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Abstract

Civil wars often force people to leave their homes. Displaced populations run higher risk in terms of disease, hunger and death, something that is well-documented. They leave their land, cattle and other assets behind for an uncertain existence in a refugee camp or depend on relatives or friends. But what happens when they return back home? This paper investigates the food security and poverty of formerly displaced persons and their household. Using the 2006 Core Welfare Indicator Survey for Burundi we compare their food intake and their level of expenses with that of their non-displaced neighbours. We test whether it is the duration of displacement that matters for current welfare or the time lapsed since returning. We use log-linear and ordered probit models as well as propensity score matching. We find that the individuals and households who returned home just before the time of the survey are worse off compared to those who returned several years earlier. It takes 8 to 10 years after return before the level of welfare of the displaced converges to that of the non-displaced. The duration of displacement seems not to matter. On average, the formerly displaced have 20% lower expenses per adult equivalent compared to the non-displaced, 15% lower food expenses but only 6 % lower calorie intake, showing that the formerly displaced consume relatively more high calorie products. The formerly displaced also report more children with a smaller size at birth. Despite international, government and NGO assistance, the welfare of recent returnees is lagging seriously behind in comparison with the local non-displaced populations.

Key words: Forced Displacement, Food Security, Nutrition, Poverty, Burundi

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1. Introduction

To outside observers forced displacement is one of the most visible manifestations of violent conflict. Watching a mass movement of people in a short amount of time on television is the clearest indication that something very bad must have happened, something that makes people leave their home and their village. What the general public does not see are the underlying dynamics of a conflict which force people to flee. Even more difficult to grasp is the fact that the refugee flow will in itself fuel further conflict or take to conflict to a new dimension. When peace settles in, refugees return home, giving rise to another set of issues. In the subsequent short overview we pay attention to these three key ingredients of forced displacement, to wit the reasons to leave, the fuelling of the conflict, and the issues arising upon return. We particularly take a micro-level, behavioural perspective.

Fleeing one's home

When individuals and households are forced to migrate, they rarely have the time to sell their assets or to take all their assets with them. When part of their assets are seized by warring factions, or have to be abandoned, the displacement means instant loss of wealth. Families cease deriving economic returns from productive assets and cannot invest capital in productive activities (Ibáñez and Moya, 2006). Displacement also causes the disintegration of households as some members are assassinated or have been separated during flight.

Until recently, the forced migration and the violent conflict literature observed a division of tasks. The later occupied itself with the parties to the conflict, their strategic objectives, the recruitment of followers and the eventual macro-level peace process. The former on the other hand was focussed on humanitarian aid, the outbreak of epidemics in camps, and the question of relocation (e.g. Cohen and Deng 1998; Lischer 2005). The analysis of the causes and conditioning of the flight has brought forced migration literature somewhat closer to violent conflict literature, firstly through the concept of 'root causes' (Zolberg, Suhrke, and Aguayo 1989) and, more recently, through analyses of the way particular types of violence affect the setting in motion and the intensity of displacement flows (e.g. Schmeidl, 1997; Moore and Gurr 1998; Edwards 2007).

This lack of attention to the way violence produces and conditions displacement and return movements is hard to reconcile with the fact that these form a key part of the consequences of violent conflict. Either as a side-product, as a purposeful strategy or as a pursued goal, the patterns of relocation and return are a radical source of socio-demographic

change, which amounts to a crucial part of the results of violence. As we shall see further on, this applies very much to the case of Burundi.

During displacement

By limiting the ability to generate income, forced displacement causes significant welfare losses to affected households. Results indicate that displaced households confront sizeable welfare losses. Because forced displacement disrupts formal and informal mechanisms to share risk, a considerable proportion of the income shock affects household consumption. Also, the impact of income generation programs may be limited to a short period of time. Thus, the short and long-term costs of forced displacement are large; assets losses, school interruption, and pronounced drops in consumption may push households into a poverty trap.

In addition, finding employment is difficult because displaced households often come from rural areas and their agricultural abilities are not valued in receiving municipalities or urban areas. The long-term consequences of a sharp drop in consumption may transcend the direct welfare costs stemming from income losses (Morduch, 1995). Children from households that are unable to smooth consumption may face health deterioration (Behrman, 1988) and lesser body size (Foster, 1995). Households also adopt costly strategies to smooth consumption such as selling assets (Rosenzweig and Wolpin, 1993), adjusting labor supply (Kochar, 1988), foregoing risky but profitable activities to smooth income instead of consumption (Morduch, 1994), and dropping children out of school.

In Colombia for example, displaced households are entitled to humanitarian aid in the first three months, which may be instrumental to prevent substantial drops in consumption. After humanitarian aid ends, empirical evidence suggests vulnerability of displaced households increases significantly. Thus, consumption smoothing may vary according to time of settlement in reception municipalities. Nearly nine percent of families lost household members, and in many cases their household head, as a consequence of displacement. Because the main bread-winners are no longer in the household, dependency rates and vulnerability to poverty increases.

Upon returning home

The effect of conflict on activities may still be felt by households long after war ends. Findings in Uganda indicate that the probability to start non-farm activities is reduced for households affected by war (Deininger, 2003). In Mozambique, households in the post-conflict period were able to engage in potential income generation activities, but the decisions

to participate varied across household and seasons (Brück, 2004). Empirical evidence on activity choices in Burundi (Bundervoet, 2009) finds that wealthier households in war regions are more likely to engage in low risk activities during war, while during non-war periods, they invest more in high risk activities. During recovery, development interventions and improved security provide opportunities for households to rebuild their livelihoods but the benefits may not be across the board. In most cases the most vulnerable groups are bypassed by these programmes and differences in access to assistance hinder household adaptation.

In northern Uganda, Lehrer (2008) finds a negative impact of conflict on the labour force participation of men. Ssewanyana et al. (2007) indicate that residence in an IDP camp is highly associated with difficulty to farm. Stites et al. (2006) study in the Kitgum district of Uganda finds that social capital is higher among households in semi-settled communities than those in camps. Families in semi-settled communities are able to participate in collective farming and share proceeds from communal land: something not possible in camps. Bruck et al. (2010) find that camp residents are less likely to participate in any of a wide range of economic activities. This observation may signal the loss of skills associated with displacement. Deterioration of skills may render individuals unproductive. Activities such as crafting require extracting inputs far from camps. Other households split up to diversify income sources, return to their hometown, and derive return from their assets. This strategy may reduce vulnerability by providing additional income sources (Ibáñez and Moya, 2006).

The remainder of the paper is as follows: section (2) gives an overview of forced displacement and return in Burundi. Section (3) describes the Burundese diet and the level of food expenditure of displaced and non-displaced populations. Section (4) analyses calorie intake and poverty on the basis of survey data and section (5) relates the research findings to current policies towards IDPs and refugees in Burundi.

2. Forced Displacement and Return in Burundi[1]

A short history of the return of IDP's and refugees

Between 1999 and 2005, an estimated 700,000 IDPs returned to their homes under improved security conditions, some of them with international support (OCHA, 2005). In recent years most efforts have been directed towards assisting returning refugees. Between 2002 and 2009,

[1] This section is based on three comprehensive reports on the history of displacement and the situation of IDP's and former refugees in Burundi (i) The study of internally displaced populations in Burundi, OCHA Burundi, March-April 2004; (ii) Enquête sur les populations déplacées au Burundi, OCHA, 2005 and (iii) Secure tenure and land access still challenges for long-term IDP's, a profile of the internal displacement situation, IDCM and Norwegian Refugee council, 2011, Geneva.

over 500,000 refugees returned, mostly from Tanzania. Their reintegration, particularly of the 50,000 who fled in 1972, presented extraordinary challenges for the government (UNHCR, 2009). Many returned to find their land occupied, expropriated, sold or redistributed to others, and finding solutions to their pressing problems has accounted for the majority of the government's resources earmarked for helping victims of the conflict (Brookings/IDMC, 2011)

After 2005, despite the further improvement of the security situation, fewer IDPs returned home. According to the UN, difficult economic and agricultural conditions, the lack of means to rebuild houses in areas of origin and the lack of sufficient trust among communities may explain this status quo. But other factors, such as new opportunities and livelihood found in IDP settlements may also contribute to this slow return (UN, 2006). In the south of the country however, IDPs were found to be gradually returning to their hills of origin (OCHA, 2005). All IDP settlements in the south were reported to have closed as of 2010. One possible explanation for the return of IDPs in the south compared to those in the north is that in the south, internal displacement was mostly caused by clashes between the army and armed groups, while in the north, many people had already fled inter-ethnic violence. When peace returned to the country, IDPs in the south were able to return home. At the same time, while many IDPs in the north have returned home, others have not done so, for several factors including – particularly for older IDPs – the fear of their former neighbours (Brookings/IDMC, 2011)

With the return of half a million refugees and many IDPs after the end of the conflict, Burundi had to reintegrate about 10 percent of its population. The return took place mostly to rural areas, in the context of widespread poverty, lack of basic infrastructure and land scarcity. The houses of many returning refugees were destroyed, and in some cases their land occupied. In a country where more than 90 percent of the population is dependent on subsistence agriculture, people without land cannot provide food for their families (UNHCR, 2008).

The OCHA 2005 comprehensive IDP survey found that as of mid-2005, 18.5 per cent of IDPs in Southern and Eastern provinces were returning refugees, who either lived on trade with Tanzania or who felt more secure in IDP settlements due to the high criminality (OCHA, 2005). According to a 2004 OCHA IDP survey, some 89 percent of IDPs considered farming as their main source of income, and their own harvests as their primary or only source of daily food. While most IDPs continued to engage in agricultural activity on their native land, the yields are low and do not meet daily food needs. Many households supplement their subsistence by working for others, paid in either food or money, or through charity from

others living in the IDP settlements, from church groups or – as of 2004 - from international assistance (OCHA, 2004).

According to the same OCHA survey, "Proximity of the place of origin to the site [i.e. IDP settlement] is an important element in determining an IDP household's level of vulnerability. Those IDP families that do not live close enough to their home areas to permit continued cultivation of their land must seek alternative means of economic livelihood, which are extremely limited. Although some of these families manage to make a meagre living through hiring out their labour on nearby farms or engaging in petty commerce or trade in the site, some remain entirely dependent on the aid of others (OCHA, 2004). Widow- or orphan-headed households were entirely dependent on support networks or external assistance (OCHA, 2004).

A number of factors explain why many IDPs face difficulties to be self-reliant: (i) *theft of crops*. According to an OCHA 2005 comprehensive IDP survey, the great distance between IDP settlements and fields of origin has led to thefts in the fields, as per cases registered in the communes' administrative centres. This in turn has reinforced food insecurity and mistrust between IDPs and those who have stayed on their hills of origin (OCHA, 2005); *(ii) Destruction of livestock*. According to an OCHA 2005 comprehensive IDP survey, IDPs said during interviews that an important part of their livestock had been destroyed during the conflict, which had led to decreased protein food intake and soil fertility (OCHA, May 2005, p.32); *(iii) Poor access to credit*. The OCHA 2005 comprehensive IDP survey noted very high lending rates and in-kind reimbursement. It stated that for example, one "measure" of beans borrowed in the beginning of the planting season had to be paid back by two-and-a half measures during harvest. For large amount credits, land has to be mortgaged, and the amount has to be paid back in full at once. After a certain time, the lender has the right to "buy back" the land at a price decided in advance. In any case, it is very difficult for IDPs to get out of debt. The survey then recommended micro-credit lending (OCHA, 2005); *(iv) Decreased land fertility*. The OCHA 2005 comprehensive IDP survey noted that IDPs in settlements also suffered from the fact that the land they have access to was less and less fertile, and had to feed more people due to demographic pressure. IDPs in settlements said that employment outside the farming sector would be welcome to ease the financial pressure they are facing (OCHA, May 2005).

While the majority of IDPs rely on subsistence farming, IDMC/NRC found during interviews in IDP settlements close to administrative centres that many IDPs now earned a

living by building roads, providing a range of services in jobs from hairdressers to drivers, or by selling goods at the market (Brookings/IDMC, 2011).

Local settlement and Obstacles to voluntary return

An IDMC June 2010 survey in four IDP settlements found that 90 percent of interviewed IDPs wished to integrate locally (Brookings/IDMC, 2011). According to the OCHA 2005 comprehensive survey on IDPs in Burundi, IDPs in the north and centre of the country remained suspicious, despite the signature of ceasefire agreements and increased security, and said they were afraid of their former neighbours. In the south and east of the country however, since armed groups had stopped fighting, IDPs did not show the same worries about insecurity. The fact that many people remained in IDP settlements was a sign of the climate of fear and uncertainty among IDPs. The OCHA survey went on to say that IDPs also remained in settlements in some places due to better economic opportunities than in areas of origin, and also due to a better access to basic services and infrastructure. The OCHA survey reported that those who wished to return conditioned their return to three main elements: (i) Material to build housing, since most of the houses in hills of origin are either entirely or partially destroyed; (ii) To return at the same time than other IDPs, as for many IDPs security and protection needs are linked to community reconciliation in the north, centre and south of the country, rather than linked to the 2010 national elections: (iii) the end of impunity of presumed criminals who killed their family members of their hills of origin, and who could kill returning IDPs in case of return (OCHA, 2005).

The IDMC survey in June 2010 found that some IDPs were afraid to visit their communities of origin on their own. This was particularly the case for older IDPs who generally said that they would not contemplate living with their former neighbours again, while the younger ones – who were children when they were displaced – were more open to the idea (Brookings/IDMC, 2011).

The main factor facilitating local integration is the strong desire of IDPs to remain where they are today. Having lived in their current location for up to 17 years in some cases, they have developed strong relationships with other members of the settlements. Many are elderly people and/or widows, and as such a social support network is crucial to them. One important element to gauge the prospects for success of local integration of IDPs is the relationship with surrounding communities. Focus group interviews with IDPs and neighbouring communities conducted by IDMC/NRC in June 2010 emphasised the positive relationships between IDPs and members of the surrounding communities. IDPs were seen as

just like any other inhabitants of the *colline*, taking part in local development projects such as the construction of school or roads, farming and herding associations and local elections. IDPs and their neighbours reported that they helped each other to harvest their crops and invited each other to weddings, funerals and other events. Marriages between IDPs and their neighbours were also mentioned. They reported that their children went to the same schools, played and watched football matches together, took part in the same church-led activities, and shared some of their families' daily tasks such as collecting firewood and water. IDPs' neighbours noted that living closer together in the settlements played a significant role in improving security. The only significant sources of conflict with neighbouring communities are the competing claims on the land on which IDP settlements have been established.

Among the category of IDPs that express a willingness to return to their place of origin, but remain meanwhile in sites, the principal reasons preventing their return (in order of priority) are as follows: (1) insecurity in their place of origin (fighting, banditry, looting); (2) no protection force in their place of origin; (3) no house in their place of origin (or ability to construct a house, as cited in the case of some female and child heads of household); (4) mines in their place of origin (particularly prevalent in certain areas of Makamba province, along the Maragarazi River, and in certain areas of Ruyigi and Bubanza provinces); (5) fear of political developments and upcoming elections; presence of armed groups not yet disarmed / demobilised; (6) fear, distrust and lack of cohesion / reconciliation among communities in their place of origin (the predominant reason cited by IDP households in northern and central provinces); (7) home collines are empty; waiting for others to return.

Among the category of IDPs that express a desire to remain definitively in the site where they currently reside, the following are the principal reasons influencing their decision (in order of priority): (1) fear, distrust and lack of cohesion / reconciliation among communities in home areas; (2) Sense of solidarity, community cohesion and protection in the site; (3) banditry and absence of protection force in their place of origin; (4) house in the site; no house in their place of origin; (5) do not own land in their place of origin; (6) nowhere else to go; completely dependent on others in the site (especially cited among female and child heads of household); (7) long duration in the site (10 years) during which new family units have formed and semi-urban social ties, customs and lifestyles have emerged (closer association with the site than the place of origin); (8) Little direct dependence on agricultural activity and have another means / source of revenue in the site.

However, as was revealed in the IDMC/NRC focus group discussions, having easy access to land does not necessarily translate into having an adequate level of agricultural activity or output. The overwhelming numbers of participants in the focus groups say they are able to cultivate their native land but they do not achieve a sufficient harvest. The primary reason cited is theft of their crops by neighbours who live permanently in the *collines,* by armed groups or bandits in areas of ongoing insecurity. Other reasons cited for the diminished yields are the limited time they are able to spend on the farm – because of the distance they must walk from the site – preventing them from adequately maintaining or protecting their land. One IDP woman explains, for instance, that although she accesses and cultivates her land daily, she is unable to fertilize her land with animal dung as she did before her displacement because her animals were stolen. The distance that IDPs have to travel from the site to reach their land is in direct proportion to their ability to adequately manage and protect their land. Therefore, despite easy access to land, compromised productivity results in an erosion of livelihood capacity and decreased food security for many IDP households.

3. Diet Composition, Food Expenses and Forced Displacement: a description

Farming is the principle economic activity of more then 80% of all Burundese households. The size of the average farm is less then 1 hectare and its produce feeds on average 5 persons. Most of farm production is for self consumption. Only a tiny fraction of a farmer's plot is allocated to domestic cash crops or to export crop production. Given that the small size of the plot is insufficient to grow all the food a household needs as well as the need for non-food products, farm households have also other non-farm sources of revenue such as day labour, business and other off-farm income, sales of cattle products as well as gifts and transfers received from others.

In the rural areas, beans, sweet potatoes, cooking bananas, cassave flour and maize together deliver 60% of calorie intake and constitute the core of the Burundese diet. These five crops are grow on the farm as well as bought in the market. In urban areas, rice, fish and meat are more important than maize and sweet potatoes. Table 1 gives an overview of the importance of these crops. Typically, the poorer you are, the more important (in terms of expenses and calorie intake) these crops are. In *very poor or food poor households* (defined as having a level of consumption lower then the food poverty line), these crops constitute each on average 2% more of the daily food expenses and deliver 2% more of the daily calories then non-poor households and 1% more then in poor households.

Table 1 also shows the differences in diet composition according to the age of the head of the household, his or her sex and level of education, the number of household members and the displacement status of the head of the household. At first sight we find only minor differences in terms of diet composition for these variables. This means that, across a series of demographic and socio-economic characteristics, the fives staple crops mentioned above are important *for all* Burundese households. The exceptions to this rule seem to merit our attention. The first is that the composition of the diet for households with a head of the household who has finished secondary education seems to differ markedly from all other households. For this group of the population, the five crops are *relatively* less important in the diet. And second, formerly displaced households seem to allocate a higher share of their food expenses to cassave flour than others. These differences will need to be confirmed and understood in a multivariate regression framework later on.[2]

The description of overall expenses and their origin or channel in Table 2 shows that by and large production for own consumption and acquisition in the market are, for the average Burundese household, equally important. This household will acquire somewhat less than half of its food from its own farm and the same amount from the market, with the rest received from gifts and from humanitarian aid. Non-poor together with very poor, male-headed and secondary educated households rely more on the market channel compared to poor, female headed and lesser educated households. These latter households rely more on production for own consumption. Our group of interest for this paper, the formerly displaced, are on average poorer than the non-displaced and receive relatively more gifts and aid, but the differences are small.

Table 3 shows the poverty levels for the formerly displaced households in comparison to the non-displaced. The formerly displaced over over-represented among the poor and the very poor, a difference that is statistically significant. We remind that poverty here is measured using the monetary value of the expenses an adult needs to make per day to lead an active live. This means a minimum of expenses to consume 2100 Kcal per day (below which one is considered food poor) plus a non-food part (below which one is considered poor).

A binary variable 'formerly displaced versus non-displaced' may not be fine-grained enough to capture the status of the formerly displaced. In effect, as we have seen in section 2, the displaced have started to return to Burundi since one year after the crisis, with the first returnees already in 1994, hence 12 years before the time of the survey. It would be surprising

[2] We refer to Zoyem, Diang'a and Wodon (2008) for an empirical analysis of calorie intake of Burundese households.

when their welfare (or status vis-à-vis the non-displaced) would not be distinguishable from that of people who returned to Burundi only recently. To that purpose we have depicted the welfare levels of formerly displaced households compared to non-displaced according to the number of years since they returned to Burundi. Figure 1 shows that the welfare level of the recent returnees differs a lot from that of the non-displaced.[3] The longer ago one returned to Burundi, the closer one's welfare level is to that of the non-displaced.

The number of years ago that the head of household returned home is calculated in relation to the last time (s)he was displaced. Many Burundese have suffered forced displacement from their homes more then once. In effect, data from the Core Welfare Indicators Questionnaire (CWIQ, 2006) shows that 1/3 of the heads of households were never displaced, 1/3 was displaced once or twice and 1/3 was displaced at least three times. Hence, the duration of forced displacement is an underestimation of the total duration of displacement since the CWIQ Survey only has information on the most recent episode of forced displacement and return. This is a limitation of the data, the most recent episode of forced displacement may not be the only episode of displacement having an effect on current welfare. It may for example be that one lost cattle in an earlier episode. To the extent that one has to re-start cultivation 'all over again' after each episode of displacement it is likely that the last episode is relevant for the part of welfare generated from cultivation. In a multivariate regression framework later on we will test if households who were displaced *multiple times* are worse off at the time of the survey.

Two mechanisms come to mind that could explain the welfare discrepancy between the old and the new returnees. The *first* one states that, upon return, a convergence process is starting. It takes a few years before the displaced household is able to reap the benefits from farm work and cultivation, succeeds in finding a job or sets up a profitable business or commercial activity. The *second* argument points out that what counts may not be the number of years that has lapsed since the household has returned home but the duration of absence. Heads of households who were absent for a long time may run a higher risk of loosing their assets such as land and cattle. This makes it harder for them to make a living when they return home. This second argument finds support in Figure 2: the longer the absence, the lower the level of welfare. Importantly, the two arguments can be tested jointly in a multivariate regression framework, what we shall be doing later on. To repeat, the first argument sees a convergence process starting from the moment when one returns. The second

[3] The welfare difference was calculated as the difference between the province-level average of the non-displaced household and the displaced households, per year of return.

see a divergence process starting from the moment one leaves. The two arguments are not necessarily incompatible.

The CWIQ survey data (2006) offer additional evidence of the needs and the actions taken by heads of households when they returned home from forced displacement. The average duration of forced displacement was two years with a low standard deviation, meaning that only for a minority the duration of displacement was very long. The average numbers of years that have lapsed since returning home was five years, with a large standard deviation around the mean meaning that Burundi witnessed a return of refugees every year, with no single peak, as demonstrated in table 3. According to the responses given in the survey, the first two *priorities of the returnees* are the (re-) construction of their houses and the (re-) start of their farm. They financed both by working and the sales of goods as well as - to a lesser extend –financial aid from friends and NGOs. One quarter of the forcibly displaced lost cattle during their absence, with these assets often sold by family members. Almost no one succeeds in recuperating these assets after return. Since the CWIQ (2006) does not have data on cattle ownership before displacement, we cannot infer how important that loss was. However, the ownership of cattle (mostly one or two) is a sign of wealth in Burundi. What counts for the loss of cattle – lost and unable to recuperate - is also the case for agricultural equipment and, to a lesser extent one's house and land.[4]

Table 4 shows that formerly displaced households are overrepresented among the food poor (very poor). And table 5 (a, b and c) adds to that picture that this may have intergenerational consequences: the food poor as well as the formerly displaced report a higher percentage of small children at birth. Among the displaced, the newly returned are worse off, just as we reported earlier in terms of expenses and food consumption. Here they these newly returned more often report a small size for their last born child. These findings are statistically significant at the usual thresholds.[5]

From the maps (Figure 3-6) we derive that food poverty as well as forced displacement are clustered in several distinct (bur different) regions of Burundi. The former is particularly problematic in the eastern part, and the later in the western and southern part. This is because the civil war was particularly intense in the west and in the south.

[4] Land issues and land conflicts are pervasive in Burundi and the return of refugees has made these land issues very complex. The 2006 data do not offer much detail on them to explore them further in this paper.

[5] The consequences of undernutrition for young children, both *in utero* as well as in the first years of life ate the subject of a lot of recent research, too much to treat in this paper. Also, since the 2006 data do not have anthropometric measurement we do not explore this issue further on. For a recent contribution we refer to Verwimp, P. (2012) Undernutrition, subsequent risk of Mortality and Civil War in Burundi, *Economics and Human Biology*, 10, n.3, 221-231.

4. Determinants of Calorie intake and Poverty

4.1 Estimation Methods

The above relations, often discovered when working with cross-tabulations of two variables, needed to be tested in a multivariate framework. It may well be that a relation (eg. between poverty and displacement) at first sight seems to exist but when controlled for province fixed effects (FE) or for demographic variables completely disappears, demonstrating that it are in fact these other variables that are correlated with poverty or displacement or both. We suggest to work with four types of analysis. The first is the log-linear model whereby the % of calorie intake from each of the main crops (C/K) is explained by a series of household level variables (H), variables at the level of the head of the household (E), displacement variables (D) and α_g , the province fixed effect. This model can be written as

$$\frac{C_j}{K_i} = \alpha_g + \beta_1 H_i + \beta_2 E_i + \beta_3 D_i + e$$

The second is also a log-linear model, but here we do not want to explain the percentage of calories in the diet that stems from each of the main crops but rather the total amount of calories consumed (K). Hence, the model becomes

$$K_i = \alpha_g + \beta_1 H_i + \beta_2 E_i + \beta_3 D_i + e$$

Since we are also interested in the *level* of poverty, we distinguish between non-poor, poor and food poor (extremely poor) and perform an ordered probit model, estimating the effect of each of the above variables on the probability to be in one of the three categories. It is an ordered and not a multinomial model because there is a hierarchy: the very poor or ranked lower than the poor who in their turn rank lower than the non-poor. We emphasize that this statement is made in terms of the poverty line, i.e. the monetary value of consumption per adult equivalent. It is not a moral or normative classification we want to make. The likelihood for the ordered probit model is the product of the probabilities associated with each of the discrete outcomes ((very poor (1), poor (2), non-poor (3)):

$$P[y_i = 1] = \Phi(u_0 - x_i\beta);$$
$$\mathrm{P}[\mathrm{y}_i = 2] = \Phi(u_1 - x_i\beta) - \Phi(u_0 - x_iB)$$
$$\mathrm{P}[\mathrm{y}_i = 3] = \Phi(u_2 - x_i\beta) - \Phi(u_1 - x_iB)$$

Where u_0, u_1 and u_2 are threshold parameters or cutpoints. In order to allow identification of the model, one often sets $u_0=0$ or suppress the intercept in the model. The product of the probabilities of the discrete outcomes translates into the log-likelihood

$$\ln L = \sum_1^n \sum_1^3 z_{ij} \ln[\Phi_{ij} - \Phi_{i,j-1}] \qquad \text{with } z_{ij}=1 \text{ if } y_i=j$$

And fourthly, considering that the log-linear regression used above may suffer from potential selection bias when the profile of the displaced population – before displacement – differs from that of the non-displaced, we want to apply a matching technique. This estimation procedure is adequate when certain observable characteristics such as level of schooling, sex, ago or place of residence may affect displacement. In that case, these observables have an effect on the outcome of interest (welfare or food consumption) as well as on the selection into treatment (forced displacement). Whereas in a linear regression framework, this will bias the estimator of the variable of interest, in matching it is possible to match on variables that are correlated with the error term in the outcome equation (Hui and Smith, 2002). Using a balance score (eg. the propensity score) based on observable characteristic from before the treatment to match similar treated with non-treated households, matching allows to infer the causal effect of the treatment on out outcome of interest, in this case the effect of forced displacement on welfare and food consumption.[6] The matching estimator (ATT or average treatment effect on the treated) can be written as

$$\Delta_{ATT} = E(Y^1 \mid X, D = 1) - E_X\left[E\left(Y^0 \mid X, D = 0\right) D = 1\right]$$

where the first term can be estimated from the treatment group and the second term from the mean outcomes of the matched comparison group. The outer expectation is taken over the distribution of *X* (the observables) in the treated population.

[6] For a detailed treatment of propensity score matching and its two assumptions of unconfoundness and common support, we refer to Caliendo, M. and S. Kopeing (2005), Some Practical Guidance for the Implementation of Propensity Score Matching, IZA discussion paper 1588

4.2 Results of the Estimations

In table 6 we present the results of an OLS regression explaining the percentage of calories in the diet delivered by five important food items. Richer and educated households have a lower percentage of calories from cassave flour, sweet potatoes and maize in their diet and more from cooking bananas. Households with more members have a higher share of all food items studied except for beans, and it is the opposite – to a large extent – for households with sizeable landholdings, who have a larger share of beans in their diet and a lower share of the other food items. The rationale for this can be found in the yield of beans and bananas per hectare of land. While all Burundese households want to consume beans, only land-rich households will cultivate enough of them to cover their consumption. Land-poor households will grow high yielding bananas and exchange them for beans in the market.[7]

The sex of the households only affects the consumption of sweet potatoes, with households with female heads consuming less. Importantly, for the topic of this paper, forced displacement (here a binary variable) seems not to affect the composition of the diet at the time of the survey, although in some specifications the variable approaches the 0.10 threshold of statistical significance. The regionally based differences in preferences, climate and soil conditions are controlled for in the province fixed effects which explain a large part of the observed variation.

When regressing the same independent variables on the *level* of calorie intake per day and the *level* of food expenses, a more outspoken picture arises. Not surprisingly, larger households and households with larger farms have higher calorie intake and higher food expenses, as shown in columns 1-4 of Table 7. The effect of the age of the head is quadratic with lower intake and lower expenses at young and old age and higher expenses at middle age. Female headed households have lower calorie intake and lower food expenses and the schooling of the head of the household (all levels) boosts calorie intake and expenses with secondary schooling having the largest impact.

Turning to the variables of interest for this paper, we notice the two of the three forced displacement variables have a statistically significant effect on calorie intake and food expenses at the household level. First is the displacement dummy, capturing the effect of displacement in a binary way (y/n). The regressions 1-4 show that this variable has a negative effect on calorie intake and food expenses. In a log-linear framework as the one used in table

[7] Kangasniemi (1998) analyzed this exchange strategy for neighbouring Rwanda using 1992 data. Rwanda at the time had a very comparable agricultural economy as Burundi today.

7, the magnitude of the displacement dummy is calculated as: a change by one unit ($\Delta X=1$) is associated with a $100*\beta\%$ change in Y, corresponding to a 8% change in calorie intake in column 1 and a 10% change in calorie intake column 3. However, building on the observations in Figure 1 we also introduce the duration of forced displacement (in years) as well as the number of years that have lapsed since returning home. We find that only the latter variable is statistically significant, lending credibility *to the convergence argument* presented in section 3. The magnitude of the return-effect is such that for every additional year that the household has returned, the calorie-intake as well as the food expenses increase by 1%. This means that it takes on average 8 to 10 years after returning home before the negative effect of displacement is cancelled out, and before the level of calorie intake and food expenses of formerly displaced households converges to the level of the non-displaced households.[8] Adding production variables to the regressions in order to capture the effect of potentially imperfect markets on consumption and production decisions of farm households does not change the results much. Regressions in columns 2 and 4 do show that producers of domestic and export cash crops have higher calorie intake and food expenditure levels.

The last two columns of table 7 serve as a robustness check, but also allow us to analyze the effect of forced displacement (and other characteristics) on *the level of poverty*. We have already seen that the displaced are overrepresented among the food poor. We find the same results as in the other columns of table 7, with formerly displaced households having a larger probability to be in the poor and food poor categories, a probability that decreases with the number of years since returning home.

Finally, in order to correct for potential selection into displacement we match displaced or 'treated' households with non-displaced or 'control' households, using a series of household characteristics that are (too a large extent) not influenced by displacement. The observable variables that we use are age, sex, schooling and province of residence of the head of the household. The 2006 survey did not explicitly collect the level of these variables before the onset of displacement, but it is the only set of variables we have. Since we are dealing with adult heads of household we are confident that their level of schooling was determined before the onset of displacement. Sex and age are not affected by displacement either, and

[8] As we discussed in the model section 4.1, this result is only valid to the extent that the displaced households do not have a different profile than the non-displaced, meaning that they are not 'selected into displacement' by observable characteristics. For that reason we will also do a matching analysis. Given that we are dealing with forced displacement, and thus the level of discretion or choice is very low, there is now a priori reason for the displaced population to have a different profile than the non-displaced.

current province of residence is almost always the same as before displacement.[9] Results of the matching procedure are presented in table 8. We find that the treated (displaced) households have lower total expenses per adult equivalent (-13%), lower food expenses (-10%) and lower calorie intake (-7%). Because of the matching technique, we can confirm that these differences between the displaced and the non-displaced are *caused* by forced displacement and not because the displaced have different characteristics than the non-displaced. When using this same matching procedure to deal with potential selection into displacement for the results on the composition of the diet presented in table 6, no statistically significant treatment effect was found.

5. Support for returned IDP's and refugees

In 2008 an ad-hoc commission for return and reintegration (the *Commission Intégrée Ad-hoc pour le Rapatriement et la Réintégration*) was set up within the Ministry of National Solidarity with UNHCR and UNDP support. The same year, it published a "villagisation" strategy document to guide the repatriation and integration of returning refugees without land (Government of Burundi, Commission Intégrée Ad Hoc - Rapatriement et Réintégration, 2008). It foresaw the creation of new villages with basic services and the making of additional land available to allow greater numbers of beneficiaries to re-establish viable livelihoods. One of its main thrusts was to accommodate various ethnic groups in the same location in an effort to foster reconciliation, peace and security. The programme also envisaged the development of simplified procedures to allow the rural population to register their homes and land with the commune in order to avoid potential land conflicts. The programme, which mentions IDPs but only as secondary beneficiaries, has been run by the Project to Support the Repatriation and Reintegration of War Affected People.

In parallel, the government developed a new national land policy (*Lettre de politique foncière*), to take into account developments since the introduction of its 1986 land code, most notably the fundamental changes brought about by displacement (République du Burundi, Ministère de l'Environnement, de l'Aménagement du Territoire et des Travaux Publiques, 15 September 2008). Its main objective was to reduce conflict over land via the creation of "integrated rural villages" (known by their French acronym VRIs) to accommodate people

[9] Most households were displaced in their own province, of which many in their own commune and even their own colline (hill).

from different ethnicities. Some villages, like the one of Muriza, Ruyigi Province, have included ethnic Tutsi IDP families and ethnic Hutu returning refugees, chosen among the most vulnerable. The villages are meant to be models of inter-ethnic reconciliation and to improve access to local infrastructure. The strategy provides, on a voluntary basis, durable solutions for landless returnees and displaced people of mixed ethnic origins as well as vulnerable people and people from various social backgrounds. It provides access to housing and land, water and sanitation, education and health, agricultural support, as well as non-agriculture based income generating activities aiming for the self-sufficiency of beneficiaries. The programme was led by the government and involves several UN agencies (OCHA, 2009). The focus on land access is supported by our results: from table 7 it can be derived that the size of farm land (and thus more general access to land) is an important determinant of calorie intake, food expenses and the level of poverty.

In March 2010, the government adopted its "socio-economic reintegration strategy for people affected by the conflict", the end goal of which is "to create an environment conducive to the country's sustainable development". It aims to "foster the setting up of rural development centres in concentrated settlements that facilitate access to land and infrastructure" in VRIs. On displacement, it declares that the return of IDPs to their community of origin, or the transformation of IDP settlements into VRIs "...is an essential objective of a socio-economic reintegration strategy leading to the consolidation of peace". The national strategy envisages the creation of an IDP technical group to review all IDP settlements, and on the basis of its findings, to define a reintegration policy. Taking into account IDPs' preferences, it would either determine the feasibility of their return, or work towards the formal recognition of their settlement, the latter including the resolution of any outstanding land claim pertaining to the settlement in question (République du Burundi, Ministère de la Solidarité Nationale, du Rapatriement des Réfugiés et de la Réintégration, March 2010). The IDP working group but in place to implement the strategy convened for the first time in October 2010.

With the data available for the current paper we are not able to evaluate the success/failure of the current return policy. Hence I cannot say whether or not the new reintegration strategy addresses the needs and the fears of the IDPs mentioned in section 2. Ideally one would need a series of welfare indicators from villages were the policy was (pilot) tested and compare these with villages where the policy was not (yet) implemented. The author is not aware whether such data exist. International agencies, the government and NGO's assist the returnees upon their arrival and in the first months and years after their

arrival, but the findings presented in this paper show that is it clearly not enough. The welfare of recent returnees is lagging seriously behind in comparison with the local non-displaced populations.

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Table 1: Calorie Intake and Composition of the Diet per Adult Equivalent in 2006

Categorie	Food expenses per day per ae	Daily calorie intake per ae	Beans		Manioc Farine		Maize		Sweet Potatoes		Cooking Bananas	
			% exp	% Kcal	% exp	% Kcal	% exp	% Kcal	% exp	% Kcal	% exp	% Kcal
Total												
Urban	734	2997	13.8	20.5	11.2	16.5	2.8	5.6	3.8	5.1	4.1	3.4
Rural	385	2301	16.5	18.7	11.5	16.7	9.8	16.3	8.2	10.4	6.4	5.4
Poverty												
Non-poor	627	3483	15.8	19.0	10.4	15.9	8.7	15.0	6.4	8.7	5.6	4.9
Poor	306	1887	17.0	19.4	11.9	17.2	9.4	15.5	8.0	10.2	6.0	5.1
Food Poor	204	1303	16.5	18.2	12.5	17.3	10.4	16.6	9.6	11.5	7.1	5.8
HH size												
<4	533	3126	17.1	19.6	11.3	16.3	9.1	15.0	8.3	10.5	5.9	5.0
>3 & <7	380	2203	16.0	18.4	11.5	16.7	9.7	16.1	8.0	10.1	6.3	5.3
>6	304	1733	16.1	18.6	11.7	17.2	9.4	16.0	7.6	9.7	6.7	5.5
Age head												
<35	452	2619	16.2	18.8	11.7	17.1	8.8	14.6	7.9	9.9	6.0	5.1
>34 & <50	358	2081	16.3	18.6	11.8	17.0	9.8	16.5	7.6	9.7	6.3	5.2
>49	412	2394	16.6	19.1	11.0	15.6	9.6	16.0	8.5	10.9	6.7	5.7
Sex head												
Female	399	2292	16.2	18.8	11.4	16.8	9.2	15.5	7.9	10.1	6.3	5.3
Male	415	2500	16.8	19.0	12.0	16.7	10.5	16.8	8.0	10.0	6.2	5.1
Educ head												
No educ	363	2210	16.8	18.9	12.4	17.5	9.8	16.1	8.1	10.1	6.7	5.5
Religious	364	2157	15.3	17.6	11.1	16.2	10.3	16.8	8.8	11.0	6.3	5.2
Prim	422	2462	16.9	19.6	11.4	16.8	9.1	15.3	7.8	10.0	6.0	5.1
At least sec	754	3345	14.6	19.8	8.7	13.8	5.7	10.9	3.6	5.3	5.3	4.9
Displaced												
never	438	2417	15.6	18.3	9.7	14.1	9.4	16.0	8.7	10.9	6.7	5.7
At least once	387	2303	16.7	19.0	12.3	17.8	9.5	15.6	7.7	9.8	6.1	5.1

Source: Core Welfare Indicators Survey for Burundi (2006).

Table 2: Food Expenses at the household level in 2006

Categorie	Total expenses (per month)	% Non-food	% Food	in % of food expenses			
				From own production	bought	gift	aid
Total	67029	32.6	67.4	48.4	44.6	4.4	2.6
Urban	176230	41.7	58.3	8.7	88.2	2.6	0.4
Rural	61087	32.1	67.9	50.5	42.2	4.5	2.7
Poverty							
Non-poor	90461	32.9	67.0	47.1	44.9	4.9	3.0
Poor	57823	33.0	66.9	50.1	42.6	4.5	2.6
Food Poor	45883	32.0	67.9	49.0	45.2	3.7	2.1
HH size							
<4	48092	37.6	62.4	47.1	41.5	8.1	3.3
>3 & <7	65649	31.5	68.4	49.2	44.7	3.3	2.7
>6	89522	29.2	70.8	48.3	47.7	2.3	1.7
Age head							
<35	59709	34.5	65.4	46.3	47.2	4.2	2.3
>34 & <50	73160	30.6	69.4	49.0	45.2	3.5	2.3
>49	66313	33.4	66.6	50.0	40.7	5.9	3.5
Sex head							
Female	53759	34.2	65.8	48.3	38.9	8.1	4.4
Male	70605	32.1	67.8	48.3	46.1	3.4	2.2
Educ head							
No educ	55358	31.7	68.3	50.3	41.0	5.6	3.1
Religious	58398	32.2	67.7	50.9	41.4	4.8	3.0
Prim	69647	32.8	67.2	47.7	46.8	3.2	2.2
At least sec	178672	39.6	60.4	26.1	71.5	1.8	0.6
Ever displaced							
Never	74705	33.3	66.7	48.4	45.3	4.0	2.3
At least once	63789	32.3	67.6	48.5	44.2	4.5	2.7

Source: Core Welfare Indicators Survey for Burundi (2006).

Table 3: Timing of Return and Duration of Displacement

Returned home by the time of the survey(2006)			Duration of Forced Displacement		
Number of years ago	heads of households		Number of years	Heads of households	
	number	%		number	%
0	2234	32.69	13	3	0.04
0.5	56	0.82	12	28	0.41
1	451	6.60	11	46	0.67
2	720	10.54	10	56	0.82
3	714	10.45	9	52	0.76
4	321	4.70	8	69	1.01
5	197	2.88	7	88	1.29
6	255	3.73	6	93	1.36
7	170	2.49	5	170	2.49
8	272	3.98	4	208	3.04
9	257	3.76	3	228	3.34
10	261	3.82	2	373	5.46
11	201	2.94	1	1039	15.20
12	497	7.27	0.5	2147	31.42
13	228	3.34	0	2234	32.69

Source: Core Welfare Indicators Survey for Burundi (2006).

Table 4: Displacement, Poverty and Food Poverty

Forced Displacement	Level of Poverty			Totals
	Non-poor	Poor	Food Poor	
Never	1124	397	746	2267
	50%	17%	33%	100
At least once	1972	941	1833	4746
	41%	20%	39%	100
Totals	3096	1338	2579	7013
	44%	19%	37%	100

Pearson Chi square(2) = 40.3*** , p=0.000

Source: Core Welfare Indicators Survey for Burundi (2006).

Table 5a: Self-reported Size at Birth of the last born Child and Total Expenses in adult equivalent

Categorie of Expenses	Size of the last born child			Total
	Small	Average	Large	
1 (low)	130 ; 16%	411 ; 50%	276 ; 34%	817
2 (medium)	107 ; 12%	451 ; 53%	298 ; 35%	856
3 (high)	66 ; 9 %	386 ; 53%	273 ; 38%	725

*Pearson chi-squared(4)=16.58*** , p=0.002*

5b: Self-reported Size at Birth of the last born Child and Head Count Poverty

Category of Poverty	Size of the last born child			total
	Small	Average	Large	
1 (very poor)	141 ; 16%	462 ; 51%	300 ; 33%	903
2 (poor)	65 ; 13%	250 ; 51%	178 ; 36%	493
3 (not poor)	97 ; 10 %	536 ; 53%	369 ; 37%	725

*Pearson chi-squared(4)=16.94*** , p=0.003*

5c: Self-reported Size at Birth of the last born Child and Number of Years since return

Years since return	Size of the last born child			total
	Small	Average	Large	
1 (less then 3 years ago)	57 ; 15%	215 ; 54%	124 ; 31%	396
2 (>2 , <7)	52 ; 11%	252 ; 53%	169 ; 36%	473
3 (more then 6 years ago)	75 ; 14 %	256 ; 47%	212 ; 39%	543

*Pearson chi-squared(4)=9.03** , p=0.06*

Source: Core Welfare Indicators Survey for Burundi (2006).

Table 6: determinants of the % of calorie intake in the diet delivered by each crop, OLS

Variable	beans	Farine manioc	Maize	Sweet potatoes	Cooking bananas
Household level					
Ln(Food expenses/day)	0.18	-2.09***	-1.01**	-3.68***	0.53***
Land size	0.64*	0.14	-0.99**	-0.28	-0.31
Household size	-0.25**	0.43***	0.19*	0.26***	0.14***
Head level					
Age	0.04	0.08	0.20**	-0.06	-0.09**
Age sq.	-0.01	-0.01	-0.01**	0.01	0.01***
Sex	0.21	0.06	0.75	-1.15***	0.08
Religious school	-0.06	-0.34	0.04	-0.12	0.01
Primary school	1.23***	-0.59	-0.85*	-0.02	0.21
Secondary school	1.22	-3.44***	-3.15***	-1.78***	0.56
Displacement head					
Dummy y/n	0.39	0.80	0.24	0.04	0.11
Province FE	Yes	Yes	Yes	Yes	Yes
Constant	13.1***	38.16***	16.9***	33.17***	-0.27
N	6872	6872	6872	6872	6872

Note: regressions are clustered at the level of the survey site to obtain robust standard errors.
Source: Core Welfare Indicators Survey for Burundi (2006).

Table 7:Determinants of the level of caloric intake and the level of poverty, OLS and Oprobit

Variable	Ln(Calorie intake) *per household*		Ln(Food expenses) *per household*		Level of poverty *per adult equivalent*	
	OLS		OLS		OPROBIT	
	(1)	(2)	(3)	(4)	(5)	(6)
Household level						
Land size	0.11***	0.10***	0.14***	0.13***	0.42***	0.39***
Household size	0.10***	0.10***	0.10***	0.10***	-0.29***	-0.29***
Head level						
Age	0.01**	0.01***	0.01***	0.01***	-0.01**	-0.02***
Age sq.	-0.00**	-0.00**	-0.00***	-0.00***	0.00***	0.00***
Sex	-0.06**	-0.06**	-0.10***	-0.10**	-0.12***	-0.10**
Religious school	0.03**	0.02	0.05***	0.04**	0.14***	0.11***
Primary school	0.11***	0.10**	0.14***	0.13***	0.42***	0.40***
Secondary school	0.42***	0.42**	0.60***	0.61***	1.39***	1.40***
Displacement head						
Dummy y/n	-0.08***	-0.09***	-0.10***	-0.11***	-0.27***	-0.29***
Years since return	0.01**	0.01**	0.01**	0.01***	0.02**	0.02***
Duration of absence	-0.00	0.00	-0.00	-0.00	0.00	0.00
Cash Crop Production						
Rice		0.09***		0.09***		0.18***
Banana bier		0.06***		0.08***		0.19***
Coffee/tea/cotton		0.06***		0.07***		0.12***
Province FE	Yes	Yes	Yes	Yes	Yes	Yes
constant	8.28***	8.27***	6.54***	6.53***		
cut_point1					1.85	1.85
cut_point2					2.49	2.49
N	6700	6700	6700	6700	6700	6700
F-stat	109***	102***	102***	96***		
Wald Chi-squared					1420***	1389***

Note: regressions are clustered at the level of the survey site to obtain robust standard errors.
Source: Core Welfare Indicators Survey for Burundi (2006).

Table 8: Matching displaced with non-displaced , ATT

Outcome of interest	Treated	Controls	Difference		t-stat
	(displaced)	(non-displ.)	Abs.	%	
Total Expenses per day per adult eq.	603	693	-90	-13.0	-3.75***
Food Expenses per day per adult eq.	407	454	-47	-10.3	-3.60***
Calorie Intake per day per adult eq.	2338	2522	-184	-7.2	-3.38***

Source: Core Welfare Indicators Survey for Burundi (2006).

Figure 1:
Total expenses (food and non-food, in adult equivalents) of formerly displaced households *in percentage of* total expenses of non-displaced households averaged at the province level, by the number of years that have lapsed since returning home and by the duration of their displacement

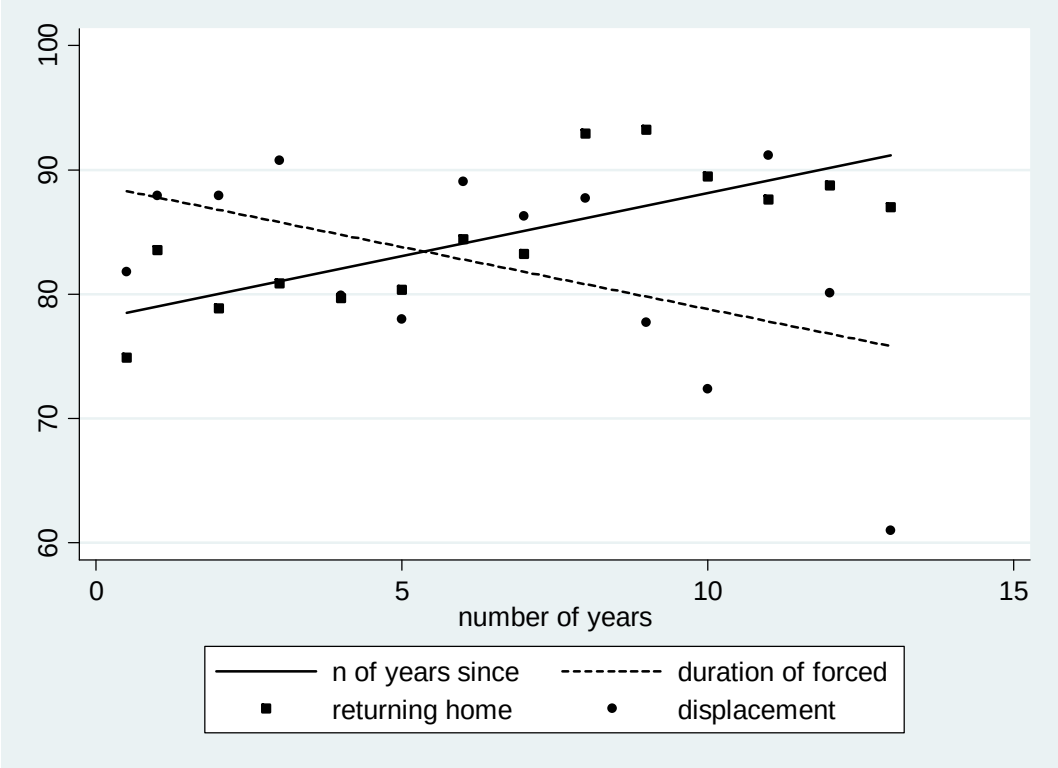

Figure 2

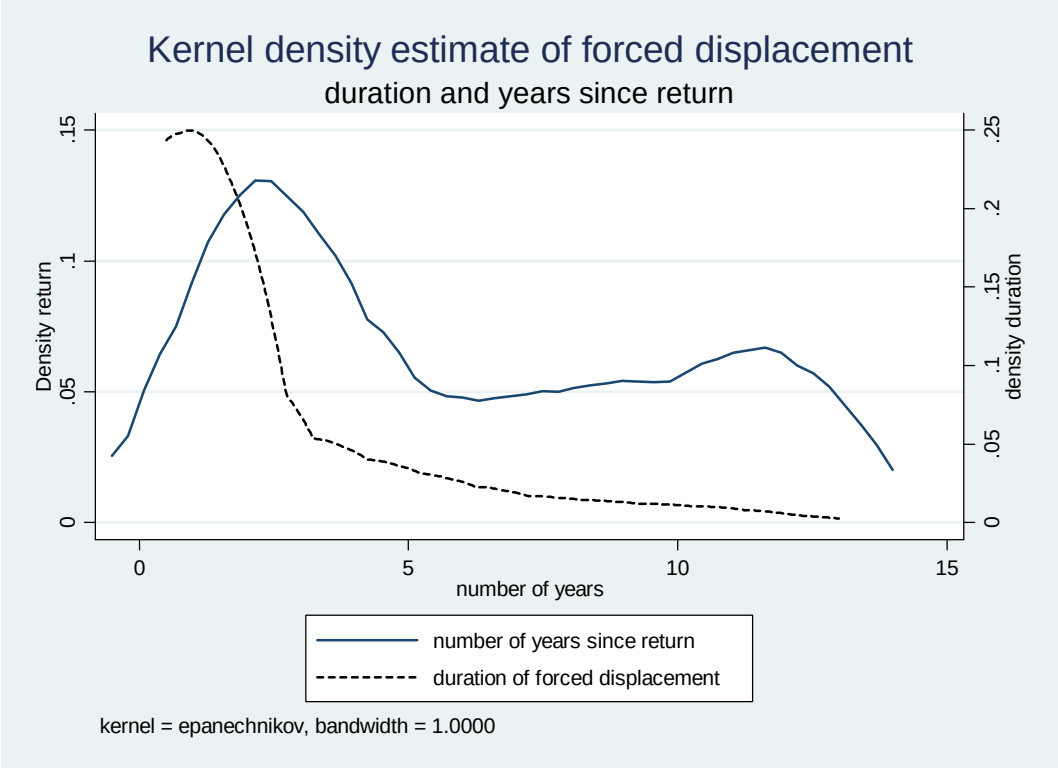
Kernel density estimate of forced displacement
duration and years since return
Density return
density duration
0
.05
.1
.15
0
.05
.1
.15
.2
.25
0
5
10
15
number of years
number of years since return
duration of forced displacement
kernel = epanechnikov, bandwidth = 1.0000

Figure 3 : % of the Population with Expenses below the Food Poverty Line, by Commune, 2006

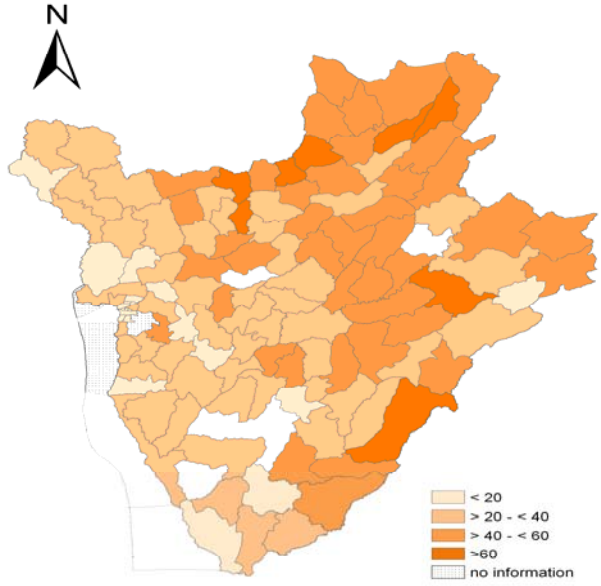

Figure 4: % of Heads of Households ever displaced, by Commune

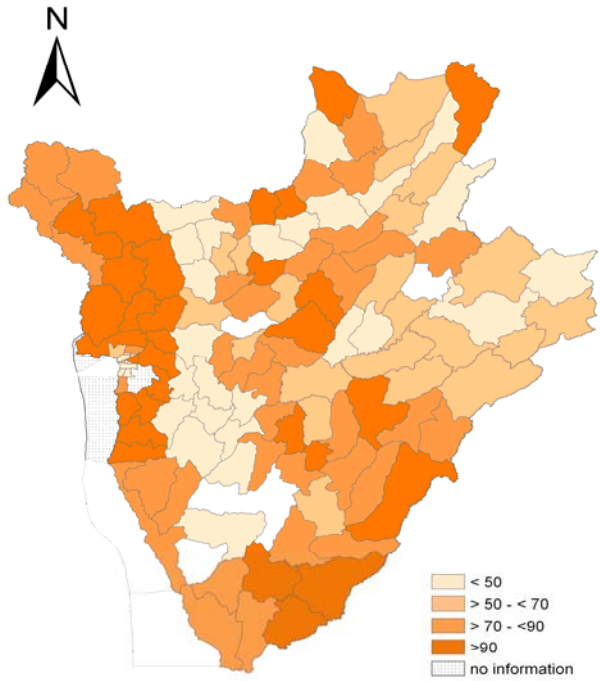

Figure 5: Years since Return from Displacement, by Commune

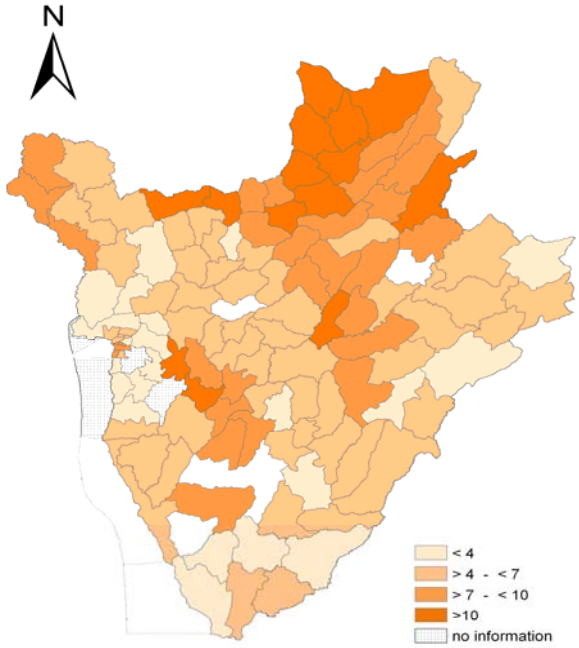

Figure 6: Total expenses of the displaced in % of the non-displaced averaged at the province level, by Commune