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The Consequences of Forced Displacement in Northern Uganda

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Abstract: Over 21 million people are currently forced to live in internally displaced person camps around the world, the majority already from low income areas. The effect of this movement has meant a severe impact on the populations, but due to estimation and data difficulties, little is known about the impact of this movement on livelihoods and health. A data set on households and communities in a conflict zone in northern Uganda offers the opportunity to exploit a possible exogenous variation in movement and a discontinuity design in order to control for endogenous factors and thus obtain potentially unbiased estimates of the cost of movement on the people. I find that being forced to move is associated with an increase in the value of assets for households that originally had little or no assets and a decrease in the value of assets of all other households between 17% and 26%. Estimation on principal component analysis is likewise significant and suggests an even greater association. I also find that, for all income groups, displacement is associated with a decrease in the likelihood of a household consuming meat, an indicator of consumption quality and general health, of up to 71%. These two indicators suggest a possible serious long-run decrease in the economic growth potential of households as the people move home.

Keywords: Forced displacement, Economic development, Consequences of conflict

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1 Introduction

Over 21 million people around the world are considered internally displaced persons (IDPs), approximately 82% of them from low income countries (UNHCR (2008)). Unlike other forms of migration, where the choice of movement can be an optimization problem for the household, the majority of displaced people were forced to leave their homes and land with nothing more than what they could carry with them, either for security reasons or due to government mandates.

Collier (1999), in his early empirical study of the macroeconomic cost of civil wars, finds that restoring peace to a war torn area does not necessarily lead to complete economic recovery. Since this early work, a debate has emerged about the long-term negative consequences of wars and armed conflicts. A number of macroeconomic studies have found either no effect of civil war or, once war ends, a significant recovery (e.g. Davis and Weinstein (2002), Brakman et al. (2004), Miguel and Roland (2006) and Chen et al. (2007)). After a conflict ends though we do not know *a priori* if all groups within a nation will recover. There has thus been an increasing interest in the microeconomic impacts of war on civilian and former combatant populations that may have been hardest hit from the conflict (e.g. Blattman and Annan (2006), de Walque (2006), Shemyakina (2006), Akresh et al. (2007), Kondylis (2007), Bellows and Miguel (2008), Kondylis (2008) and Akresh and de Walque (2008)). For instance, Blattman and Annan (2006) and Akresh and de Walque (2008) look at the implications of conflict on educational attainment, an important determinant of income and development potential. This paper likewise looks at the association between displacement in response to civil conflict on the assets and health, both indicators of long-run development potential, of civilian populations in northern Uganda.

In 2004, due to a protracted civil war, 1.6 million people were displaced in northern Uganda - up to 90% of the population in some areas. The civil war is between the government and the rebel group the Lord's Resistance Army (LRA), which has operated a program of abduction in order to terrorize the people and increase the size of its membership. In 1993, many of the more well-off civilian population voluntarily moved to towns to avoid the conflict, but most of the people were unable to leave and stayed behind. Starting in 2000, in an effort to better fight the rebel group, the government of Uganda (with the humanitarian support of the World Food Program (WFP)) forced the majority of the population in the Acholi region of northern Uganda, along with some communities in Lira and Katakwi districts, into IDP camps[1]. This movement caused a number of difficulties for the people as there are few means of making a living in the camps, and all dietary and health considerations are now handled by the international community.

The cultural effect on the people from such movement has been profound[2]. In both Uganda and other contexts of displacement, estimation issues have made it difficult to conduct a systematic study of the effect on the economic status or health of those forced to move. There is often very little data on the households and communities before the move, and data after the move often suffers from a lack of comparability as a counter-factual is not clear[3]. There is some recent work that has attempted to address selection difficulties in displacement by identifying exogenous sources of movement, including Kondylis (2007), who exploits geographic differences in timing of return to identify impact of displacement in Rwanda, and Kondylis (2008), who identifies the selection involved in Bosnian displacement.

[1]For a detailed history of the conflict, see Acker (2004).

[2]See for example discussions by Allen (2005), Dolan (2000) and RLP (2004).

[3]A number of papers have attempted an estimate of the effects of forced migration but make little or no mention of identification problems. Some recent examples include Karunakara (2004), Singh (2001), Cortes (2004), Ibanez and Moya (2006), who likewise looks at asset loss and consumption changes due to displacement, as well as Ssewanyana et al. (2007), who attempt an estimate of the effect of displacement on consumption levels in northern Uganda as well, though they focus on consumption, which in fact identifies the service delivery quality of NGOs in Uganda. They also do not make an identification argument, and so it is not clear that their use of a dummy variable for being and IDP is appropriate. Porter and Haslam (2005) conduct a meta-analysis of a large number of studies that use control groups, though none of the studies make the choice of control group clear. Many studies, such as Werker (2007) and Boothby (2006), have thus focused on a description of the current conditions and avoid a discussion of the causal impact of the movement.

This paper explores the cost of conflict at the microeconomic level using two indicators. First, I estimate the association between displacement and household assets, which have important long-term development implications for those displaced. Second, I estimate the association between displacement and how many times a household consumed meat, which, given the few consumption choices people in northern Uganda have, is a strong indicator of protein consumption and general nutrition. I use a cross-sectional household demographic survey collected in 2004 containing detailed data on assets, consumption and relevant demographic variables.

I first examine rural households in the war zone and compare displaced to nondisplaced people. This approach could yield a potentially biased estimate through a selection effect for displacement. That is, if the choice of whom to displace focused on poorer (or more well-off) communities, either through political concerns, security, or access, an estimate of the association between displacement and assets would be biased upward (or downward). In order to solve for this, I exploit the fact that the decision by the government of Uganda of whom to displace was decided by the Ugandan military. The military was motivated by safety considerations, which was based on rebel activities. Recent research suggests that raids and abduction activities by the rebels were exogenous to economic and demographic variables. If true, the conflict then presents a quasi-experimental situation, and so an unbiased estimate of the cost of displacement can be obtained. However, significant unobserved selection could still arise from the fact that displacement decisions were motivated by security concerns. If people in the communities that were displaced had stayed at home, they might have faced attacks by the rebel group. Thus, the communities that I use as comparison potentially faced less danger than those that were moved. Therefore, it may not be a pure estimation of the association between displacement and assets but could be contaminated by being in a conflict area. This would then likely lead to an upward bias in the estimates. Figure 1 shows the incidence of conflict between the LRA and government of Uganda, as recorded by Raleigh and Hegre (2005). Sites of conflict are dispersed across the samples, suggesting that all areas, including those not displaced, faced security issues. This of course does not preclude the chance that some areas were still in more danger, and thus faced different conditions during displacement.

In order to further reduce unobserved selection that may be present in the full sample, as well as potential bias from security issues, I then compare only neighboring communities in the Lira district that were and were not displaced: a regression discontinuity (RD) approach. Based on interviews and observation, whether or not a community was displaced in Lira created a line of displacement. This line was heavily influenced by the lack of similar language between the rebel group and the local population, thus creating a problem of supply for the rebels, and improving operations of the military. Under RD, I only include households in the analysis that are close to the division decision of whom to displace, and so reduce the security difference between those who were displaced and those who were not.

This more restricted choice of communities may still present a bias if pretreatment variables are different. A comparison of predisplacement assets though shows that there is no statistical difference between displaced and nondisplaced communities. This does not eliminate the chance that violence was different between groups, but it does minimize the potential differences.

I find displacement is not associated with asset loss across all asset levels. In fact, I find that for the very poorest households, displacement is associated with an increase in assets. For all other individuals, displacement is associated with a decrease in assets of between 17% and 26%, depending on the sample specification used. An estimation based on prinicipal component analysis suggests the an even larger association of a roughly 70% decrease in assets. For all groups, displacement is associated with up to a 71% decrease in the likelihood a household consumed meat. As the households in the data set were still displaced at the time of the survey, I am not able to look at the long-run asociation of displacement; however, both assets and health have important implications on the long-term development success of these people when they eventually move back home.

The remainder of this paper is organized as follows: section 2 presents the identification strategy employed. Section 3 discusses the econometric model. Section 4 presents the data, and section 5 is the estimation results. Section 6 concludes.

2 Identification

Identification is a serious issue with respect to the question of forced migration. As it is not possible to observe the outcome if a displaced person had not received "treatment" - that is, been forced to move - it may be possible to use a relevant control group and estimate the Average Treatment Effect (ATE), which is the average difference in the outcomes of the treated and controlled group. If an appropriate control group can be found, an unbiased estimate of the effect of displacement can be obtained.

Rosenbaum and Rubin (1983) discuss what is needed to calculate an unbiased ATE. Let observables be y, w and x, with y being (y_0, y_1), where y_1 is the outcome of those that received some kind of treatment (forced to move) while y_0 is the outcome of those that did not move. w is either 1 for those that received treatment and 0 if not, while x is a matrix of other independent observables. When w and (y_0, y_1) are correlated, it is not possible to identify the treatment effect.

Treatment effect can be identified using the assumption of conditional mean independence, where $E(y_0|x, w) = E(y_0|x)$ and $E(y_1|x, w) = E(y_1|x)$. That is, the estimates are unbiased when, conditional on x, treatment assignment and potential outcomes are independent. In the case of forced migration, the after movement differences observed between two communities may in fact be due to important differences between them and not the movement itself, leading to biased results. For example, if people with fewer assets were targeted by the Ugandan government for forced migration, any comparison between this group and another better-off group could bias the association between forced migration and assets. Conditional mean independence then means that, conditional on the observables, there is no such systematic targeting.

I use two different methods to estimate an unbiased ATE of displacement. The first method uses the full data sample of displaced districts and exploits the fact that displacement in northern Uganda is likely an example of treatment being independent of potential outcomes conditional on a set of observed variables. The organization and rationality of LRA activity displays a somewhat contradictory nature. There is strong evidence from Blattman and Annan (2006), Blattman and Annan (2008) and Bevan (2007) that larger LRA activity was both calculating and rational; though, on the ground it was highly unorganized and not directed toward any one group. The larger organization, led by Joseph Kony, mandated specific rules for abductions and attacks, while the leaders on the ground, who were often cut-off from communicating with the central command for long periods of time, routinely attacked indiscriminately. Abductions and raids were used to terrorize the local population, but mostly were used to gather resources, and so were conducted when necessity arose. For example, Blattman and Annan (2006) argue that abductions were exogenous to the economic, geographical and compositional conditions of communities, all of which are important unobserved characteristics that could bias the results. Being exogenous to characteristics, the methods of rebel leaders on the ground thus creates a quasi-experimental design for estimating the effect of abduction.

According to former government officials involved with displacements beginning in 1993, the Ugandan governments decision on whom to displace was entirely determined by the Ugandan military, which displaced people based on LRA activities. As these activities were in turn partially motivated by abduction needs and their own limited resources of movement, the decision of which communities to displace was likely exogenous to the demographics of the people and so meets the requirements of conditional mean independence.

This method may be limited, though, as the communities that I use as comparison potentially faced less danger than those that were moved. While a WFP report notes that it has never been proven that displacement actually led to an increase in safety, especially considering the poor living conditions of the camps and the lack of proper protection from the authorities (WFP (1999)), it is not possible to find conclusive evidence. The results may not be a pure estimation of the association between displacement and assets, but could be contaminated by being in a conflict area. Under a purely quasi-experimental situation, the ATE is unbiased with regards to the choice of which communities were displaced, but the estimation captures both displacement and danger.

In order to reduce the potential bias from security issues, I use a second method: a Regression Discontinuity analysis. RD allows for the estimation of an effect when communities are assigned to or selected for "treatment" - in this case displacement - on the basis of a cutoff score. This score then separates communities by the choice to displace and creates a discontinuity at some threshold or point z_0. If there is reason to believe that individuals close to z_0 have very similar cutoff values, then the design is almost experimental near z_0. It is thus possible to evaluate the causal impact of treatment by comparing the average outcome for those just above z_0 to those just below z_0. That is, if $E[y(1)|z]$ and $E[y(0)|z]$ are continuous at z_0, then, as Imbens and Lemieux (2008) show, $lim_{z \downarrow z_0} E[y_i|z] - lim_{z \uparrow z_0} E[y_i|z] = E[\alpha_i|z = z_0]$. The RD approach then identifies the ATE for individuals close to the discontinuity point.

For this study, the discontinuity point is the area where the decision of which communities to displace was at the margin. The LRA was unable to penetrate deeply into the district as local populations spoke a different language, making movement more difficult and abductions less attractive. This created a change in security through the district that necessitated some community displacement, while others were not displaced. As can be seen in the map in figure 1, displacement created an invisible division line from the northwest to middle portions of

Lira district, with many of the displaced communities geographically near communities that were not displaced. This method minimizes unobserved differences between displaced and nondisplaced communities, and so minimizes the differences in security between displaced and nondisplaced communities.

Due to lack of data on security and movement, it is not possible to directly test whether the change in security for displaced and nondisplaced communities was continuous or constituted a sharp change. As a test for the robustness of the RD, I estimate the ATE for three different samples divided by county within Lira as depicted in figure 1. The samples include (1) all of Lira, (2) Lira district not including the outlying counties of Kioga and Otuke, which did not face any displacement, and (3) only Dokolo and Erute counties, which also excludes Moroto county where all communities in the sample were displaced.

An additional potential issue is the possibility that better-off households, rather than being displaced, moved to communities that were not to be displaced. This is an especially important issue for the regression discontinuity design, as there is little physical distance between displaced and nondisplaced communities. While we might expect this would make moving easy, moving in rural areas is very difficult if the individuals do not have very strong ties to other areas. In northern Uganda it is very rare for individuals to have close ties to other communities. Thus, the better off families that may have moved would have moved to the urban areas. To control for this, I do not include urban residents in the sample.

The argument of conditional mean independence cannot be directly tested. As a partial test for pretreatment differences, table 2 presents regression tests for before forced movement assets per person for the different samples. These numbers are reported in the 2004 survey as assets in 1999. For each specification I report t-statistics clustered at the community level and include district dummies if the full sample or county dummies for Lira only samples. The test suggests that in the full sample there may be differences in log assets per person in 1999, though for all other specifications the t-statistic is very low, suggesting for these samples there was little difference between the communities, originally. While there are difficulties with historical reporting of assets, this method offers some evidence that the potential biases are likely small.

3 Model

To explore the association between displacement, assets and health, I run the following regression model:

$$Outcome_i = \alpha + \beta T_i + \gamma Q_i + \theta T_i \cdot Q_i + \delta X_i + \epsilon_i \tag{1}$$

Where i refers to a household within the data set. T equals one if the household is located in an IDP camp. X contains relevant demographic indicators of the household, including the education level of the head of the household, whether the head is a male, the number of weather and security shocks the household has reported in the last 6 months, if the head of the household is single, divorced or widowed, if the head of the household reports agriculture as their main sector of employment, total number of people in the household, and the log of the age of the head of household.

Displacement may not be associated with the same asset loss across all asset levels, and may in fact be positively associated for certain very poor households; a quantile regression would then be a potential estimation strategy. However, a quantile regression confounds the estimation as the question of interest is the outcome itself. The ideal approach would be to estimate across quantiles of *pretreatment* variables. Q then is a dummy variable representing those households that had log assets per person before displacement in 1999 above a certain threshold. As will be discussed below, the combined coefficients on γ and θ are the association between displacement and assets for those households.

The dependent, or outcome, variables are then log of household assets per person, an index of assets derived from principal components to be described, and the number of times in the last 7 days that the household ate meat. I use meat consumption as it is likely a better indicator of health within the camps than general health or illness questions since it less likely to suffer from the potential selection problem associated with health care, i.e. an increased presence of health workers could induce people to report more illnesses as they may be generally more informed on disease, and so this could miss-identify health differences. Meat consumption is also more straightforward to measure. Additionally, it is a highly preferred food choice for individuals in northern Uganda over other local foods and is often used as an immediate upgrade in food quality.

To estimate the association between displacement, assets and health, I use a weighted least squares (WLS) regression. As discussed by Hirano et al. (2003), WLS weights on the inverse of a nonparametric estimate of the propensity score and produces more efficient and consistent estimation than OLS. Under WLS, the weights used in equation (1) are:

$$\omega_i = \omega(T_i, \nu_i, \rho_i) = \rho_i \cdot \pi_i \cdot \left(\frac{T_i}{\hat{e}(\nu_i)} + \frac{1 - T_i}{1 - \hat{e}(\nu_i)} \right) \tag{2}$$

Where ρ_i and π_i are sampling and attrition weights, and $\hat{e}(vi)$ is a nonparametric estimate of the propensity score.

4 Data

The data used in this study is from the Northern Uganda Survey (NUS), which was collected by the Uganda Bureau of Statistics (UBoS) between July and December 2004 for use in a development program funded in part by the World Bank. The survey covered all 18 districts in the northern and eastern regions of Uganda; the areas of interest here are districts in the Acholi region, Gulu, Kitgum and Pader, and the Lango region of Lira.

UBoS randomly selected communities from each district and then randomly chose 10 households per community to interview. These interviews were conducted with the head of the household, who was asked detailed questions about the entire household and all members of the household. Among the data collected was information on the sex, age, health and education of every person in the household, as well as the number of adults and children, how many times the household ate meat in the last week, the displacement status (whether an IDP or not) of the household and the individual assets of the household, which includes cash, animals, kitchen and household utensils, electronics, such as radios, land and vehicles, including bicycles and motorcycles. Information on the monetary value of each of these assets was then collected from the respondents.

I construct the assets variable by summing the value of all of the household assets, then dividing by household size to obtain per capita values. Many household assets, while small, would have proved difficult to take to the IDP camps. The biggest potential loss from displacement then is most likely with regards to housing materials, storage and agriculture tools.

A limitation to this data is that it is a self-reported value of the assets in the household: respondents were asked how much money they could receive if they sold the asset in the condition it is in. This value of assets is useful as it captures the quality of the asset, though could be biased if displaced populations are more likely to under (or over) state the value of an asset in similar condition, compared to a nondisplaced population. An estimate of the association of displacement would then over (under) state the association of displacement. A way to check for this bias is to compare the per item valuation for displaced versus nondisplaced populations on an asset that is not likely to suffer from quality differences (so that comparison of value is valid). A potential candidate is cattle. Animals have different access to food in displaced and nondisplaced populations, thus affecting the quality (size) of the animal. Cows, though, are more difficult to raise and so are generally only raised on grazing land, thus potentially decreasing the difference between the quality of animal in the two groups. A t-test of per cattle valuation by displacement status obtains a t-value less than 0.10. Therefore, it is not possible to reject the null hypothesis that the two groups are valuing cattle equally.

To partially control for potential misreporting of value, I also construct an index of household assets using principal components. Principal component analysis extracts a linear combination of assets that best express the common information. Specifically, each variable is first normalized by its mean and standard deviation, and then, for the first principal component, a linear combination of all of the variables is found that maximizes the variance[4]. This procedure produces an index of assets with zero mean that is very robust to the specification of what assets are included. I include the household per capita number of the following assets: bicycles, cattle, chickens, hoes, televisions, radios, phones, furniture, vehicles, buildings, ploughs, land (in acres) and pigs.

At the time of the data collection in 2004, the conflict, while still ongoing, was slowing down. Many of the people had adjusted to camp-life. Evidence from Ssewanyana et al. (2007) suggests that, most likely due to the presence of the WFP, people in the camps had comparable consumption levels to those not forced to move, though the quality of this consumption, or the long-term impact of the movement on livelihoods, is not clear.

The summary statistics for rural residents in each of the samples used are presented in table 1. The data is separated into four samples. The first is the full sample and contains all individuals surveyed in Gulu, Kitgum, Pader and Lira districts. The second is for all of Lira district. The third is Lira district not including outlying counties, and the final is for Dokolo and Erute counties only. These samples are illustrated in figure 1.

A comparison of the variables across the different samples suggests that the samples are very similar in observed composition. Days in the last week eating meat and the IDP

[4] For a more detailed explanation, see Filmer and Pritchett (2001), Lindeman et al. (1980) and StataCorp (2007).

dummy for the full sample are different from the other samples because of the inclusion of the Acholi district, where most of the population is displaced. Conversely, the Dokolo and Erute counties have lower levels of displacement and more meat consumption than the other samples. The remaining variables, though, are all remarkably comparable. For all samples, days eating meat in the last week has a number of missing variables due to some survey enumerators incorrectly skipping this question. This error was not likely done systematically, and so may not bias the results, though it is not possible to be sure.

While it is not possible to determine the sharpness of the change in unobserved household characteristics between displaced and nondisplaced, figure 2 is a plot of household log assets per person for different sample specifications. To the left of the black line are displaced households; distance from displacement decreases from left to right. To the right of the black line are households not displaced; distance from displacement increases from left to right. Households closest to the line are then physically closest to each other. The difference in log assets per person near the line and far away from the line on both sides suggests that there is not a sharp change in this observable variable, though variance is higher in non-displaced populations. This increased variance may be due to groups converging after displacement, and so controlling for low assets in 1999, as described above, may be important.

5 Empirical Results

Table 3 presents the WLS regression results of equation (1)[5]. In addition to equation (1) presented above, I also estimate a larger model where demographic variables are further separated out. Columns (1) and (2) estimate the ATE assuming displacement is exogenous; columns (3) to (8) explore the RD design and use the 3 subsamples in Lira districts.

As previously discussed, it is possible that displacement may not be associated with lower

[5] I have also estimated each equation using an ordinary least squares (OLS) regression and an OLS with each household weighted by the probability of selection and find no significant difference in the results.

assets for all wealth levels. To test for this, a dummy variable for individuals that reported more than 10,000 USH ($6) in assets in 1999 (between 15% and 20% of individuals in the samples) is interacted with the IDP dummy. The coefficient on this interaction is negative and very significant[6]. The coefficient on the IDP variable is positive across all specifications, suggesting that displacement of those with zero or very small assets in 1999 is associated with an increase in assets. This positive relationship is likely due to programs directed by international agencies that have provided support for housing and basic consumption which, for the poorest households, could mean an improvement in livelihoods.

To calculate the association between displacement and assets on an individual with more than 10,000 USH of assets in 1999, the coefficient on "Does the HH reside in an IDP camp?" must be added to the interaction term "IDP x assets in 1999 over 10,000 USH". For instance, for the full specification, adding the point estimates 0.506 and -0.765 obtains -0.259. Displacement is thus associated with a 25.9% decrease in assets. Across all specifications, this association ranges from -17% to -26% and is significant at the 1% level.

This result is striking as, during the 5 years (2000 to 2004) that the people have been in the camps, the majority of people have not been able to replace a large portion of their missing assets. Assets are not only important for household investment, and thus general economic growth, they also have important implications for the ability of people to successfully return home. Controlling for individual differences, upon returning home IDPs will likely have significantly less assets that non-IDPs.

Table 4 presents an estimation of the association of displacement and the first principal component and suggests a greater negative association from displacement on assets than using the self-identified valuation of assets. Principal components suggests that displacement is associated with a 70% decrease in assets. The quality of an asset is potentially very

[6] I have also estimated the model for a number of 1999 asset specifications, including 20,000 USH, 40,000 USH and 50,000 USH and the results do not significantly change for any of these specifications, so I only report for the lowest.

important for such an association though, and so a principal components method could mis-estimate the association as it only captures quantity and not quality of assets.

Table 5 explores the association between displacement and meat consumption in the last 7 days for a WLS estimation[7]. The results for the number of meals that contain meat eaten in the last week is significant across all samples and suggests that displacement is associated with a decrease in the likelihood of consuming meat in the last week by up to 71%. As the majority of people would consume meat if they had the option, this suggests a sevely decreased nutritional consumption content for households. Such a decreased nutrition could have a long-run significant impact, especially on children, as it may lead to future health and physical development problems.

6 Conclusion

In addition to the 21 million IDPs, there are an additional 16 million people displaced in refugee camps around the world (UNHCR (2008)), as well as numerous others displaced by development projects (Turton (2003)). Not all displaced people face the same difficulties[8], but these results could suggest a general effect of forced displacement in and beyond Uganda. Even if partially supported by the international community, displacement, if not properly planned, can have serious consequences on a population.

Displacement in Uganda was focused on moving the rural civilian population. The government of Uganda forcefully displacing people in northern Uganda, as well as the decision of the WFP in practically supporting such movement, is associated with an improvement in the conditions of the poorest individuals, but has lead to a decrease in assets of most

[7]Again, the results are not very different between OLS and WLS, and so I focus here on the WLS results. Also, including an interaction with assets in 1999 does not affect the results, so I only report results without the interaction.

[8]For a discussion of some important differences between displaced populations, see discussions from Ryan et al. (2008) and Hathaway (2007).

individuals of around 20%, and a decrease in meat consumption by 71%. This could mean serious problems for the people in the future as communities return home.

Some NGOs in northern Uganda have begun to focus on distributing and improving assets, though most have focused on small agriculture items such as hoes and machetes. Whether replacing these items will be enough to ensure people are able to successfully return home and improve their lives will require a long-term observation of the populations.

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Table 1: Summary statistics.

	Full Sample					Lira				
Variable	Obs	Mean	Std. Dev.	Min	Max	Obs	Mean	Std. Dev.	Min	Max
Log assets per capita	998	10.994	1.881	5.704	16.532	221	11.647	1.408	7.419	15.865
Days in last week eating meat	610	0.364	0.701	0	5	109	0.495	0.728	0	3
Mortality rate of HH	1048	0.145	0.383	0	3	222	0.167	0.385	0	2
IDP dummy	1048	0.729	0.445	0	1	222	0.568	0.497	0	1
Assets in 1999 over 10,000 USH	1048	0.797	0.403	0	1	222	0.851	0.357	0	1
IDP x assets in 1999 over 10,000 USH	1048	0.585	0.493	0	1	222	0.505	0.501	0	1
Education level	1031	5.359	4.145	0	19	222	5.595	4.191	0	19
Male dummy	1045	0.707	0.455	0	1	220	0.723	0.449	0	1
Shock dummy	1048	0.969	0.172	0	1	222	0.919	0.274	0	1
Single dummy	1048	0.275	0.447	0	1	222	0.279	0.450	0	1
Single male dummy	1045	0.075	0.263	0	1	220	0.064	0.245	0	1
Agriculture dummy	1048	0.218	0.413	0	1	222	0.266	0.443	0	1
Size of HH	1048	5.376	2.376	1	20	222	5.329	2.452	1	12
Log age of head of HH	1045	3.637	0.361	1.099	4.489	220	3.651	0.364	2.639	4.382
No school dummy	1048	0.230	0.421	0	1	222	0.221	0.416	0	1
Some primary school dummy	1048	0.496	0.500	0	1	222	0.523	0.501	0	1
Complete promare school dummy	1048	0.114	0.317	0	1	222	0.108	0.311	0	1
Some secondary school dummy	1048	0.110	0.313	0	1	222	0.108	0.311	0	1
Complete secondary school dummy	1048	0.006	0.075	0	1	222	0.005	0.067	0	1
Post secondary school dummy	1048	0.045	0.207	0	1	222	0.036	0.187	0	1
	Lira w/o outlying counties					Dokolo & Erute counties				
Variable	Obs	Mean	Std. Dev.	Min	Max	Obs	Mean	Std. Dev.	Min	Max
Log assets per capita	186	11.630	1.423	7.419	15.865	115	11.478	1.494	7.419	15.865
Days in last week eating meat	100	0.490	0.745	0	3	57	0.702	0.865	0	3
Mortality rate of HH	187	0.155	0.363	0	1	116	0.172	0.379	0	1
IDP dummy	187	0.578	0.495	0	1	116	0.319	0.468	0	1
Assets in 1999 over 10,000 USH	187	0.845	0.363	0	1	116	0.810	0.394	0	1
IDP x assets in 1999 over 10,000 USH	187	0.513	0.501	0	1	116	0.276	0.449	0	1
Education level	187	5.845	4.235	0	19	116	5.905	4.183	0	19
Male dummy	185	0.751	0.433	0	1	115	0.739	0.441	0	1
Shock dummy	187	0.936	0.246	0	1	116	0.897	0.306	0	1
Single dummy	187	0.267	0.444	0	1	116	0.276	0.449	0	1
Single male dummy	185	0.059	0.237	0	1	115	0.061	0.240	0	1
Agriculture dummy	187	0.262	0.441	0	1	116	0.259	0.440	0	1
Size of HH	187	5.316	2.478	1	12	116	5.560	2.609	1	12
Log age of head of HH	185	3.643	0.362	2.833	4.357	115	3.594	0.363	2.833	4.357
No school dummy	187	0.193	0.395	0	1	116	0.164	0.372	0	1
Some primary school dummy	187	0.524	0.501	0	1	116	0.543	0.500	0	1
Complete promare school dummy	187	0.123	0.329	0	1	116	0.147	0.355	0	1
Some secondary school dummy	187	0.112	0.317	0	1	116	0.095	0.294	0	1
Complete secondary school dummy	187	0.005	0.073	0	1	116	0.000	0.000	0	0
Post secondary school dummy	187	0.043	0.203	0	1	116	0.052	0.222	0	1

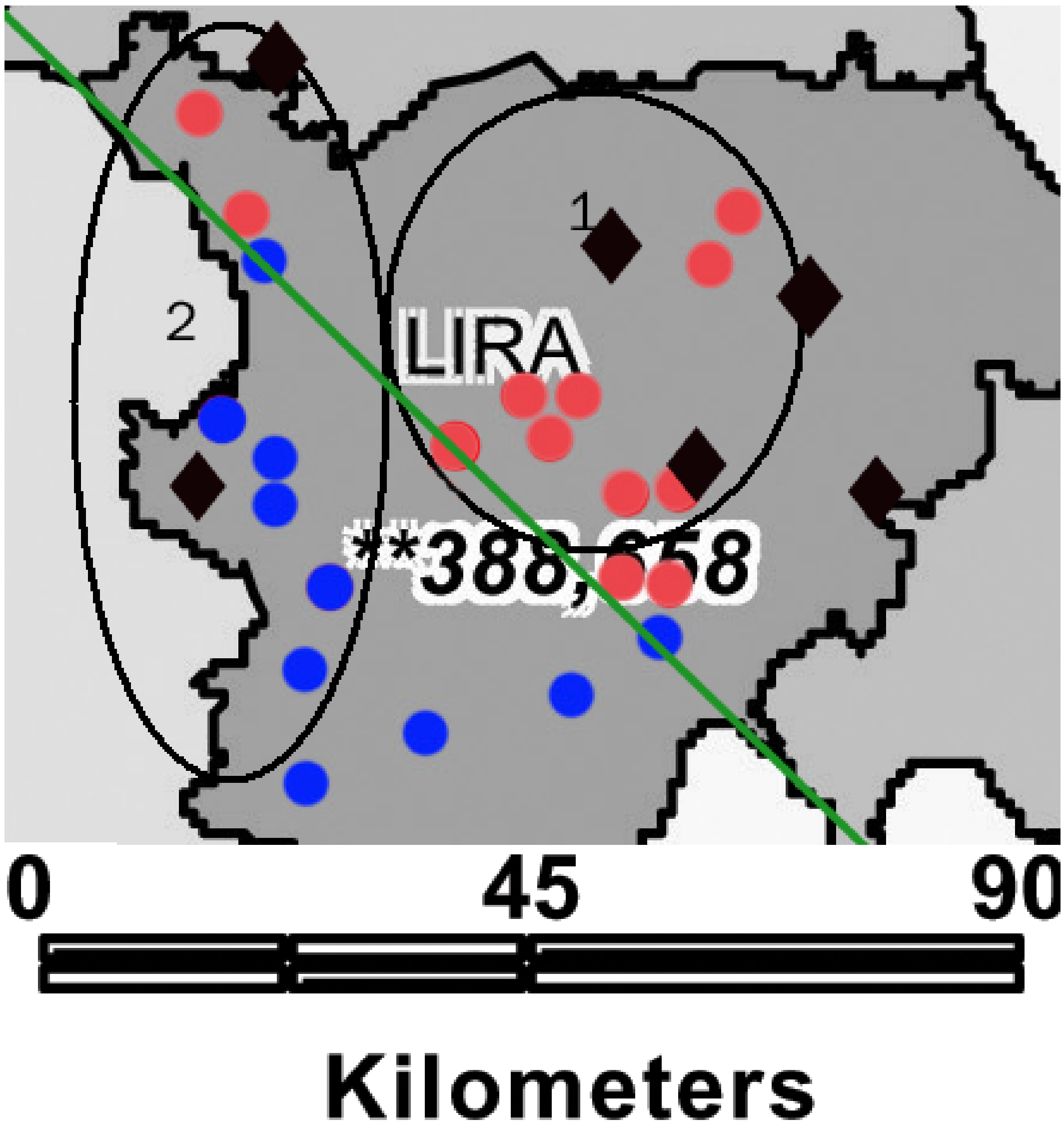
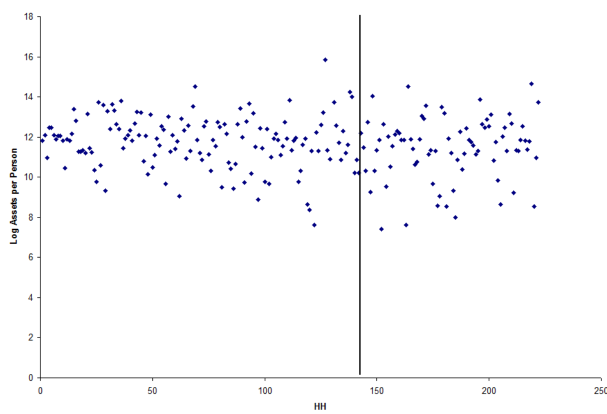
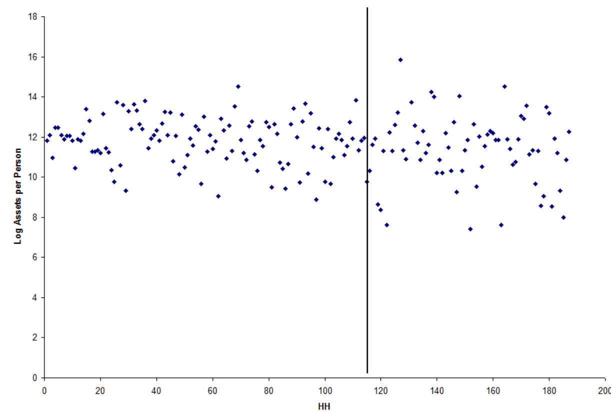


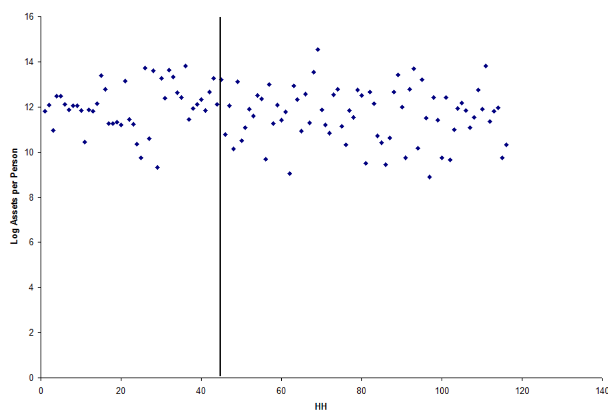
Fig. 1: Map of northern Uganda IDP population in 2004 by district. Black diamonds are sights of conflict between the LRA and the government of Uganda in Lira district as recorded by Raleigh and Hegre (2005). Red circles denote location of communities in the Lira district sample forced to move. Blue circles denote communities in the Lira district sample that were not forced to move. Communities enclosed by area 1 are in Moroto county. Those in area 2 are Erute and communities in unenclosed area are in Dokolo counties. The green line suggests a possible line of division between displaced and nondisplaced communities.



(a) Lira



(b) Lira w/o outlying counties



(c) Dokolo and Erute counties only

Figure 2: Household log assets per person for different sample specifications. Households to the left of the black line are displaced; moving from left to right, the distance to displacement line decreases. Households to the right are not displaced; moving from left to right, the distance to displacement line increases. That is, as points move closer to the line from either direction, the distance to the displacement theoretical displacement line decreases.

Table 2: Regression results for assets and log assets per person in 1999 as the dependent variable.

	Full Sample	Lira	Lira w/o outlying counties	Dokolo & Erute
Assets per person 1999				
Does the HH reside in an IDP camp?	524,730.10	-22,552.90	-22,552.90	-22,552.90
	[1.19]	[0.40]	[0.40]	[0.39]
Observations				
R-squared	1048	222	187	116
	0.01	0.03	0.03	0.00
Log assets per person 1999				
Does the HH reside in an IDP camp?	0.386*	0.003	0.003	0.003
	[1.95]	[0.01]	[0.01]	[0.01]
Observations				
R-squared	921	204	170	106
	0.02	0.06	0.06	0.00

[1]Robust t statistics in brackets.

Table 3: WLS regression results for log assets per person in 2004 as the dependent variable. Columns 1 and 2 include district effects and columns 3 to 8 include county effects.

	Full Sample		Lira		Lira w/o outlying counties		Dokolo & Erute counties	
Does the HH reside in an IDP camp?	0.506*	0.526*	1.503***	1.658***	1.452**	1.799***	1.511**	2.088***
	[0.287]	[0.285]	[0.561]	[0.559]	[0.603]	[0.585]	[0.720]	[0.746]
Assets in 1999 over 10,000 USH	1.912***	1.864***	1.988***	2.016***	1.782***	1.786***	1.784***	1.788***
	[0.253]	[0.251]	[0.446]	[0.441]	[0.488]	[0.474]	[0.488]	[0.453]
IDP x assets in 1999 over 10,000 USH	-0.765***	-0.736**	-1.676***	-1.890***	-1.656***	-2.056***	-1.728**	-2.290***
	[0.295]	[0.293]	[0.579]	[0.572]	[0.627]	[0.604]	[0.774]	[0.803]
Head education level	0.049***		0.066***		0.060***		0.065**	
	[0.013]		[0.023]		[0.023]		[0.031]	
Head works in agriculture	-0.065		-0.062		-0.096		-0.174	
	[0.117]		[0.199]		[0.218]		[0.300]	
Head male dummy	0.13	0.159	0.187	0.052	0.118	-0.155	0.1	-0.114
	[0.160]	[0.158]	[0.254]	[0.275]	[0.281]	[0.383]	[0.338]	[0.548]
HH experienced a shock	-0.188	-0.19	0.054	-0.11	0.199	-0.086	0.252	0.069
	[0.278]	[0.276]	[0.287]	[0.309]	[0.341]	[0.409]	[0.358]	[0.423]
Head is single	0.114	0.11	0.214	0.099	0.145	-0.093	0.212	0.062
	[0.183]	[0.184]	[0.318]	[0.333]	[0.371]	[0.427]	[0.466]	[0.617]
Size of HH	-0.110***	-0.104***	-0.149***	-0.140***	-0.149***	-0.150***	-0.143***	-0.132***
	[0.021]	[0.020]	[0.039]	[0.037]	[0.042]	[0.040]	[0.052]	[0.049]
Head log age	0.427***	0.403***	0.509**	0.521*	0.680**	0.681**	0.532	0.4
	[0.142]	[0.145]	[0.253]	[0.265]	[0.280]	[0.296]	[0.357]	[0.380]
Some primary schooling		0.067		0.335		0.281		0.274
		[0.131]		[0.250]		[0.283]		[0.386]
Compete primary school		0.242		0.626*		0.642*		0.361
		[0.182]		[0.349]		[0.369]		[0.486]
Some secondary schooling		0.278		0.351		0.253		0.151
		[0.183]		[0.330]		[0.370]		[0.548]
Complete secondary school		1.788***		1.539		1.636		0
		[0.662]		[1.269]		[1.297]		[0.000]
Post secondary education		0.711**		1.732***		1.679***		1.344**
		[0.289]		[0.450]		[0.476]		[0.608]
Head single male		0.286		0.156		0.262		0.034
		[0.254]		[0.470]		[0.570]		[0.806]
Head works in agriculture		0.400**		0.155		0.572		0.815
		[0.160]		[0.324]		[0.375]		[0.530]
Head works in other		1.089**		-0.199		-0.609		-0.617
		[0.510]		[0.761]		[1.041]		[1.094]
Head works in mining		-0.17		-0.64		-1.381		0
		[0.455]		[0.910]		[1.260]		[0.000]
Head works in manufacturing		0.198		0.421		0.795*		1.656**
		[0.242]		[0.412]		[0.457]		[0.735]
Head works in trade		0.306		0.39		0.7		0.478
		[0.276]		[0.425]		[0.528]		[0.709]
Head works in transportation		1.645***		2.890**		3.273***		3.693***
		[0.545]		[1.112]		[1.152]		[1.224]
Head works in public sector		0.466*		-0.152		0.296		1.332*
		[0.279]		[0.469]		[0.573]		[0.786]
Constant	8.218***	8.592***	8.323***	8.544***	7.880***	7.823***	8.183***	8.109***
	[0.611]	[0.670]	[1.071]	[1.240]	[1.197]	[1.345]	[1.427]	[1.714]
Observations	981	981	218	219	184	184	114	114
R^2	0.40	0.41	0.20	0.27	0.19	0.29	0.20	0.34

[1] Robust standard errors in brackets. * denotes significant at 10%, ** denotes significant at 5%, *** denotes significant at 1%.

Table 4: WLS regression results for first principal component per person in 2004 as the dependent variable.

	(1)	(2)	(3)	(4)
Does the HH reside in an IDP camp?	-0.099	0.042	0.183	0.879
	[0.132]	[0.218]	[0.262]	[0.698]
Assets in 1999 over 10,000 USH	0.548***	0.835***	1.032***	0.995***
	[0.145]	[0.229]	[0.291]	[0.322]
IDP x assets in 1999 over 10,000 USH	-0.369**	-0.742**	-0.987***	-1.580**
	[0.160]	[0.286]	[0.361]	[0.764]
Some primary schooling	0.059	-0.254	-0.311	-0.178
	[0.088]	[0.256]	[0.233]	[0.392]
Compete primary school	0.181	0.215	0.173	0.716
	[0.113]	[0.314]	[0.319]	[0.485]
Some secondary schooling	0.116	-0.241	-0.147	0.509
	[0.116]	[0.292]	[0.294]	[0.510]
Complete secondary school	-0.012	-0.256	-0.338	0
	[0.419]	[0.991]	[1.007]	[0.000]
Post secondary education	0.532***	0.401	0.385	0.939
	[0.206]	[0.337]	[0.376]	[0.603]
Head male dummy	0.138	0.416	0.356	0.116
	[0.110]	[0.291]	[0.418]	[0.527]
HH experienced a shock	-0.510**	-0.828***	-0.689**	-0.489
	[0.213]	[0.230]	[0.344]	[0.399]
Head is single	-0.141	0.447	0.321	0.502
	[0.130]	[0.348]	[0.464]	[0.616]
Head single male	0.538***	-0.042	0.355	-0.622
	[0.195]	[0.509]	[0.647]	[0.902]
Head works in agriculture	0.502***	0.780**	1.011***	0.784
	[0.100]	[0.329]	[0.378]	[0.568]
Head works in other	0.37	0.124	0.713	0.438
	[0.263]	[0.727]	[0.993]	[1.248]
Head works in mining	-0.061	0.539	0.516	0
	[0.305]	[0.766]	[1.169]	[0.000]
Head works in manufacturing	0.425**	0.894**	1.294***	1.980***
	[0.167]	[0.397]	[0.420]	[0.728]
Head works in trade	0.211	0.693*	0.909*	0.366
	[0.175]	[0.394]	[0.476]	[0.751]
Head works in transportation	0.498	1.536*	1.426	1.156
	[0.369]	[0.818]	[0.914]	[1.098]
Head works in public sector	0.269	0.361	0.467	0.08
	[0.172]	[0.447]	[0.530]	[0.831]
Size of HH	-0.187***	-0.219***	-0.265***	-0.286***
	[0.012]	[0.029]	[0.034]	[0.049]
Head log age	0.314***	0.074	0.135	-0.273
	[0.092]	[0.241]	[0.276]	[0.434]
Constant	-0.035	0.548	0.029	1.676
	[0.420]	[1.011]	[1.155]	[1.742]
Observations	1019	218	185	115
R^2	0.38	0.35	0.37	0.38

[1]Robust standard errors in brackets. * denotes significant at 10%, ** denotes significant at 5%, *** denotes significant at 1%.

Table 5: WLS regression results for how many days the HH consumed meat during the last 7 days as the dependent variable. Columns 1 and 2 include district effects and columns 3 to 8 include county effects.

	Full Sample	Lira	Lira w/o outlying counties	Dokolo & Erute counties
Does the HH reside in an IDP camp?	-0.327***	-0.710***	-0.651***	-0.664***
	[0.073]	[0.169]	[0.197]	[0.242]
Head education level	0.019**	0.025	0.023	0.04
	[0.007]	[0.015]	[0.017]	[0.029]
Head male dummy	0.023	-0.096	-0.152	-0.337
	[0.087]	[0.235]	[0.324]	[0.355]
HH experienced a shock	0.065	0.241	0.075	0.073
	[0.178]	[0.297]	[0.386]	[0.435]
Head is single	0.022	-0.138	-0.185	-0.227
	[0.096]	[0.235]	[0.325]	[0.400]
Head works in agriculture	-0.140**	-0.119	-0.161	-0.019
	[0.069]	[0.158]	[0.201]	[0.362]
Size of HH	-0.012	-0.023	-0.024	-0.062
	[0.011]	[0.024]	[0.032]	[0.047]
Head log age	-0.029	0.328*	0.215	0.243
	[0.077]	[0.166]	[0.187]	[0.293]
Constant	0.364	-0.773	0.103	0.221
	[0.340]	[0.741]	[0.903]	[1.306]
Observations	602	108	97	56
R^2	0.12	0.33	0.28	0.28

[1]Robust standard errors in brackets. * denotes significant at 10%, ** denotes significant at 5%, *** denotes significant at 1%.