The Economics of Refugee Return

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Abstract
We explore differences in economic outcomes between return migrant households and non-migrant households using panel data from Burundi, a country which experienced large scale conflict-led emigration to Tanzania and massive post-war refugee return. We exploit proximity at birth to the border of Tanzania for identification purposes. Results indicate that returnee households have significantly lower levels of livestock. Legal restrictions on economic activities while in displacement, which resulted in high levels of inactivity, may explain a portion of the posterior economic gap between returnee and non-migrant households. There is no evidence for other channels (i.e. vulnerability to crime, health status).

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1. Introduction

International migration is often temporary and the evidence suggests that many migrants return home to take advantage of a higher return in their home country to skills acquired abroad (Dustmann et al., 2011). Examples of these skills include knowledge of a new language, international practices, different markets and production techniques. There is substantial evidence that international migration experiences often result in a wage premium upon returning home (Co et al., 2000; Barrett and Goggin, 2010; Reinhold and Thom, 2013; Pozo, 2014; Wahba, 2015). Several studies have also found that returnees are particularly likely to become entrepreneurs upon return (Dustman and Kirchkamp, 2002; Mesnard, 2004; McCormick and Wahba, 2001; Piracha and Vadean, 2010). Differences in prices and accumulated wealth may also play a role in the decision to return home. Migrants often postpone consumption in the host country to take advantage of lower prices at home (Dustmann, 1994) and accumulate resources for later investments in the home country (Yang, 2006). As such, returnees could have particularly high levels of wealth relative to earnings upon returning to the home country.

The previous literature has mostly focused on the case of "voluntary" migration. However, millions of migrants around the world are forced to leave their home countries in order to escape violence. The United Nations Population Division estimates that there were 19 million international refugees worldwide in 2014 and the majority of these, over 80%, are in neighboring developing countries (United Nations High Commission for Refugees, 2015). Many of these refugees eventually become "return migrants" and the consequences of being a returnee are likely to be very different in the conflict/post-conflict context.

In situations of conflict migration might take place even if the expected earnings gap between the host and home country is small or even negative. Economic considerations are relevant, but the level of violence often escalates abruptly during crises and security is the main determinant of migration. In addition, those escaping conflict usually have limited transportation options and often have to walk to their destination (Durieux, 2008), a fact that limits the set of destinations available and the possibility of making significant economic gains from migration. Moreover, in the conflict context households often leave behind livestock, land and other assets that are difficult to reclaim in the post-conflict period (Ruiz and Vargas-Silva, 2013).

In the post-conflict context, the decision to return is also likely to be affected by different factors. In this case, a decrease in the level of violence back home is likely to be a key

determinant of the timing of voluntary returns. However, in this context, return is often involuntary. This includes forced repatriations and cases in which the host country considers that international protection is no longer justified and declares refugees to be illegal residents (Black and Koser, 1999). This contrasts widely with the case in which returnees are able to decide the timing of their return and to take advantage of the differences in the returns to skills between the two countries.

It is possible to think that there might also be potential skills and labor market experience gains from international migration and return in the conflict/post-conflict context. Refugees, including those in camps, are often involved in trading relationships with host communities and participate in host labor markets. For instance, the trade in milk and meat between Somali refugee camps and neighboring communities in Kenya was estimated to be USD 3 million for 2010 (Enghoff et al., 2010). In Tanzania the presence of refugees from Burundi and Rwanda initially led to a "huge upsurge in business and trade conducted by both hosts and refugees" (Whitaker, 2002). Products which were previously exported to Burundi and Rwanda were now traded in refugee camps inside Tanzania and in many cases refugees used food aid to trade with host communities. Refugees also participate in host labor markets and sometimes even displace local workers (Ruiz and Vargas-Silva, 2015a; 2015b).

Yet, in many situations the host country imposes strong restrictions on the movements and economic activities of refugees. For instance, Ongpin (2008) explains how Tanzania introduced restrictive legislation a few years after the arrival of the refugees which prohibited refugees from seeking employment outside the camps or possessing farms within the camps. This resulted in high levels of inactivity and made refugees highly dependent on humanitarian aid (United Nations High Commission for Refugees, 2009; Harild et al., 2015). There are also cultural factors that may lead to high levels of inactivity for forced migrants. For instance, Lehrer (2010) explains that a "culture of idleness" developed over time in displacement camps in Northern Uganda and resulted in high levels of inactivity for different groups.

In this paper we look at economic outcomes in a post conflict scenario and explore the role of return migration. In particular, we explore the economic implications of being a returnee in a situation in which conflict was the original driver of a large-scale migration followed by massive return migration after the end of the conflict. We define a returnee as someone who crossed an international border for at least three months and later returned to the community of

origin. We use a simple theoretical model to show how migration and return in situations of conflict can lead to different outcomes in comparison to those who never migrated (i.e. stayees). We then use survey data to test differences in livestock levels between returnees and stayees. Finally, we explore the role of economic activities (during migration and current), vulnerability to crime and health shocks, time since return, and time abroad as potential key factors explaining the differences between returnees and stayees.

For the empirical analysis we use data from Burundi, a country which experienced a major civil conflict between 1993 and 2000. A large share of the country's population was displaced to another country, with neighboring Tanzania being the main destination of migrants. After a few years Tanzania closed all refugee camps, stop providing legal protection to the refugees and repatriated the remaining camp residents to Burundi (European Commission, 2009; Harilds et al., 2015). The large majority of Burundian refugees from the 1993-2000 conflict have now returned to the country. It is now possible to explore the medium-term implications of international migration experience for Burundian returnees. We use countrywide panel data collected in 2011 and in 2015. The survey has detailed information about livestock and economic activities of returnees and stayees. We also have information on returnees' economic activities just before and during migration.

In addition, we also explore whether there is convergence in outcomes over time between returnees and stayee households. We have data 11 and 15 years after the end of the conflict and it is possible that any negative (or positive) gaps between returnees and stayee households have disappeared or increased over time. For instance, Verwimp and Muñoz-Mora (2013) estimate that it takes 8 to 10 years after return for the level of welfare of internally displaced households in Burundi to converge to that of the non-displaced. O'Reilly (2015) indicates that in Northern Uganda returnee households experienced a growth rate of per capita consumption significantly higher than comparable non-returnee households.

We control for the level of violence exposure during the conflict period and other key factors in the estimations. Yet, there is still a possibility that unobserved factors have affected the likelihood of being an international migrant (and therefore a returnee) in the first place. We use several techniques to address this possibility. First, we use geographical factors (i.e. proximity to the border of Tanzania at birth) as an instrument in our estimations. In the case of Burundi most displacement took place by foot and distance to Tanzania was one of the key determinants of

being an international migrant. Second, as a robustness check, we use propensity score matching in order to compare outcomes of returnee and stayee households.

Our results show that returnee households have significantly lower livestock levels than stayee households. The evidence supports the idea that legal and practical restrictions on economic activities while in displacement could explain a portion of the economic gap between returnee and stayee households. There was no evidence in support of other possible channels such as higher vulnerability to crime or poorer health conditions. The effect of forced migration on livestock levels diminish with time after return.

2. Conflict and forced displacement in Burundi

The first democratic elections of Burundi were held in 1993. The winner of the election, Melchior Ndadaye, was the first Hutu president of the country. Ndadaye was assassinated a few months after the election. This assassination and the political events which followed led to a long civil war in which an estimated 300,000 people were killed (Ngaruko and Nkurunziza, 2000).[2]

Hundreds of thousands of people fled their homes in search of refuge during the conflict period. In this study we are interested in those who left the country, most of whom were international refugees in neighboring countries. As shown in Figure 1, Burundi shares borders with the Democratic Republic of Congo (DRC), Rwanda, Tanzania and one lake. From these neighboring countries, Tanzania has been historically perceived as the stable "safe haven" for refugees (Kamanga, 2005). In the early 1990s the DRC and Rwanda were also immersed in conflict (Ongpin, 2008). Therefore, it is not surprising that the Burundian conflict resulted in a large scale forced displacement to Tanzania (Ruiz et al., 2015). UNHCR (2008) estimates that at the peak of the refugee crisis there were nearly half a million registered Burundian refugees in Tanzania.

[Figure 1]

Figure 2 reports the number of Burundian refugees in Tanzania in mid-2000 per province of origin in Burundi. The second number in each province is the number of refugees from that province as a share of the entire population of the province as recorded in the 1990 Census. As evidenced by Figure 2, most of the refugees came from provinces which border Tanzania. This is expected as a large portion of the refugee migration took place by foot.

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[2] There are several sources for understanding the origins and development of the conflict and war in Burundi. Of particular interest, was the escalation of conflict leading to untargeted and random attacks to the overall population. Refer to Bundervoet et al (2009), Uvin (1999), Voors et al (2012) for more information.

[Figure 2]

Burundian refugees in Tanzania were placed in refugee camps in the north-western part of the country (Maystadt and Verwimp, 2014). Unlike the previous cohorts (i.e. 1972 refugees), Burundian refugees fleeing to Tanzania from 1993 onwards were not given land for agricultural activities (Harild et al., 2015). Still, many did engage in casual agricultural employment in neighboring villages shortly after arrival (Ruiz and Vargas-Silva, 2015b). Whitaker (2002) explains that in some areas close to the camps the wage rate for casual work initially decreased by 50%. However, over time the Tanzanian Government restricted the movement of refugees to four kilometers from the camps and imposed limitations on the types of economic activities that refugees could engaged in (Millner, 2013). Refugees could not legally work outside camps or own farms in the camp areas. As a result many of these refugees were fully dependent on international aid support for the entire duration of their stay in Tanzania (Harild et al., 2015).

The Arusha Peace and Reconciliation Agreement was signed in 2000 putting an official end to the conflict. It took some more years for the country to be completely peaceful, but a large wave of return migration from Tanzania to Burundi started in 2001. As shown in Figure 3, around 560,000 refugees returned to Burundi from Tanzania during the 2001 – 2013 period. This number includes children of Burundian refugees who were born in Tanzania. The peaks in 2008 and 2012 respond to the closing of refugee camps by Tanzanian authorities, as residents of these camps were required to return to Burundi (i.e. Lukole refugee camp in 2008 and Mtabila refugee camp in 2012).

[Figure 3]

3. Theoretical background

Models of migration and return decisions typically start with individuals facing the choice of staying at home and earning Y_H or going abroad and earning Y_A. It is possible to consider a two period problem, with the first being the period of migration and the second being the period of return. Income in both periods is dependent on the skills set of the individual. In the first period the individual has a skill set which is based on home country experiences (SK_H) and, if migration takes place, in the second period the individual has a set of skills transformed by the international experience (SK_A). The changes in skills could include positive aspects such as learning a new language or production technique. While the expected home-host country earnings gap may be positive at first this may reverse in the future as the individual accumulates skills abroad that are

rewarded more back home. This in turn may prompt the decision to return (Dustmann and Görlach, 2015). However, there could also be a loss/deterioration or downgrading of skills because of a mismatch between skills and activities or, particularly in the refugee context, long periods of inactivity. Below we present evidence of high levels of inactivity while abroad for the returnees in our sample.

While economic considerations are important, the difference in expected security levels at home (SE_H) and abroad (SE_A) have a major effect on the individual's decision to migrate in the conflict context (Ibañez and Velez, 2008). Finally, there are also costs associated with migration (C_E) and return (C_R).

As explained above, in many cases, including Burundi, return is involuntary for a large share of the refugees. For simplicity let's assume that there is no possibility of being a permanent migrant (i.e. everyone is back in the home country in the second period). The main point that we make below is not affected by this assumption, but it is easier to show.[3] Using a linear model, the individual would like to move abroad in the first period if:

$$([Y_A^1(SK_H) + Y_H^2(SK_A)] + [\theta^1 SE_A^1 + \theta^2 SE_H^2] - [C_E + C_R]) > \tag{1}$$
$$([Y_H^1(SK_H) + Y_H^2(SK_H)] + [\theta^1 SE_H^1 + \theta^2 SE_H^2])$$

Where the θ^i represent the relative weights of security during both periods.

It is possible to re-write (1) as:

$$Y_H^2(SK_H) - Y_H^2(SK_A) < [Y_A^1(SK_H) - Y_H^1(SK_H)] - [C_E + C_R] + \theta^1 [SE_A^1 - SE_H^1] \tag{2}$$

Note that a high security gap (i.e. $SE_A^1 - SE_H^1$) may lead to migration (and return) taking place even if it is not economically beneficial (i.e. $Y_H^1(SK_H) > Y_A^1(SK_H)$ and $Y_H^2(SK_H) > Y_H^2(SK_A)$). For instance, the individual could be aware of the legal limitations to economic activities abroad and the possible deterioration of skills for the future, but the difference in expected security levels could be large enough to still encourage migration. This differs from the purely "economic" migration context in which security does not play a major role.

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[3] It is also possible to include other factors in the discussion such bias for home consumption or accumulation of savings abroad without changing the main idea.

In the empirical section we explore differences in livetsock levels between returnees and stayees. This relates strongly with the left hand side factors in (2). The first term on the right hand side of (2) is the cost of migration and return which relates strongly to pre-migration distance from the border, information that we have in our dataset. The second term on the right hand side of (2) is the earnings gap during the first period (at home and abroad). We have some related information in this regard in the survey (i.e. pre/during migration activities and pre-war livestock levels). The last term in (2) reflects the security levels at home and abroad. For the most part security levels in Tanzania where relatively high. Most of the variation in security relates to security levels at home. We have information on conflict intensity at the community of origin level, which should serve as a good proxy for security levels.

4. Methodology

4.1 Data

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. Figure 4 shows the distribution of the communities across Burundi.

[Figure 4]

In this study we use the community, household and individual components of the survey. We exclude the households from Bujumbura, the capital, due to the fact that these households are in an urban environment with very different economic dynamics from those of rural Burundi. Also, the conflict and displacement dynamics were very different (Verwimp and Van Bavel, 2014). The re-interview rate of households in rural Burundi was over 90%. After excluding households in Bujumbura we are left with a total of 904 households living in 87 communities for which we have complete data in 2011 and 2015.

We start the analysis by looking at the implications of household returnee status on livestock levels. Previous studies have suggested that livestock is the main form of wealth in rural Burundi (Bundervoet, 2009; Verwimp and Van Bavel, 2014). In order to standardize the livestock across individuals we use Tropical Livestock Units (TLUs). Following Bundervoet (2009), 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. After standardizing the livestock in TLUs we divide the standardized number by the number of adult members of the household. As such,

our dependent variable is livestock per adult household member (defined as those who are 14 years of age or older).

Table 1 reports the mean value of livestock for stayee and returnee households. In the table returnee households are defined as households with at least one member who is a returnee. In the regressions below we also show results with alternative definitions of a returnee household. Returnee households have a lower average livestock than stayee households. The gap is equal to 0.06 TLUs per adult member in 2011 and 0.08 TLUs per adult member in 2015.

4.2 Instrumental variable estimation

The main estimations are a series of regressions along the following lines:

$$Y_i = \delta_i + \beta R_i + \theta X_i + \varepsilon_i \tag{3}$$

Where Y_i is the outcome of interest for household (or individual) i, δ_i is the province dummy, X_i are a series of individual, household and community level controls and ε_i is the random error. We present results using each round of the survey separately and together. In estimations in which we pool both rounds of the survey we add a time dummy and all estimations include robust standard errors.

The coefficient of interest for the analysis is β. The variable R_i indicates a returnee individual or household. In order to be considered a returnee a person must have lived abroad for at least three months. We explore results using different specifications of R_i at the household level. First, we use the share of household members who are returnees. Second, we use a dummy indicating that at least one member of the household is a returnee. We tried other variations such as a dummy indicating that the head of the household is a returnee and results are robust to these variations in definition. Table 2 provides descriptive statistics for the control variables included in X_i and Appendix 1 includes the definition and source of all the variables included in the estimation.

[Table 2]

As explained above, the Tanzanian Government closed the refugee camps in the 2000s demanding the return of the refugees displaced by the 1993-2000 conflict to Burundi. The large majority of these refugees returned to Burundi (Harild et al., 2015; Ruiz and Vargas-Silva, 2015b). Hence, there is no selection in terms of return migration from Tanzania. Moreover, most

returnees returned to their region of birth. In the estimation using individual data to explore the role of economic activities (see Section 6) we limit the analysis to those adults who either live in the community they were born or in a neighboring community. This is true for 82% of the adults in the dataset and over 90% live in their province of birth.

There is also substantial evidence that exposure to conflict in Burundi was random (Voors et al., 2012; Uvin, 1999). That is, exposure to conflict was largely exogenous to household characteristics and it did not relate to factors such as wealth and education. We use information from the community survey to control for conflict exposure. However, even if exposed to the same level of conflict, some individuals might be more likely than others to move abroad in order to scape conflict. As such, one possibility of bias in our case relates to the likelihood of being an international migrant in the first place.

The literature on forced migration suggests that even if random conflict is the main driver of emigration, those individuals from wealthier families can travel further and select better locations (Van Hear, 2006). Therefore, the returnees in our sample could have come from better off households in the pre-conflict period. We explore the role of pre-war livestock further in this section and in the robustness section. Yet, there could be other related unobserved factors that affect the likelihood of being a returnee or having a returnee as a member of the household. In order to control for this possibility we need an exogenous factor that affects the likelihood of being an international migrant.

One key observable aspect which is likely to affect the likelihood of being a migrant/returnee is the difficulty of travelling to Tanzania. Geographical features play a key role in this regard, particularly in Burundi where a substantial portion of the displacement occurred by foot. One obvious factor that should make it more difficult to get to Tanzania is proximity to the border. In the estimation we use the logarithm of the inverse of distance to the border at birth as an instrument for the likelihood of being a refugee/returnee. We use the logarithm of proximity to account for the fact that some of the communities are very close to the border.

The main worry about this instrument is that proximity may relate to unobserved factors that affect household wealth or economic activities. We conduct several analyses to explore this possibility. First, for older households (i.e. those which were established before the start of the conflict in 1993) we have pre-conflict livestock data. As shown in the first column of Table 3 there is no statistically significant relationship between proximity and pre-war livestock. While

the measure of pre-conflict livestock is informative caution should be used while interpreting this variable as there could be issues related to the long recollection period as shown by previous studies (e.g. Beegle et al., 2012).

Another possibility is to look at education levels. Primary education in Burundi is compulsory for children between the ages of 7 and 13. However, the war destroyed a quarter of the country's schools, a significant portion of the teaching staff was killed and recruitment of new teachers was interrupted during the conflict (US Department of Labor, 2001). We focus on the years of education of 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 on this variable.

We can also use the information from the survey on the main economic activities of returnees just before migration. Given that this specific information was only collected for a sub-sample of returnees (i.e. one adult returnee per household) we cannot conduct a full placebo test of the "impact" of being a future returnee on pre-war/pre-migration economic activities. However, we can still test the relationship of the economic activities of returnees just before migration with proximity to the border. As shown in columns 3, 4 and 5 of Table 3 there is no significant relationship between proximity and pre-migration economic activities.

Finally, in the last column of Table 3 we show that proximity was not correlated with the likelihood of being an IDP household (i.e. displaced within Burundi), which indicates that conflict was not region specific. This relates well with accounts of the conflict, which was widespread and random in terms of targets. As we show below, proximity only relates to the likelihood of being an international returnee (i.e. those who crossed the border).

[Table 3]

Table 4 reports the results of the first stage estimations. The results suggest that proximity to the border has a strong positive effect on the likelihood of being a refugee. The value of the F-test of the excluded instrument test is also very high.

[Table 4]

5. Impacts on livestock

Table 5 reports the impact of being a returnee household on livestock levels. The difference is negative for both periods but it is not statistically significant in the first period IV estimations. The coefficient for both rounds controlling for relevant factors (column 9) suggests that, on

average, a household with at least one returnee has a livestock per adult which is about 0.24 TLU smaller than the average stayee household, which is broadly the equivalent in TLUs to one pig per household adult member. This result suggests a very large livestock gap between returnee and stayee households.

[Table 5]

6. The role of economic activities during and after migration

As we explained in the theoretical section, inactivity while abroad can have implications for income generation upon returning to the home country due to the deterioration of skills. In this section we look at information on economic activities to shed some light on this possibility.

One adult returnee per household was randomly selected during the data collection for a separate in-depth interview about experiences before, during and after migration. This information includes the economic activities of individuals during those periods. The top portion of Table 6 summarizes the main economic activities of returnees while abroad, while the bottom portion provides information on activities just before migration. Column (1) contains information on the main economic activity, while column (2) reports on all economic activities. In column (2) we are also able to separate between agricultural employees from non-agricultural employees.

Close to one third of the returnees with available information were inactive while abroad, which compares to 10% just before migration. This high level of inactivity among migrants in the context of forced displacement has also been documented in other contexts (e.g. Lehrer, 2010) and corresponds well with stories about the dependence of refugees on food rations from international agencies and the legal restrictions that refugees faced for working outside the camps (Harild et al., 2015; West and Wambugu, 2003). Also, the share of employees who engaged in agricultural work while abroad is substantially higher that in the pre-migration situation. Finally, while farming for subsistence was very important for returnees in the pre-migration period (main activity of 71% of respondents), this was not the case during migration (main activity of just 23% of respondents). Again, this coincides well with the legal limitations for Burundian refugees to cultivate plots while in Tanzania.

[Table 6]

We cannot test the implications of past labor market experiences on current livestock levels because we only have pre-migration information for a sub-set of returnees and there is no

comparable situation for stayees. Also, we do not have good data on current income in the survey. Given the rural nature of the region compensation for work is often provided by payment in kind and there is a strong reliance on farming for subsistence. However, we can still look at current economic activities and see if there are major differences between returnees and stayees in this regard.

In Table 7 we present the impact of returnee status on current main economic activity. In addition to the household controls we add controls for marital status, gender, age, education and IDP status of the individual. The results suggest that being a returnee has a negative impact on having self-employment as the main activity. This result contrasts with the evidence from the "economic" migration context in which returnees often have a higher likelihood of being in self-employment (e.g. McCormick and Wahba, 2001). On the other hand, returnees have a significantly higher chance of having farming as their main economic activity (a gap of about 24 percentage points).

[Table 7]

Main economic activity is not the whole story. Given the substantial importance of farming for subsistence in Burundi it is important to look at all economic activities. Table 8 explores activity participation once we allow the individuals to participate in more than one activity. Being a returnee has a strong positive impact on the likelihood of being an agricultural worker and subsistence farming. On the other hand, the coefficients for self-employment and being a non-agricultural employee are negative but not significant.

[Table 8]

Overall the greater tendency of returnees to depend on the agricultural sector (for subsistence in their own plots or as employee) and smaller likelihood of self-employment could explain some of the observed livestock difference between returnee and stayee households. In order to support this possibility in Table 9 we provide the average livestock levels by economic activities for *stayees*. By using stayees we can get a good idea of the overall livestock consequences of certain economic activities without worrying about the possible effects of migration. While we cannot claim any causal effects from the results in Table 9, it is clear that those in self-employment and non-agricultural employment live in households with higher livestock levels per adult. Meanwhile those in agricultural employment and farming, the two

activities in which returnees had a higher likelihood of participating, live in households with lower average livestock levels per adult.

[Table 9]

7. The role of household vulnerability

Another possible explanation of the livestock differences between returnee and stayee households is that returnee households are more vulnerable than stayee households. This vulnerability could be reflected in factors such as exposure to crime or health complications. With some family members abroad there could have been less protection of livestock and other assets and greater exposure to theft. There is also a substantial literature which documents the adverse effects of forced displacement for health outcomes (e.g. Ortiz Becerra, 2014; Thomas and Thomas, 2014). Returnee households with poorer health may not be able to accumulate livestock as fast as other households.

In the survey there are questions about thefts of livestock, cash, agricultural tools and other assets since 2005. As suggested by the results in Table 10, there is not a statistically significant difference between returnee and stayee households in the likelihood of experiencing livestock, tools or other assets thefts. Interestingly, returnee households are less likely to experience cash thefts. Of course, returnee households may be less likely to hold cash in the first place.

There are also questions about any instances of serious illnesses among the adult household members since 2005. The questions are asked separately by gender. As shown in Table 10, returnee households are actually significantly less likely to have reported having adult household members who have experienced a serious illness. There is no statistical difference in the case children illness.

Overall, there is no evidence that greater vulnerability of returnee households in terms of criminality or health outcomes helps explains the gap in livestock levels between stayee and returnee households.

[Table 10]

8. Time since return and time abroad

There could also be important differences in economic outcomes between recent returnees and those who returned several years back. As shown in Figure 5 there were two key periods for return. First, there are returnees who came back after a brief stay abroad shortly after the conflict

ensued. That period goes from 1993 to 1999, with a substantial peak in 1994. The second period starts after the signature of the peace agreement in 2001 and extends to 2010. The peak for this second period was 2005.

[Figure 5]

The median number of years since return in the 2011 round was 10 years. In order to test the importance of time since return we create two dummy variables. One variable indicates that it is a household with members who returned from abroad less than ten years ago in 2011 (i.e. less than 14 years ago in 2015) and a second one which indicates that it is a household with members who returned ten years or more ago in 2011 (i.e. 14 years or more in 2015). The top portion of Table 11 presents the results when we use these dummy variables in the estimations (separate estimations). The results suggest that the negative effect of the returnee household variable on livestock levels is driven by households with more recent returnees. It seems that refugee households could be catching up over time with stayee households. In order to test this further we estimated the regression changing the definition of a long-term returnee by subtracting one year at a time (i.e. from over 10 years to over 9 years, to 8, etc.). The result becomes significant (negative) for the first time for those who have been back for over six years.

[Table 11]

The implication of return migration may also vary depending of the amount of time spent abroad. Some migrants only stay a few months (at least three in our data), while others stay for over a decade. In order to analyze these possibilities we create dummy variables indicating that the members of the household stayed less/more than a decade abroad. In the bottom portion of Table 11 we analyze the impact of time spent abroad on livestock outcomes. We find no major differences based on length of time abroad.

9. Robustness

9.1 Propensity Score Matching and pre-war livestock

In this section we test the robustness of the results by employing propensity score matching (PSM) techniques in order to match returnee households with a comparable group of non-returnee households. In this case the treatment (T) is being a returnee household. As we explained above, the large majority of refugees from the 1993 conflict returned home after the end of the war. Hence, the treatment is essentially being a refugee in the first place, a factor that was largely determined by distance to the border of Tanzania.

We start by estimating a probit model to predict the likelihood of being a returnee household and then we match households based on pre-war characteristics. We limit the analysis to households in which the household head was born before the start of the conflict in 1993. The pre-war characteristics include age, gender and province for birth of the household head, education levels of those household members who were adults before 1993 (i.e. 14 years of age or more) and pre-war livestock. These factors should not be affected by the treatment. Once we check for the balancing properties and common support across treatment and comparison group, we proceed to use the nearest neighbor estimation matching procedures. We also use kernel matching estimators in order to check the robustness of the results. With the matching at hand, the difference in the outcome variable is calculated to estimate the average treatment effect of the treated (ATT):

$$ATT = E[E\{Y|T = 1\} - E\{Y|T = 0\}] \tag{4}$$

Where Y is the outcome variable (i.e. livestock).

Figure 6 shows the propensity score distribution before and after matching, which illustrates that there is clearly enough overlapping for the common support in both rounds. Table 12 shows the results for the estimated effect of displacement and return on household livestock. As with the IV estimations there is evidence that returnee households have lower livestock levels compared to stayee households. However, different from the IV estimations it seems that difference is greater and statistically significant for the first period. One possible explanation for this is that the matching is based on pre-war characteristics which are likely to become less important over time.

[Table 12]

9.2 IDPs

As we show above, 17% of the returnee households were also IDP households, while this is true for 29% of the stayee households (see Table 4). In the main analysis we control for the household being an IDP household and in the economic activities estimation we also add a dummy for IDP status of the individual. However, it is possible to argue that IDP households are also affected by many of the same factors as refugees (i.e. those who crossed an international border), and that it would be better to compare exclusively with households with no forced

migrants. Table 12 provides the same analysis as Table 7 about the impact of being a returnee household on livestock. The coefficients are somewhat smaller and less significant when we exclude IDP households from the estimation, but the overall conclusions remain similar.

[Table 12]

10. Conclusions [NEED TO FINISH]

Return migration after conflict is very different from return migration in the voluntary migration context. In this paper, we explore differences in economic outcomes between return migrant households and non-migrant households using panel data from Burundi, and find that returnee households have significantly lower levels of livestock. Our search for explanations supports the idea that legal and practical restrictions on economic activities while in displacement, which resulted in high levels of inactivity, may explain a portion of the posterior livestock gap between returnee and stayee households. In particular high levels of inactivity abroad may have resulted in returnees engaging in activities that are less profitable upon return. The negative effect of forced migration on livestock levels diminishes over time after return.

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Appendix 1 [need to include]

Figure 1 – Burundi and vicinity

Figure 2 – Number of refugees in Tanzania per province of origin [brackets] and as a share of the province's 1990 population (parenthesis).
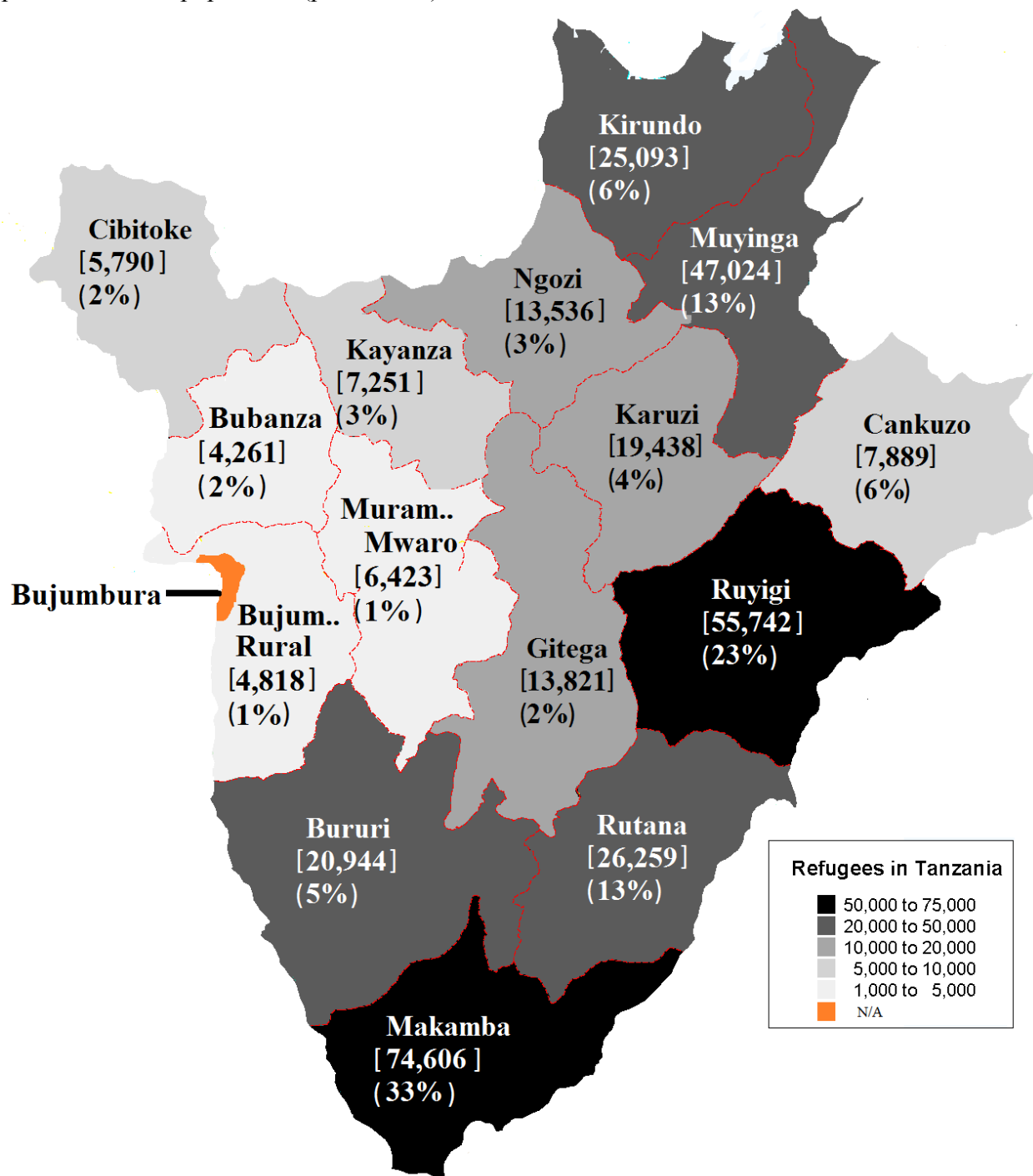
Note: data reflects the situation in mid-2000. Source of information on refugees in Tanzania is UNHCR. Data on share of the province population constructed with information from the 1990 Census. Note that Muramvya and Mwaro were one province during the period of interest.

Figure 3 – Returnees from Tanzania to Burundi.
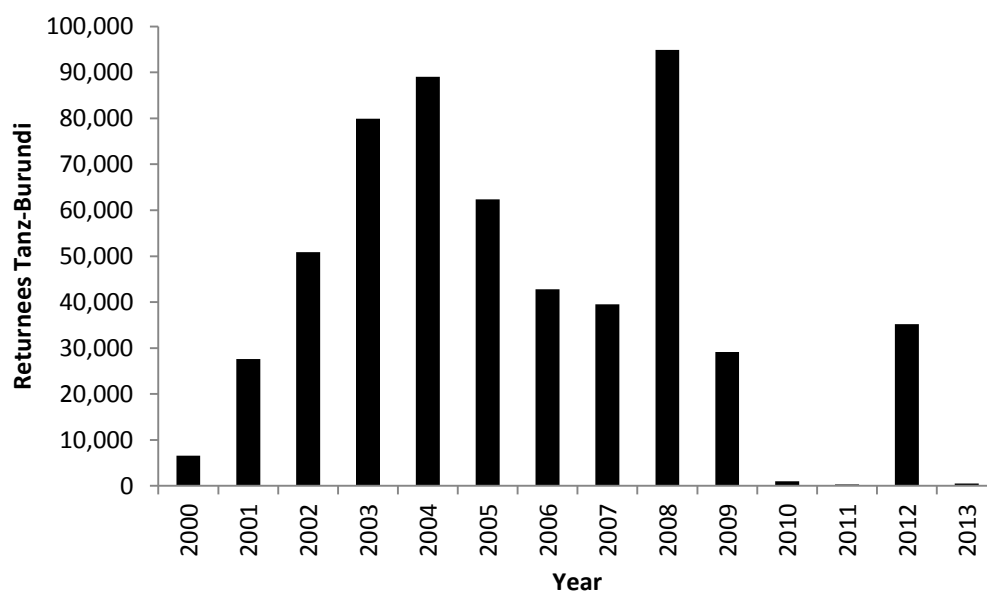
Note: source of data is the United Nations High Commission for refugees.

Figure 4 – Location of the communities surveyed
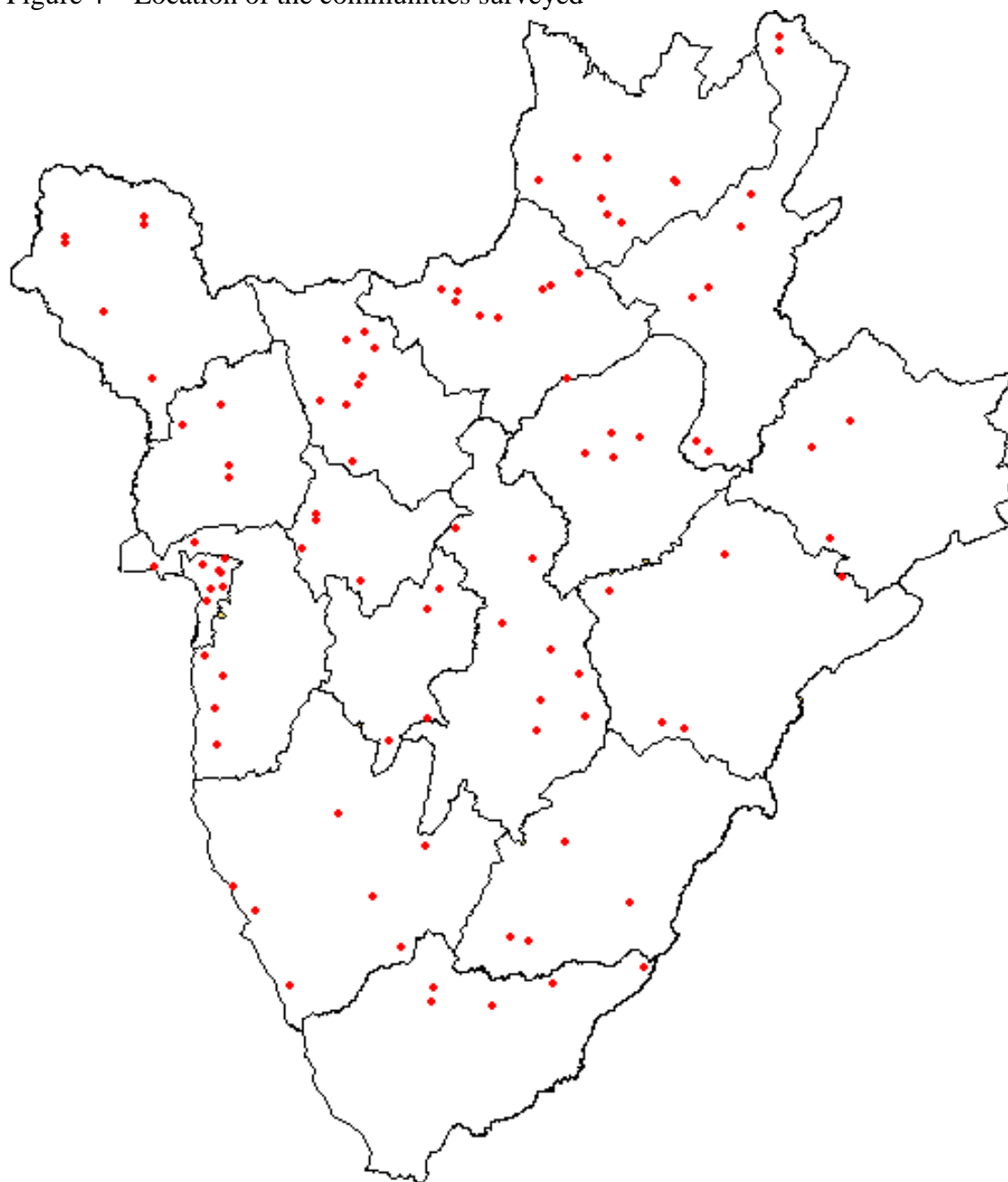
Note: The data collection for this study took place between January and March of 2011 and 2015 in all 17 provinces of Burundi. The communities sampled were selected according to the demographic weight of these provinces in the 2008 Burundi Census. The Figure above shows the distribution of the communities across Burundi.

Figure 5 – Year of return of returnees in the sample
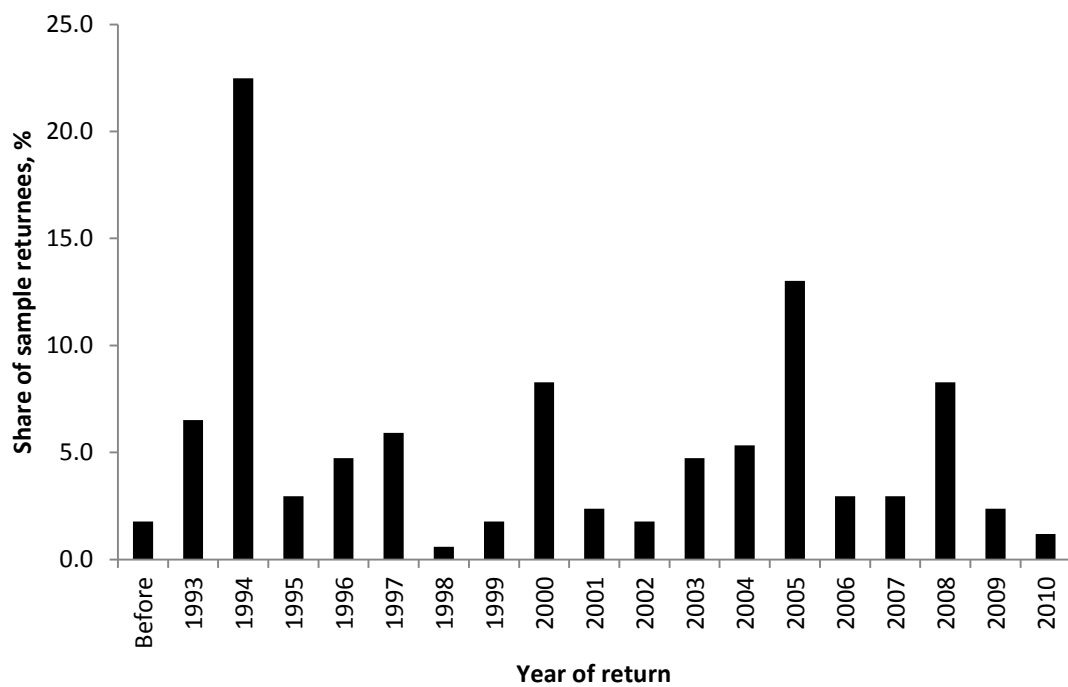
Figure 6 – Propensity score distribution for the baseline household regression (2011)

Panel (a) – 2011 Round
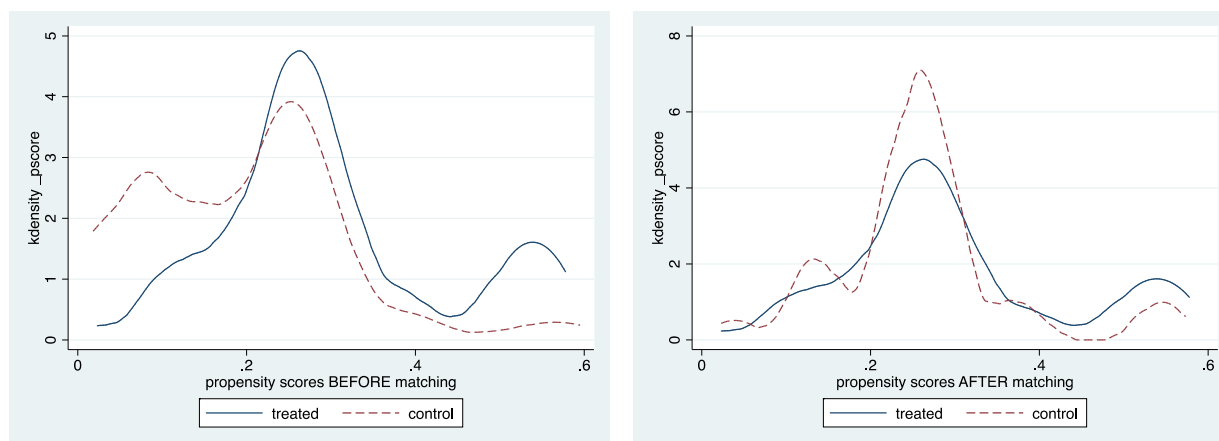
Panel (b) – 2015 Round
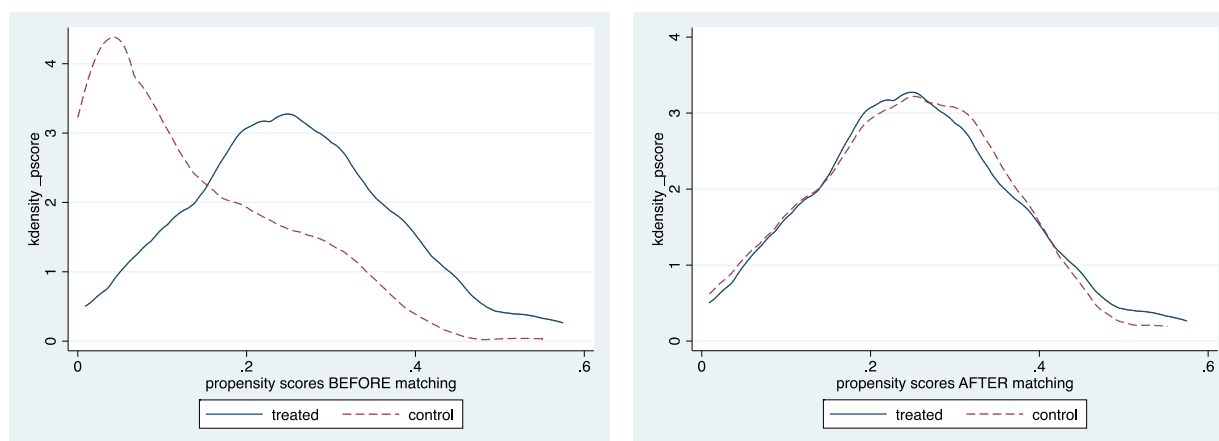
Table 1– Descriptive statistics for current household livestock.

Variable	Returnees			Stayees		
	2011	2015	2011 and 2015	2011	2015	2011 and 2015
	(1)	(2)	(3)	(4)	(5)	(6)
Livestock, TLU	0.09	0.16	0.13	0.15	0.24	0.20
Households	150	150	300	754	754	1,508

Note: for the purpose of this table returnee households are those with at least one member who is a returnee.

Table 2 – Household/community level controls

Variable	Returnees			Stayees		
	2011	2015	2011 and 2015	2011	2015	2011 and 2015
	(1)	(2)	(3)	(4)	(5)	(6)
Age head	44.41	48.03	46.22	43.74	47.76	45.75
Female head	0.18	0.15	0.16	0.16	0.16	0.16
Primary edu head	0.19	0.25	0.22	0.24	0.30	0.27
Secondary edu head	0.01	0.02	0.02	0.03	0.03	0.03
Married head	0.79	0.83	0.81	0.82	0.83	0.82
Household size	5.60	5.90	5.74	5.54	5.70	5.62
Child to adult ratio	0.94	0.92	0.93	0.84	0.86	0.85
IDP household	0.17	0.17	0.17	0.29	0.29	0.29
Deaths in conflict	0.43	0.43	0.43	0.44	0.44	0.44

Note: for the purpose of this table returnee households are those households with at least one member who is a returnee.

Table 3 – Impact of proximity on pre-war livestock, pre-war education, pre-migration activities and IDP status.

Independent variable	Pre-war livestock	Pre-war years education	Pre-war primary school	Pre-migration employee	Pre migration non-farm self-employment	Pre-migration farm self-employment	IDP household
Proximity	-0.04 (-0.35)	0.008 (0.04)	-0.04 (-1.02)	-0.04 (-0.56)	-0.01 (-0.13)	0.08 (0.95)	-0.02 (-0.55)
Household	X	X	X				X
Returnee				X	X	X	
Observations	446	667	690	124	124	124	904

Notes: Pre-war livestock only available for households which 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. The information on pre-migration activities is only available for one returnee per household. IDP households are those were displaced for three months or more within Burundi. t statistics are included in parenthesis.

Table 4 – First stage results.

Instrument	Share of members who are returnees		Returnee household		Returnee individual		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
				2011 round			
Proximity	9.13	8.95	0.18	0.16	0.21	0.21	0.20
	(4.72)***	(4.59)***	(5.09)***	(4.83)***	(8.44)***	(8.43)***	(8.12)***
F-test IV	22.27	21.08	25.94	23.79	71.20	71.02	65.89
				2015 round			
Proximity	8.75	8.61	0.18	0.17	0.21	0.21	0.20
	(4.73)***	(4.68)***	(5.09)***	(4.85)***	(8.44)***	(8.47)***	(8.18)***
F-test IV	22.33	21.89	25.95	24.18	71.20	71.79	66.93
Observations	904	904	904	904	1,786	1,786	1,786
				2011 and 2015 rounds			
Proximity	8.94	8.72	0.18	0.17	0.21	0.21	0.20
	(6.71)***	(6.51)***	(7.23)***	(6.89)***	(11.96)***	(12.00)***	(11.61)***
F-test IV	44.99	42.41	52.34	48.66	143.09	144.05	134.84
Observations	1,808	1,808	1,808	1,808	3,580	3,580	3,580
Individual controls						X	X
Household controls		X		X			X

Notes: *** indicates that the coefficient is significant at the 1% level. Proximity = logarithm of the distance to the border with Tanzania in kilometers.

Table 5 – Impact of being a returnee household on livestock (TLUs).

Independent variable	2011			2015			2011 and 2015		
Share returnees	-0.00	-0.00	-0.00	-0.00	-0.01	-0.01	-0.00	-0.00	-0.01
	(-1.86)*	(-1.14)	(-1.30)	(-1.82)*	(-1.90)*	(-2.06)**	(-2.74)***	(-2.18)**	(-2.38)**
Returnee household	-0.04	-0.14	-0.17	-0.05	-0.27	-0.31	-0.48	-0.21	-0.24
	(-2.00)**	(-1.15)	(-1.33)	(-1.88)*	(-1.96)**	(-2.17)**	(-2.77)***	(-2.22)**	(-2.46)**
Household controls	X		X	X		X	X		X
IV		X	X		X	X		X	X
Observations	904	904	904	904	904	904	1,808	1,808	1,808

Notes: table shows results from separate regressions. "Share returnees" = share of household members who are returnees. "Returnee" = at least one household member is a returnee. *** 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. t statistics are included in parenthesis.

Table 6 – Economic activities of returnees during and just before migration

Variable	Main activity	All activities
	During migration	
Employee	0.31	0.50
Agricultural employee		0.38
Non-agricultural employee		0.12
Self-employment	0.08	0.14
Farming	0.23	0.27
Education	0.04	-
Other/inactive	0.34	0.29
	Pre-migration	
Employee	0.09	0.24
Agricultural employee		0.15
Non-agricultural employee		0.09
Self-employment	0.05	0.17
Farming	0.71	0.79
Education	0.04	-
Other/inactive	0.11	0.10
Individuals	124	124

Note: information only collected for one adult returnee per household.

Table 7 – Impact of being a returnee on economic activities.

Independent variable	2011			2015			2011 and 2015		
				Employee					
Returnee	0.05	0.04	0.06	0.00	0.01	-0.05	0.02	0.02	-0.00
	(0.54)	(0.52)	(0.71)	(0.04)	(0.05)	(-0.43)	(0.33)	(0.22)	(-0.06)
				Self-employment					
Returnee	-0.09	-0.09	-0.12	-0.18	-0.19	-0.18	-0.13	-0.15	-0.16
	(-1.96)**	(-2.08)**	(-2.39)**	(-1.65)*	(-1.85)*	(-1.70)*	(-2.26)**	(-2.57)***	(-2.61)***
				Farming					
Returnee	0.17	0.20	0.17	0.23	0.25	0.28	0.20	0.23	0.24
	(1.47)	(1.85)*	(1.47)	(1.55)	(1.67)*	(1.84)*	(2.07)**	(2.49)**	(2.45)**
Individual controls		X	X		X	X		X	X
Household controls			X			X			X
IV	X	X	X	X	X	X	X	X	X
Observations	1,302	1,302	1,302	1,458	1,458	1,458	2,760	2,760	2,760

Notes: table shows results from separate regressions. "Returnee" indicates that the individual is a return migrant. Those with education as their main activity are excluded from the analysis in this table. *** 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. t statistics are included in parenthesis.

Table 8 – Impact of being a returnee on all economic activities.

Independent variable	(1)	(2)	(3)
	Agricultural employee		
Returnee	0.47	0.51	0.48
	(2.74)**	(2.97)***	(2.68)***
	Non-agricultural employee		
Returnee	-0.02	-0.03	-0.06
	(-0.21)	(-0.32)	(-0.51)
	Self-employment		
Returnee	0.07	-0.10	-0.11
	(-0.45)	(-0.68)	(-0.69)
	Farming		
Returnee	0.25	0.27	0.25
	(2.24)**	(2.38)**	(2.08)**
Individual controls		X	X
Household controls			X
IV	X	X	X
Observations	1,458	1,458	1,458

Note: table shows results from separate regressions. "Returnee" indicates that the individual is a return migrant. Those with education as their main activity are excluded from the analysis in this table. *** 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. t statistics are included in parenthesis.

Table 9 – Livestock levels in household by economic activity for *stayees*

Variable	Main activity	All activities
Employee	0.25	0.20
Agricultural employee		0.16
Non-agricultural employee		0.28
Self-employment	0.30	0.28
Farming	0.24	0.24

Note: table only includes stayees.

Table 10 – Impact of being a returnee on exposure to crime and health shocks (since 2005)

Independent variable	2011					
	(1)	(2)	(3)	(4)	(5)	(6)
	Theft livestock			Serious illness adult women		
Share returnees	0.00	-0.00	-0.00	0.00	-0.00	-0.00
	(0.11)	(-1.24)	(-1.51)	(1.00)	(-2.26)**	(-2.33)**
Returnee household	0.01	-0.08	-0.11	0.02	-0.21	-0.23
	(0.58)	(-1.24)	(-1.52)	(0.79)	(-2.31)**	(-2.36)**
	Theft cash			Serious illness adult men		
Share returnees	0.00	-0.00	-0.00	0.00	-0.00	-0.00
	(0.56)	(-1.65)*	(-1.79)*	(0.07)	(-2.32)**	(-2.34)**
Returnee household	0.03	-0.12	-0.14	0.01	-0.16	-0.17
	(1.47)	(-1.65)*	(-1.79)*	(0.27)	(-2.37)**	(-2.38)**
	Theft agricultural tools			Serious illness child		
Share returnees	0.00	-0.00	-0.00	-0.00	-0.00	-0.00
	(0.35)	(-0.19)	(-0.00)	(-0.02)	(-0.88)	(-1.01)
Returnee household	0.02	-0.01	-0.00	0.01	-0.07	-0.08
	(1.17)	(-0.19)	(-0.00)	(0.61)	(-0.88)	(-1.00)
	Theft other assets					
Share returnees	-0.00	0.00	0.00			
	(-0.22)	(0.51)	(0.31)			
Returnee household	0.01	0.02	0.02			
	(0.77)	(0.51)	(0.31)			
Household controls	X		X			X
IV		X	X		X	X
Observations	904	904	904	904	904	904

Note: *** 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. t statistics are included in parenthesis.

Table 11 – Time since return and time abroad

Independent variable	2011		2015		2011 and 2015	
	(1)	(2)	(3)	(4)	(5)	(6)
Years since return in 2011						
Over 10 years	0.04	-1.83	-0.04	-3.99	-0.04	-2.85
	(-1.68)*	(-0.58)	(-1.24)	(-0.51)	(-2.06)**	(-0.76)
0 to 10 years	-0.05	-0.20	-0.09	-0.38	-0.07	-0.28
	(-1.56)	(-1.25)	(-2.30)**	(-2.18)**	(-2.82)***	(-2.41)**
Time spent abroad						
Over 10 years	-0.07	-0.35	-0.04	-0.64	-0.06	-0.49
	(-2.30)**	(-1.21)	(-0.71)	(-1.84)*	(-1.78)*	(-2.20)**
0 to 10 years	-0.03	-0.39	-0.04	-0.76	-0.04	-0.57
	(-1.32)	(-1.11)	(-1.58)	(-1.51)	(-2.13)**	(-1.89)*
Household controls	X	X	X	X	X	X
IV		X		X		X
Observations	904	904	904	904	1,808	1,808

Note: table shows results from separate regressions. *** 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. t statistics are included in parenthesis.

Table 12 – Average treatment effect of the treated: Livestock outcomes

Treatment	Treated	Control	Difference	t-stat	
				Standard	Bootstrapped
			Nearest Neighbor Estimator		
			2011		
Returnee household	0.09	0.28	-0.19	-2.51***	-2.10**
			2015		
Returnee household	0.15	0.15	-0.00	-0.02	-0.00
			Kernel Matching Estimator		
			2011		
Returnee household	0.09	0.16	-0.07	-2.58***	-1.65*
			2015		
Returnee household	0.15	0.16	-0.01	-0.05	0.62

Note: Results are based on the nearest neighbor and Kernel matching estimators.

Table 13 – Impact of being a returnee household on livestock (TLUs), excluding IDP households.

Independent variable	2011			2015			2011 and 2015		
Share returnees	-0.00	-0.00	-0.00	-0.00	-0.01	-0.01	-0.00	-0.00	-0.00
	(-2.23)**	(-1.02)	(-1.12)	(-2.55)**	(-1.48)	(-1.68)*	(-3.48)***	(-1.79)*	(-1.97)**
Returnee household	-0.06	-0.14	-0.17	-0.08	-0.24	-0.28	-0.07	-0.19	-0.22
	(-2.52)**	(-1.03)	(-1.14)	(-2.77)***	(-1.54)	(-1.75)*	(-3.81)***	(-1.83)*	(-2.03)**
Household controls	X		X	X		X	X		X
IV		X	X		X	X		X	X
Observations	661	661	661	661	661	661	1,322	1,322	1,322

Notes: table shows results from separate regressions. "Share returnees" = share of household members who are returnees. "Returnee" = at least one household member is a returnee. *** 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. t statistics are included in parenthesis.