754
	2015					
Returnee share	0.1491 (0.1047)	0.2535 (0.3481)	0.1407 (0.1471)	0.7984 (0.5339)	0.3713** (0.1577)	0.4873 (0.4753)
Households	754	754	754	754	754	754
	2011 and 2015					
Returnee share	-0.0321 (0.0932)	0.9020*** (0.3183)	-0.0544 (0.1096)	1.3702*** (0.3950)	0.1552 (0.1108)	0.7684** (0.3644)
Households	1,508	1,508	1,508	1,508	1,508	1,508
Controls	X	X	X	X	X	X
OLS	X		X		X	
IV		X		X		X

Notes: table shows results from separate regressions. “Returnee share” = share of community; population who are returnees. ***, **, * indicates that the coefficient is significant at the 1%, 5%, and 10% level. Standard errors are included in parenthesis. In estimations in which we pool both rounds of the survey, we add a time dummy.

Table 8 – Impact of returnee share on health and thefts in 2011

	Illness		Thefts	
	Any member		Livestock	
Returnee share	0.1228 (0.1036)	-0.2359 (0.3825)	0.0188 (0.0663)	-0.2322 (0.1666)
	Adult		Agricultural tools	
Returnee share	0.0683 (0.0879)	-0.2736 (0.2700)	0.0308 (0.0330)	-0.0887 (0.0709)
	Child		Other assets	
Returnee share	0.0672 (0.0777)	-0.4504 (0.3481)	0.0445 (0.0315)	0.1568 (0.1442)
Households	754	754	754	754
Controls	X	X	X	X
OLS	X		X	
IV		X		X

Notes: table shows results from separate regressions. “Returnee share” = share of community population who are returnees. Standard errors are included in parenthesis.

Table 9 – Impact of returnee share on the likelihood that a member of the household migrated between 2011 and 2015

Returnee share	-0.1257 (0.1435)	0.5184 (0.5146)
Households	754	754
Controls	X	X
OLS	X	
IV		X

Notes: table shows results from separate regressions. “Returnee share” = share of community population who are returnees. Standard errors are included in parenthesis.

Table 10 – Impact of returnee share on change of main economic activities between 2011 and 2015

	(1)	(2)
	Top activity 2011 different from top activity 2015	
Returnee share	-0.0897 (0.1617)	1.4523** (0.5869)
	Top activity 2011 different from top two activities 2015	
Returnee share	-0.1988 (0.1596)	1.4373** (0.5718)
	Top two activities 2011 different from top activity 2015	
	-0.0897 (0.1617)	1.4522** (0.5869)
	Top two activities 2011 different from top two activities 2015	
	-0.1487 (0.1614)	1.6554*** (0.6028)
Households	754	754
Controls	X	X
OLS	X	
IV		X

Notes: table shows results from separate regressions. “Returnee share” = share of community population who are returnees. Standard errors are included in parenthesis.

Table 11 – Impact of returnee share on the use of land harvesting for household food consumption

	2011	
Returnee share	-0.0193 (0.0891)	-0.2281 (0.2810)
Households	650	650
	2015	
Returnee share	-0.0656 (0.0593)	-0.4858** (0.2370)
Households	709	709
Controls	X	X
OLS	X	
IV		X

Notes: table shows results from separate regressions. “Returnee share” = share of community population who are returnees. Standard errors are included in parenthesis. Information is only collected for those households with land holdings.

Online Appendix

Online Appendix for the paper “**The Impacts of Refugee Repatriation on Receiving Communities**”.

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Definition of variables

Table A1 provides the definition of all the variables used in the estimations. These variables are included in alphabetical order.

Table A1 – Definition of variables (alphabetical)

Variable	Definition
Age head	In years.
Change in activity	Dummy equal to one if the main income generating activity of the household changed between 2011 and 2015. Households' main activity is coded using 30 categories. The analysis uses four different variants of this variable.
Child to adult ratio	Number of children in the household divided by number of adults in the household. Adult = 14 years of age or older. Children = less than 14 years of age.
Current economic situation	Answer to question: <i>"Which of the following descriptions comes closest to how you see this household's current economic situation?"</i> Answers on a 5 point scale from one: <i>"Finding it very difficult"</i> to five: <i>"Living very comfortably"</i> .
Deaths in conflict	Dummy equal to one if at least 10% of the residents of the community were killed during the conflict. This information comes from the community survey.
Flatness	Logarithm of the inverse of altitude in metres.
Female head	Dummy equal to one if the head is a female.
Food difficulty daily	Dummy equal to one if the household faces difficulties meeting food needs on a daily basis.
Food difficulty weekly	Dummy equal to one if the household faces difficulties meeting food needs on a weekly basis or more frequently.
Food difficulty few months	Dummy equal to one if the household faces difficulties meeting food needs every few months or more frequently.
Height for age z-scores	Constructed using the information on mean height by age and gender from the World Health Organization. Only available for children under five years of age.
Household size	Number of members of the household.
IDP household	Dummy equal to one if at least one member of the household spent at least three months in displacement within Burundi.
Illness any	Dummy equal to one if any member of the household experienced a serious illness during 2005-2011.

Illness adult	Dummy equal to one if any adult member of the household experienced a serious illness during 2005-2011. Adult = 14 years of age or older.
Illness children	Dummy equal to one if any child member of the household experienced a serious illness during 2005-2011. Children = less than 14 years of age.
Land	Size of household plots in hectares.
Land harvesting for food	Dummy equal to one if any household member harvest their land in order to produce food for household consumption.
Livestock	Livestock index from 0 to 1 based on the following weights: cow/ox = 1, 1 sheep = 0.17, 1 goat = 0.17, 1 pig = 0.25 and 1 fowl = 0.01. It is divided by the number of adult members of the household. Adult = 14 years of age or older.
Low availability of land	Dummy equal to one if the community had low availability of land during the pre-war period. Information comes from the community survey.
Out-migration	Dummy equal to one if a household member emigrated to another community during 2011-2015.
Poor soil quality	Dummy equal to one if the community had poor soil quality during the pre-war period. Information comes from the community survey.
Pre-war primary school	Dummy equal to one if the oldest member of the household finished primary school, among those household members who were 14 years of age or older at the start of the war in 1993.
Pre-war years education	Average years of education of those household members who were 14 years of age or older at the start of the war in 1993.
Primary edu head	Dummy equal to one if the person completed primary schooling.
Proximity	Logarithm of inverse of distance to Tanzania in kilometres.
Returnee share	Returnees as a share of the population of community. Analysis uses two versions, one constructed from household survey and one constructed from community survey. A returnee must have spent three months outside Burundi.
Theft livestock	Dummy equal to one if the household experienced any livestock thefts during 2005-2011.
Theft agricultural tools	Dummy equal to one if the household experienced any agricultural tools thefts during 2005-2011.
Theft other assets	Dummy equal to one if the household experienced thefts of any other assets during 2005-2011 (not including housing).

First stage results

Table A2 reports the descriptive statistics of the two instruments. The average distance from the border was 58 kilometres, which is substantial given the lack of roads and hilly terrain in Burundi. Distance to the border varied from 6 to 147 kilometres. The average altitude was 1,606 meters. In turn, altitude varied from 757 meters to 2,172 meters.

Table A3 reports the results from the first stage regression. Proximity and Flatness both have a strong statistically significant impact on the share of returnees. We also report different test statistics to support the choice of instrument. First, we report the Kleibergen-Paap LM statistic for underidentification test, which is rejected. The weak identification test is also rejected. Finally, we fail to reject the overidentification test (null hypothesis is that the instruments are valid).

Table A2 – Descriptive statistics of the instruments

Variable	Descriptive statistics	
	Mean	SD
Distance (kms)	58.09	33.08
Proximity ($\ln(1/\text{distance})$)	-3.87	0.66
Altitude (meters)	1,606.31	314.42
Flatness ($\ln(1/\text{altitude})$)	-7.36	0.22

Table A3 – First stage results

First stage regressions	
Proximity	0.0460*** (0.0144)
Flatness	0.1867*** (0.0191)
Underidentification test	
Kleibergen-Paap LM statistic	132.856
χ^2 P-value	0.0000
Weak identification test	
Kleibergen-Paap Wald F statistic	109.116
Overidentification test	
Hansen J statistic	2.578
χ^2 P-value	0.1084
Controls	X

Note: *** indicates that the coefficient is significant at the 1% level. Standard errors are included in parenthesis.

Impact of proximity and flatness on change in average height

In our dataset we do not have data on adult height. However, this information is available from Burundi's 2010 DHS survey for adult females. This survey is also national and geocoded. Hence, we can replicate our two instruments with this survey. In Table A4, we present the results from a regression in which the dependent variable is the change in average height at the community level between females born in the 1970s and females born in the 1960s. The results suggest that there is no trend in this regard which is associated with the instruments.

Table A4 – Impact of proximity and flatness on change in average height for females born in the 1970s and females born in the 1960s, DHS data

Variable	Height
Proximity	0.0129 (0.0181)
Flatness	-0.0036 (0.0064)
Communities	264

Notes: Analysis conducted with Burundi's 2010 DHS dataset. Height information is only available for females.

Estimations using the alternative measure of the returnee share

The share of returnees in the main estimations in the paper is constructed with information from the survey roster. Tables A5 reports the results of the main estimations using the alternative measure of the returnee share of the community's population, which is based on the information from the community interviews (i.e. number of returnees, overall population).

Table A5 – Impact of returnee share on household livestock using an alternative measure of the returnee share

		Livestock (TLUs)		Current economic situation (worse = 1, better = 5)		
Variable	2011					
Returnee share	-0.1801** (0.0768)	-1.0218** (0.4154)	-0.9813** (0.4080)	0.0395 (0.3673)	-4.1362** (1.8171)	-3.4711** (1.6804)
Households	754	754	754	754	754	754
2015						
Returnee share	-0.3291*** (0.0811)	-1.9860*** (0.5631)	-1.8763*** (0.5282)	0.1736 (0.3419)	-2.8650 (1.8097)	-1.6330 (1.6392)
Households	754	754	754	754	754	754
2011 and 2015						
Returnee share	-0.2484*** (0.0545)	-1.5039*** (0.3480)	-1.4038*** (0.3311)	0.1053 (0.2502)	-3.5006*** (1.2882)	-2.6410** (1.1853)
Households	1,508	1,508	1,508	1,508	1,508	1,508
Controls	X		X	X		X
OLS	X			X		
IV		X	X		X	X

Notes: table shows results from separate regressions. "Returnee share" = share of community population who are returnees. *** indicates that the coefficient is significant at the 1% level. ** indicates that the coefficient is significant at the 5% level. * indicates that the coefficient is significant at the 10% level. Standard errors are included in parenthesis. In estimations in which we pool both rounds of the survey, we add a time dummy.

Table A6 shows the results for the other main results of the paper. The results shown are for instrumental variable estimations with controls. Columns 1 to 4 use the combined sample (i.e. 2011 and 2015), while columns 5 to 10 use 2011 data, as these variables are only available for that year.

Table A6 – Impact of returnee share on household on different measures using an alternative measure of the returnee share

	Amount land	Food security			Illness			Thefts		
		Daily	Weekly	Few months	Any	Adult	Child	Livestock	Ag. tools	Other assets
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Returnee share	-7.8237*** (2.3373)	1.5060*** (0.5707)	2.419*** (0.7169)	1.3465** (0.6213)	-0.3336 (0.6417)	-0.3686 (0.44459)	-0.7521 (0.5937)	-0.3789 (0.2840)	-0.1461 (0.1108)	0.2696 (0.2423)
Households	1,508	1,508	1,508	1,508	754	754	754	754	754	754
Controls	X	X	X	X	X	X	X	X	X	X
IV	X	X	X	X	X	X	X	X	X	X

Notes: table shows results from separate regressions. “Returnee share” = share of community population who are returnees. Standard errors are included in parenthesis.

Estimations excluding households in Ruyigi and Makamba

Table A7 reports the results of the main estimations excluding households in Ruyigi and Makamba, the two provinces with more returnees, from the sample.

Table A7 – Impact of returnee share on household on household livestock excluding households in Ruyigi and Makamba from the sample

	Livestock (TLUs)			Current economic situation (worse = 1, better = 5)		
Variable	2011					
Returnee share	-0.0702 (0.0753)	-0.7336** (0.3329)	-0.7279** (0.3327)	-0.3428 (0.2977)	-3.1076** (1.4587)	-2.8179** (1.3850)
Households	695	695	695	695	695	695
	2015					
Returnee share	-0.07349 (0.0971)	-1.6639*** (0.4081)	-1.5079*** (0.3899)	-0.3745 (0.2883)	-2.4796* (1.4761)	-1.6101 (1.3696)
Households	695	695	695	695	695	695
	2011 and 2015					
Returnee share	-0.0745 (0.0611)	-1.1987*** (0.2644)	-1.1074*** (0.2574)	-0.3566* (0.2083)	-2.7936*** (1.0402)	-2.2999** (0.9812)
Households	1,390	1,390	1,390	1,390	1,390	1,390
Controls	X		X	X		X
OLS	X			X		
IV		X	X		X	X

Notes: table shows results from separate regressions. “Returnee share” = share of community population who are returnees. *** indicates that the coefficient is significant at the 1% level. ** indicates that the coefficient is significant at the 5% level. * indicates that the coefficient is significant at the 10% level. Standard errors are included in parenthesis. In estimations in which we pool both rounds of the survey, we add a time dummy.

Table A8 shows the results for the other main results of the paper. These are instrumental variable estimations with controls. Columns 1 to 4 use the combined sample (i.e. 2011 and 2015), while columns 5 to 10 use 2011 data, as these variables are only available for that year.

Table A8 – Impact of returnee share on household on different measures excluding households in Ruyigi and Makamba from the sample

	Amount land	Food security			Illness			Thefts		
		Daily	Weekly	Few months	Any	Adult	Child	Livestock	Ag. tools	Other assets
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Returnee share	-6.4684*** (1.8788)	1.0652*** (0.4628)	1.9974*** (0.5642)	0.9768* (0.5098)	-0.2426 (0.5656)	-0.1415 (0.3863)	-0.6831 (0.5205)	-0.3275 (0.2504)	-0.1358 (0.0907)	0.2473 (0.2019)
Households	1,390	1,390	1,390	1,390	695	695	695	695	695	695
Controls	X	X	X	X	X	X	X	X	X	X
IV	X	X	X	X	X	X	X	X	X	X

Notes: table shows results from separate regressions. “Returnee share” = share of community population who are returnees. Standard errors are included in parenthesis.

Estimations with errors clustered in different ways

Tables A9 to A12 show the results similar to those in Tables 5 to 8 of the paper, but with errors clustered in different ways. In particular, the errors are either clustered at the sous-colline level (i.e. community level) or at the sous-colline and period level.

Table A9 – Impact of returnee share on household livestock and subjective economic indicator with different types of error clustering

Variable	Livestock (TLUs)			Livestock (IHS of TLUs)		Current economic situation (worse = 1, better = 5)			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
2011									
Returnee share	-0.0978 (0.0709)	-0.5871** (0.2634)		-0.0855 (0.0652)	-0.5400** (0.2405)		-0.3220 (0.3074)	-2.1072** (0.9885)	
Households	754	754		754	754		754	754	
2015									
Returnee share	-0.1122 (0.0952)	-1.0849*** (0.3545)		-0.0998 (0.0880)	-0.9877*** (0.3279)		-0.3025 (0.2918)	-0.8958 (1.3378)	
Households	-0.1122 (0.0952)	-1.0849*** (0.3545)		-0.0998 (0.0880)	-0.9877*** (0.3279)		-0.3025 (0.2918)	-0.8958 (1.3378)	
2011 and 2015									
Returnee share	-0.1057* (0.0639)	-0.8301*** (0.2712)	-0.8301*** (0.2273)	-0.0937 (0.0589)	-0.7588*** (0.2507)	-0.7588*** (0.2097)	-0.3145 (0.2599)	-1.5448 (0.9721)	-1.5448 (0.8593)
Households	1,508	1,508	1,508	1,508	1,508	1,508	1,508	1,508	1,508
Controls	X	X	X	X	X	X	X	X	X
OLS	X			X			X		
IV		X	X		X	X		X	X
Clustered at									
Sous-colline	X	X		X	X		X	X	
Sous-colline and round			X			X			X

Notes: table shows results from separate regressions. "Returnee share" = share of community population who are returnees. *** indicates that the coefficient is significant at the 1% level. ** indicates that the coefficient is significant at the 5% level. * indicates that the coefficient is significant at the 10% level. Standard errors are included in parenthesis. In estimations in which we pool both rounds of the survey, we add a time dummy.

Table A10 – Impact of returnee share on household's land holdings with different types of error clustering

	Amount land (hectares)			IHS transformation		
Variable	2011					
Returnee share	0.6947 (0.4481)	-3.3696 (2.3813)		0.2127 (0.2221)	-2.3671** (1.0012)	
Households	754	754		754	754	
	2015					
Returnee share	-1.4162** (0.5708)	-5.6923*** (1.9691)		-0.4790** (0.2229)	-2.7385*** (0.9178)	
Households	754	754		754	754	
	2011 and 2015					
Returnee share	-0.3978 (0.3905)	-4.5048** (1.8924)	-4.5048*** (1.6545)	-0.1429 (0.1659)	-2.5531*** (0.8800)	-2.5531*** (0.7076)
Households	1,508	1,508	1,508	1,508	1,508	1,508
Controls	X		X	X		X
OLS	X			X		
IV		X	X		X	X
	Clustered at					
Sous-colline	X	X		X	X	
Sous-colline and round			X			X

Notes: table shows results from separate regressions. "Returnee share" = share of community population who are returnees. *** indicates that the coefficient is significant at the 1% level. ** indicates that the coefficient is significant at the 5% level. * indicates that the coefficient is significant at the 10% level. Standard errors are included in parenthesis. In estimations in which we pool both rounds of the survey, we add a time dummy.

Table A11 – Impact of returnee share on food insecurity with different types of error clustering

Variable	Daily difficulty			Weekly or more frequent difficulty			Every few months or more frequent difficulty		
	2011								
Returnee share	-0.2072	1.5490**		-0.2524	1.8923*		-0.0735	1.0107	
	(0.2157)	(0.6622)		(0.2307)	(0.9698)		(0.2066)	(0.6245)	
Households	754	754		754	754		754	754	
	2015								
Returnee share	0.1491	0.2535		0.1407	0.7984		0.3713**	0.4873	
	(0.1088)	(0.3651)		(0.1807)	(0.4922)		(0.1766)	(0.4114)	
Households	754	754		754	754		754	754	
	2011 and 2015								
Returnee share	-0.0321	0.9020**	0.9020**	-0.0544	1.3702**	1.3702**	0.1552	0.7684*	0.7684*
	(0.1251)	(0.4154)	(0.4268)	(0.1594)	(0.6598)	(0.5831)	(0.1568)	(0.4161)	(0.4518)
Households	1,508	1,508	1,508	1,508	1,508	1,508	1,508	1,508	1,508
Controls	X	X	X	X	X	X	X	X	X
OLS	X			X			X		
IV		X	X		X	X		X	X
	Clustered at								
Sous-colline	X	X		X	X		X	X	
Sous-colline and round			X			X			X

Notes: table shows results from separate regressions. “Returnee share” = share of community; population who are returnees. ***, **, * indicates that the coefficient is significant at the 1%, 5%, and 10% level. Standard errors are included in parenthesis. In estimations in which we pool both rounds of the survey, we add a time dummy.

Table A12 – Impact of returnee share on health and crime in 2011 with different types of error clustering

	Illness		Crime	
	Any member illness		Livestock theft	
Returnee share	0.1228 (0.0901)	-0.2359 (0.3137)	0.0188 (0.0675)	-0.2322* (0.1400)
	Adult illness		Agricultural tools theft	
Returnee share	0.0683 (0.0794)	-0.2736 (0.3063)	0.0308 (0.0312)	-0.0887 (0.0668)
	Child illness		Other assets theft	
Returnee share	0.0672 (0.0607)	-0.4504** (0.2250)	0.0445 (0.0300)	0.1568 (0.1420)
Households	754	754	754	754
Controls	X	X	X	X
OLS	X		X	
IV		X		X
	Clustered at			
Sous-colline	X	X	X	X

Notes: table shows results from separate regressions. “Returnee share” = share of community population who are returnees. Standard errors are included in parenthesis.

Estimations excluding the top-quartile and top-decile of the returnee share

Table A13 replicates the results of Table 5 in the paper, but excluding the top-quartile and top-decile of the returnee share. These results provide information about how the results change across the distribution of the returnee share.

Table A13 – Impact of returnee share on household livestock and subjective economic indicator excluding top quartile and decile from the estimation

Variable	Livestock (TLUs)		Livestock (IHS of TLUs)		Current economic situation (worse = 1, better = 5)	
	(1)	(2)	(3)	(4)	(5)	(6)
2011 and 2015						
Returnee share	-1.5328*** (0.4362)	- 1.22846*** (0.2867)	-1.4061*** (0.3979)	-1.1356*** (0.2609)	-3.5049** (1.6989)	-2.4701*** (0.7303)
Households	1,192	1,386	1,192	1,386	1,192	1,386
Excluding 75th	X		X		X	
Excluding 90th		X		X		X
Controls	X	X	X	X	X	X
IV	X	X	X	X	X	X

Notes: table shows results from separate regressions. "Returnee share" = share of community population who are returnees. *** indicates that the coefficient is significant at the 1% level. ** indicates that the coefficient is significant at the 5% level. * indicates that the coefficient is significant at the 10% level. Standard errors are included in parenthesis. In estimations in which we pool both rounds of the survey, we add a time dummy.