SAJE South African Journal of Economics
ESSA The Economic Society Of South Africa (est. 1925)
South African Journal of Economics Vol. 0:0 Month 2019

THE IMPACT OF LEAVING CAMPS ON WELL-BEING OF INTERNALLY DISPLACED PERSONS IN NORTHERN UGANDA

FU-MIN TSENG[†,*], BARBARA MCPAKE[‡] AND IJEOMA EDOKA[§]

Abstract
The armed conflict in Northern Uganda led to a large number of internally displaced persons (IDPs). After the government announced the declaration of free movement on 30 October 2006, a large number of IDPs left camps. Transition from camp life to post-camp life has important implications for population well-being. This paper uses the Ugandan National Household Survey conducted in 2005-2006 and 2009-2010 and a difference-in-differences method to estimate changes in IDPs' well-being measured by self-reported heath as well as household food consumption. We do not find a significant effect of leaving camps on self-reported illness and household food consumption but we find a significant effect on the choice of healthcare providers utilised. The postcamp effect was estimated to increase the use of non-free health providers, an effect composed of more visits to informal providers and greater choice of formal private providers, when formal providers are utilised. Those findings shed light on policy-relevant issues in the areas of land rights, recovery of public health systems and gender inequalities in well-being.
JEL Classification: I10, I31
Keywords: IDPs, Well-being, Post-camp period, Uganda

1. INTRODUCTION

Armed conflict is a human-created disaster with lasting adverse effects on communities particularly those in poor settings (Stewart and Fitzgerald, 2001a, 2001b; Fearon and Latin, 2003). It is associated with a variety of direct and indirect effects strongly affecting living conditions of households during and after conflict (Justino, 2011). The directly observable consequences can be catastrophic, the impact felt years after the end of conflict and often borne unequally across the population (Hoeffler and Reynal-Querol, 2003; Justine, 2005; Murthy and Lakshminarayana, 2006; Lai, 2007; Blattman and Miguel, 2010; Buvinic *et al.*, 2012; León, 2012; Kecmanovic, 2012; Ali, 2013).

Armed conflict creates major challenges for public health and health systems in low-income countries, further exacerbated by the diversion of scarce resources to military activities (Sidel and Levy, 2009; Devkota and van Teijlingen, 2010). High mortality rates,

* Corresponding author: Department of Economics, National Chung Cheng University, Minhsiung, Taiwan. E-mail: ftseng@ccu.edu.tw, ftseng14@gmail.com
† Department of Economics, National Chung Cheng University
‡ Nossal Institute for Global Health, University of Melbourne
§ SAMRC Centre for Health Economics and Decision Science – PRICELESS SA, School of Public Health, Faculty of Health Sciences, University of the Witwatersrand

doi: 10.1111/saje.12241

disability and prevalence of infectious and chronic diseases leading to reductions in life expectancy are the major consequences of armed conflicts affecting the long-term health and well-being of the affected population (Murray *et al.*, 2002; Ghobarah *et al.*, 2004; Gayer *et al.*, 2007; Akresh *et al.*, 2012; Doocy *et al.*, 2012; Price and Bohara, 2013).

The conflict between the Lord's Resistance Army (LRA) and the Government of Uganda in northern Uganda broke out in the early 1990s and mainly took place in Lira, Pader, Kitgum and Gulu districts (Raleigh *et al.*, 2010).[1] As part of military strategy to quell insecurity, designated urban centres and camps were constructed within the affected districts to house internally displaced persons (IDPs) (Global IDP Database, 2005; Rugadya *et al.*, 2008). At the peak of conflict in 2005, the number of IDPs reached approximately two million, consisting of over 90% of Acholi population, 33% of Lango population, 12.7% of Teso population and 41,000 in West Nile, (Gelsdorf *et al.*, 2012). In late 2006, the number of IDPs significantly dropped following the free movement declaration announced by the Ugandan government on 30 October. By 2009, the number of IDPs had fallen to 446,300 (UNHCR, 2009; 2012).[2]

As IDPs returned home from camps their well-being could have been affected by multiple and often conflicting factors. Situations common in most IDP camps including over-crowding, poverty, inadequate infrastructure and services such as sanitation, clean water supply and specialist healthcare have important implications for the well-being of IDPs (Ministry of Health, 2005; Checchi, 2006; Horn, 2009). Conversely, on returning home the health of IDPs can be compromised by limited access to services and infrastructure that would have been destroyed during the conflict. Therefore, the positive effect of escaping crowded IDP camps can be counteracted by the negative effect of insufficient infrastructure in places of return (Bozzoli and Brück, 2010). Furthermore, the need to re-establish livelihoods, planting cycles, housing and land rights may affect household recovery and resettlement post-conflict (Kruse *et al.*, 2009).

This study uses the Uganda National Household Survey (UNHS) to investigate changes in well-being measured as health-related outcomes of IDPs and food consumption of IDP households in the primary conflict-affected districts (Lira, Gulu, Kitgum, and Pader). We attempt to answer three questions. First, whether the average health status of IDPs in the post-camp period changed significantly. Second, whether the frequency and pattern of healthcare utilisation for IDPs changed in the post-camp period. Third, whether the level of food consumption for IDP households improved in the post-camp period. Rebuilding a society that has been in long-term armed conflict requires enormous inputs of resources, which is a huge burden for poor countries. Those questions provide insights into the urgent needs in progress made towards rebuilding household livelihoods and welfare post-conflict.

This study does not find a significant effect of leaving camps on self-reported illness and household food consumption but we find a significant effect on changes in healthcare utilisation. The post-camp effect was estimated to increase the use of non-free healthcare services, an effect composed of more visits to informal providers and greater choice

[1] The number of conflict events in which the Lord's Resistance Army has been involved since 1997 is 107 in Lira, 151 in Pader, 266 in Kitgum, and 284 in Gulu (source: Armed Conflict Location & Event Data).

[2] Since the second half of 2004, approximately 350,000 IDPs in Lango and Teso sub-regions had been encouraged to move out of IDP camps.

of formal *private* providers, when formal providers are utilised. Those findings reveal that changes in well-being of returnees are not obvious. How to improve people's health status, household food consumption and the quality of public healthcare should be paid attention in the first phase of rebuilding programme. Those findings can be generalised to the countries in the similar circumstances, particularly those that have suffered long-term armed conflict.

The rest of the paper is structured as follows. Section 2 introduces the Uganda National Household Survey and the empirical strategy. The results are presented in Section 3 and discussed in Section 4.

2. DATA AND EMPIRICAL STRATEGY

2.1. Data

The Uganda National Household Survey (UNHS) is a repeated cross-sectional survey that has been conducted, on average, every four years between May and April of the respective years since 1989. UNHS contains information on socio-demographic characteristics of household members including age, gender, education, marital status, place of residence, household size and health-related information on self-reported incidence of illness, healthcare utilisation and health expenditure (consultation fees and medicine) collected over a 30-day recall period.

The surveys also include information on household monetary value of assets (excluding financial assets) one year prior to each survey as well as monetary value of food including beverages and tobacco consumed over a seven-day recall period and food sources – purchases, donations in kind (both valued at market prices) and home produce (valued at farm-gate prices).

This study only uses the 2005-2006 (Wave I) and 2009-2010 (Wave II) surveys because information on identity of internally displaced households and migration history is not available in the previous surveys.

We aim to identify a treatment group of the population residing in IDP camps in Wave I and recently returned from camps in Wave II. Information on internally displaced households (residing in camps) is only available in Wave I but in Wave II those who have returned from camps can be identified using information on migration history in which individuals were asked the previous places of residence as well as the year and reason for moving since 2004. The individuals are identified as IDPs in Wave II if their reason for moving was "to return home from displacement" and the individuals are identified as non-IDPs if they had moved only once since 2004 because of other reasons. This excludes the likelihood that individuals who answered other reasons to their move in Wave II were IDPs before the declaration of free move.

Wave I survey shows Gulu, Kitgum, Pader and Lira are the only districts to accommodate the IDP households so only individuals in these four districts are selected into the analysis sample. For consistency, in Wave II we only selected those migrants who had lived in the four districts before 2004 and moved within the four districts after 2006 so that the individuals who did not live in the four districts before 2004 or moved to the other districts after 2006 are excluded. By doing so, the district effects are controlled in our estimation. More details are in the following section.

2.2. Empirical Strategy

(i) Difference-in-Differences Method Wave I and Wave II of the UNHS are pooled and a difference-in-differences (DiD) approach is applied to estimate changes in IDPs' health-related outcomes (self-reported incidence of illness healthcare utilisation and health expenditure) and food consumption after they left camps:

$$\Delta^{Intervention} = \left(H^{after}_{treatment} - H^{before}_{treatment} \right) - \left(H^{after}_{comparison} - H^{before}_{comparison} \right) \quad (1)$$

where H represents the study outcomes, and *before* and *after* indicate the waves before and after the free movement declaration in 2006, respectively. IDPs are assigned to the treatment group and non-IDPs are assigned to the comparison group.

The framework described in equation (1) allows the control of unobserved fixed and common group factors of variability in both study groups, for example, the district effects. The regression equation is shown in equation (2):

$$Y_i = \beta_0 + \beta_1 Post_i + \beta_2 T_i + \beta_3 Post_i \cdot T_i + \beta' X_i + \varepsilon_i \quad (2)$$

where Y_i represents three study outcomes at an individual level (self-reported illness, healthcare service utilisation, and health expenditure for individual *i*) and four study outcomes at a household level (total food consumption, food consumption from purchase, food consumption from home produce and food consumption from donation for household *i*). Self-reported illness and healthcare utilisation are dichotomous variables with a value of 1 indicating individual *i* reports illness or utilises healthcare services and 0, otherwise. $Post_i$ and T_i are dummy variables with a value of 1 for Wave II and the treatment group, respectively. $Post_i \cdot T_i$ is the interaction term of $Post_i$ and T_i. For the outcomes at an individual level, X_i is a vector of covariates comprising age, household size, dummy variables for education, marital status, male, urban, district dummy variables (Gulu, Kitgum, and Pader) and logarithmic transformation of the value of household assets per capita one year prior to each survey which replaces current assets to avoid the endogeneity between assets and health. For the outcome of household food consumption, X_i is a vector of regressors that includes household average age, the percentage of educational and marital categories in the household, male proportion in the household, urban and logarithmic transformation of the value of household assets per capita one year prior to each survey. Household scale is a determinant of household financing plans. Urban might reflect differences in economic activities and geography. Household assets (wealth) correlate highly with health status and household well-being (Headey and Wooden, 2004). ε_i is a random error term. β_3 is the coefficient of interest which captures the effect of leaving camps on study outcomes.

Due to the highly positive skew in the distribution of individual health expenditure conditional on visiting healthcare when ill (Fig. A1), a two-part model (2PM) is applied to estimate health expenditure. The 2PM permits parameter coefficients on covariates to be different in the choice of services used (free healthcare or non-free healthcare) and level

of spending, which is more restrictive in the Tobit model (Jones, 2000).[3] The Tobit model will result in biased marginal effects increasing as the proportion of zero observations increases (Daunfeldt and Hellström, 2007; Stewart, 2009).[4] As well, we restrict the observations in each wave to those within three standard deviations to reduce the disturbance of outliers.

The first part in the 2PM estimates the probability of visiting non-free healthcare services when individuals were sick and visited health providers using a probit model:

$$P\left(V_i^* = 1 | X, Post, T, Post \cdot T\right) = \phi\left(\alpha_1 Post_i + \alpha_2 T_i + \alpha_3 Post_i \cdot T_i + \alpha' X_i\right) \tag{3}$$

$$\begin{cases} V_i^* = 1, & \text{if } E_i > 0 \\ V_i^* = 0, & \text{if } E_i = 0 \end{cases}$$

where V_i^* is a dichotomous variable for individual i taking the value of 1 when health expenditure, E_i, is positive. ϕ is the cumulative density function of a standard normal distribution. The second part estimates health expenditure conditional on those who pay for healthcare:

$$E_i = \gamma_0 + \gamma_1 Post_i + \gamma_2 T_i + \gamma_3 Post_i \cdot T_i + \gamma' X_i + \eta_i, \quad \text{if } E_i > 0 \tag{4}$$

where η is a random error term. α and γ coefficients are defined in the same way as the β coefficients in equation (2). The generalized linear model (GLM) in Poisson form is used to estimate equation (4). This is the best model to fit our data based on a series of tests in Deb and Norton (2018). GLM possesses a more flexible functional form that can incorporate other than normally distributed errors.

Using Wave I as the baseline, health expenditure, food consumption and household assets in Wave II are deflated using the health consumer price index (CPI), average CPI of food, beverages and tobacco, and composite CPI, respectively (Uganda Bureau of Statistics, 2010).

(ii) The Evolution of Difference in Self-Reported Illness and Household Food Consumption between IDPs and non-IDPs We employ information on the IDP identity and migration history in Wave I to estimate the evolution of differences in self-reported health and household food consumption between both groups. The individuals in Wave I were asked "since 2001, have you lived in another place, such as another village, another town or country for 6 months at one time" and "when did you move here (current place of residence) the most recent time." If individuals reported they had never moved or moved to the current location since 2001, they are placed in the category of 2001, which

[3] Free or non-free healthcare depends on expenditure when individuals visited a healthcare provider. If an individual reported healthcare visits and zero fee which includes medicine, we say this person visited free healthcare.

[4] The proportion of zero expenditure in Wave I and Wave II is approximate 40.88% and 37.65%, respectively.

means they have lived in the current location for four years or more. If individuals reported they have moved to the current location since 2005 before the Wave I survey was conducted, it means they have lived in the current location for less than 1 year so they are placed in the category of 2005. The length of stay in the conflict-affected areas is assumed to influence people's well-being. For instance, well-being for people who have stayed in the areas, either in camps or out of camps, for four years should be different from the well-being for those who just stayed for one year. The estimation is shown in equation (5)

$$Z_i = \theta_0 + \theta' D_i + \lambda' I_i + \iota' X_i + \omega_i \tag{5}$$

where Z_i represents self-reported illness at the individual level for individual i and total food consumption at the household level for individual i's household. The two outcomes are the components that affect well-being directly. D_i is a vector of four dummy variables for year 2001, 2002, 2003 and 2004. I_i is a vector comprising five interaction terms of T_i and year dummy variables (2001, 2002, 2003, 2004 and 2005). X_i is a covariate vector defined above and ω_i is a random error term. θ_0 is a constant term and θ', λ' and ι' are the coefficient vector for their corresponding vector of covariates. λ' represents the differences in the outcome between both groups. All the estimates in this study are carried out using a weighted least squares method with the sampling weights.

3. RESULT

3.1. Descriptive Statistics

The sample size for the treatment group and comparison groups is 1,147 and 1,375, respectively, in Wave I and 388 and 74, respectively, in Wave II (Table 1). Comparing the incidence of sickness, it declined over time for both groups but the decline was greater in the non-IDPs. IDPs had a lower incidence of visiting health providers than non-IDPs in Wave I but a higher incidence in Wave II when people were sick (90.3% vs. 91.9% in Wave I and 88.4% vs. 84.2% in Wave II). When people visited healthcare providers in Wave I, the majority of IDPs, approximately 56%, used formal public healthcare, the second largest group used formal private healthcare (27.3%), and only 14.7% used informal healthcare and in non-IDPs, the majority used formal private (52.5%), followed by formal public (25.4%) and informal (21.8%). In Wave II, the order of percentage from high to low for IDPs became formal public (40.5%), informal (34.8%) and formal private (24.7%) and for non-IDPs was formal public (51.1%), formal private (30.8%) and informal (18.1%). As for health expenditure, IDPs, on average, spent less on healthcare than non-IDPs (UGX1,133 vs. UGX3,365 in Wave I and UGX2,952 vs. UGX5,490 in Wave II) once they visited health providers. IDPs consumed less food than non-IDPs in both waves (UGX9,195 vs. UGX16,450 in Wave I and UGX16,120 vs. UGX21,900 in Wave II). The food supply for IDPs in Wave I was 44.2% from purchase, 41.3% from donation and 14.5% from home produce whereas for non-IDPs it was from 64.9% purchase, 26.5% from home produce and 8.6% from donation. For IDPs in Wave II, it became 48.3% from purchase, 39% from home produce and 12.7% from donation and for non-IDPs it was 58.8% from purchased, 30.2% from produced and 11.1% from donated.

Table 1. Sample statistics with sampling weights

	Wave I (2005-2006)			Wave II (2009-2010)		
	IDPs	Non-IDPs	*t*-test	IDPs	Non-IDPs	*t*-test
	Mean (S.D.)	Mean (S.D.)	p-value	Mean (S.D.)	Mean (S.D.)	p-value
Individual level (in last 30 days)						
Sick	0.398 (0.490)	0.405 (0.491)	–	0.389 (0.488)	0.309 (0.465)	–
Visit Healthcare	0.903 (0.296)	0.919 (0.273)	–	0.884 (0.321)	0.842 (0.372)	–
Informal[1]	0.147 (0.354)	0.218 (0.413)	–	0.348 (0.478)	0.181 (0.394)	–
Formal public[2]	0.563 (0.497)	0.254 (0.436)	–	0.405 (0.492)	0.511 (0.512)	–
Formal private[3]	0.273 (0.446)	0.525 (0.500)	–	0.247 (0.433)	0.308 (0.473)	–
Health expenditure[4]	1.133 (3.600)	3.365 (5.883)	–	2.952 (6.134)	5.490 (8.385)	–
Household level (in last 7 days)						
Food consumption-all[4]	9.195 (5.376)	16.45 (12.28)	–	16.12 (9.979)	21.90 (16.57)	–
Food consumption-purchased[4]	4.063 (4.398)	10.67 (10.25)	–	7.780 (6.912)	12.87 (12.01)	–
Food consumption-produced[4]	1.334 (2.023)	4.367 (6.842)	–	6.292 (6.358)	6.610 (7.174)	–
Food consumption-donated[4]	3.798 (2.878)	1.413 (2.604)	–	2.043 (5.401)	2.423 (7.053)	–
Individual characteristics						
Age	22.27 (16.85)	22.37 (15.97)	0.879	28.71 (18.42)	26.07 (15.33)	0.227
Education						
None	0.250 (0.433)	0.165 (0.372)	0.000	0.182 (0.387)	0.069 (0.256)	0.015
Primary	0.683 (0.466)	0.646 (0.478)	0.073	0.713 (0.453)	0.573 (0.498)	0.017
Junior	0.008 (0.088)	0.023 (0.149)	0.003	0.024 (0.155)	0.000 (0.000)	0.170
Secondary or above	0.060 (0.237)	0.166 (0.372)	0.000	0.080 (0.272)	0.357 (0.483)	0.000
Marital status						
Married	0.364 (0.481)	0.326 (0.469)	0.049	0.455 (0.499)	0.334 (0.475)	0.047
Divorce	0.018 (0.134)	0.028 (0.165)	0.106	0.034 (0.180)	0.069 (0.255)	0.138
Widowhood	0.038 (0.192)	0.033 (0.179)	0.490	0.054 (0.226)	0.072 (0.262)	0.500
Single	0.579 (0.494)	0.613 (0.487)	0.091	0.458 (0.499)	0.524 (0.503)	0.282
Male	0.476 (0.500)	0.486 (0.500)	0.617	0.514 (0.500)	0.435 (0.499)	0.197
Household size	6.031 (2.191)	6.790 (2.724)	0.000	6.454 (2.490)	5.889 (3.160)	0.078
Urban	0.037 (0.188)	0.457 (0.498)	0.000	0.003 (0.056)	0.403 (0.494)	0.000
Previous year household asset per capita[4]	20.47 (75.90)	44.37 (1543)	0.000	68.86 (376.6)	748.2 (1609)	0.000
Sample size	1,147	1,375		388	74	

[1]This category includes drugs at home, neighbour/friends, community health worker, HOMAPAK drug distributor, ordinary shop, drug shop/pharmacy, traditional healer and other.
[2]This category includes health unit government and hospital government.
[3]This category comprises private clinics, health unit NG, and hospital NGO.
[4]Unit: UGX1,000.

In terms of individual and household characteristics, the difference between both groups in Wave I was significant ($p < 0.05$) in three education categories (no education, junior and secondary or above), one category in marital status (married), household size, urban and previous year household asset per capita. The difference in Wave II was significant ($p < 0.05$) in three education categories (no education, primary and secondary or above), one category in marital status (married), urban and previous year household asset per capita. In Wave I, the percentage receiving education at the primary school level or below was higher in IDPs than non-IDPs (93.3% vs. 81.1%) and the percentage receiving education at the junior high school level or above was lower in IDPs than non-IDPs (6.8% vs. 18.9%). The percentage of married IDPs is higher than married Non-IDPs by 3.8%. The households of non-IDPs were larger than IDPs (6.79 vs. 6.03 persons) and non-IDPs had more household assets per capita comparing to IDPs (UGX44,370 vs. UGX20,470). About 45.7% of non-IDPs lived in urban areas whereas it was only 3.7% for IDPs.

In Wave II, the percentage of IDPs receiving primary education or below was still higher than the percentage of non-IDPs (89.5% vs. 64.2%) and the percentage receiving

education at the secondary level or above was still lower in IDPs than non-IDPs (8% vs. 35.7%). There were more married IDPs than married non-IDPs by 12.1%. About 0.3% of IDPs lived in urban areas but it was 40.3% for non-IDPs. Similar to Wave I, IDPs were poorer than non-IDPs in terms of previous year household asset per capita (UGX68,860 vs. UGX748,200).

3.2. Difference-in-Difference Estimates

(i) Estimation of the Changes in Outcomes in the Post-Camp Period The results (Table 2) show that the effect of leaving camps was not significant ($p > 0.05$) for self-reported illness and household food consumption but significant ($p < 0.01$) for the choice of healthcare providers. After IDPs left camps, they increasingly visited non-free providers (the coefficient is 0.85) but the expenditure conditional on utilising non-free healthcare did not significantly change (–0.23, $p > 0.05$).

(ii) Estimation of the Changes in Outcomes in Different Subgroups To estimate the effect of leaving camps by gender and residential district, the full sample is disaggregated into subgroups of male, female, Gulu, Lira, and Kitgum-Pader (Table 3). In males, the effect was only significant ($p < 0.01$) on utilisation of healthcare that induced a drop by 66.8%. In females, leaving camps induced a higher incidence of illness and more health expenditure. The incidence of illness increased by 23.4% and health expenditure increased by UGX3,922 that attributed to more visits to formal private healthcare. In Gulu district, this effect was not significant ($p > 0.05$) on the outcomes but in Lira district, a decrease was observed in health expenditure ($p < 0.05$) by UGX5,209. In Kitgum-Pader district, leaving camps induced an increase in the incidence of illness by 50.3% ($p < 0.01$), a decrease healthcare utilisation by 77% ($p < 0.01$), and an increase in health expenditure by UGX6,851 ($p < 0.01$) that resulted from more visits to formal private providers.

(iii) Estimation of Changes in Healthcare Utilisation Table 4 presents the effect of leaving IDP camps on choice of health provider. Using informal providers as the baseline, we find a negative effect ($p < 0.05$) on formal provider visits (Column 1) and formal public provider visits (Column 2) in the total sample and the subgroup of males and Gulu. As for formal private provider visits (Column 3), a negative effect ($p < 0.05$) only appeared in males but a positive effect ($p < 0.01$) appeared in Gulu. When only looking at formal provider visits, Column 4 shows a positive effect ($p < 0.01$) on visits to formal private provider in the total sample as well as the subgroup of females, Gulu and Kitgum-Pader.

(iv) Estimation of Effects on Sources of Food Consumption Table 5 shows the effect of leaving camps on household food consumption across three sources. The results suggest that the effect was positive ($p < 0.05$) on produced food in female headed households by UGX3,701. However, this effect was negative ($p < 0.05$) on donated food consumption in Gulu (by UGX9,368) as well as Lira (by UGX1,520).

(v) Robustness Check We display the differences in self-reported illness and household food consumption at the multiple time points of moving to the current place before 2006. Fig. 1 shows whenever IDPs moved to camps they reported lower incidence of

Table 2. The effects of leaving camps on health outcomes and food consumption

	Individual level					**Household level**
	Sick in last 30 days[1]	**Visit health providers**[1]	**Health expenditure**[1]			**Total food consumption**[1]
			2PM (First part: Probit; Second part: GLM)			
	Probit	**Probit**	**1st Part**	**2nd Part**	**Combining 2 parts**	**OLS**
	Marginal effect (D-M S.E.)[2]	**Marginal effect (D-M S.E.)**[2]	**Coef. (S.E.)**	**Coef. (S.E.)**	**Marginal effect (D-M S.E.)**[2]	**Coef. (Robust S.E.)**
Post (conflict)	−0.116 (0.067)	−0.071 (0.070)	−0.143 (0.302)	0.390 (0.364)	0.686 (0.942)	7.041* (3.079)
IDP	−0.074* (0.031)	0.020 (0.023)	−1.014** (0.144)	0.210 (0.257)	−0.992 (0.613)	−3.113** (1.040)
Post*IDP	0.111 (0.075)	0.056 (0.076)	0.845* (0.338)	−0.234 (0.443)	0.691 (1.119)	−1.472 (3.266)
Age	0.004** (0.001)	−0.001 (0.001)	−0.003 (0.004)	0.018* (0.008)	0.037* (0.019)	0.050 (0.029)
Education (Ref: No education)						
Primary	−0.057* (0.028)	0.026 (0.022)	0.141 (0.119)	0.139 (0.207)	−0.112 (0.507)	1.882 (0.996)
Junior	−0.208* (0.088)	0.012 (0.078)	0.427 (0.459)	−0.641 (0.435)	−0.847 (1.204)	4.749 (2.903)
Secondary or above	−0.127** (0.042)	0.035 (0.043)	0.264 (0.196)	0.192 (0.273)	0.823 (0.689)	7.712** (1.890)
Marital status (Ref: Single)						
Married	0.066* (0.033)	0.071 (0.029)	0.157 (0.146)	−0.186 (0.268)	−0.197 (0.681)	−1.191 (1.294)
Divorce	0.069 (0.069)	0.019 (0.052)	−0.039 (0.290)	−0.756 (0.446)	−1.787 (1.117)	0.184 (2.295)
Widowhood	0.111 (0.070)	−0.005 (0.051)	0.009 (0.275)	−0.902 (0.597)	−2.054 (1.433)	−3.747 (2.021)
Male	−0.029 (0.022)	−0.019 (0.019)	0.125 (0.103)	−0.146 (0.145)	−0.151 (0.365)	−1.646 (1.327)
Household size	−0.007* (0.004)	0.004 (0.004)	−0.020 (0.019)	−0.009 (0.027)	0.051 (0.068)	1.555** (0.244)
Urban	−0.036 (0.031)	0.071* (0.029)	0.105 (0.144)	0.399* (0.177)	1.068* (0.449)	3.022* (1.217)
Log household assets per capita one year ago	−0.014* (0.007)	0.012* (0.006)	0.085** (0.032)	0.083** (0.037)	0.315** (0.096)	1.716** (0.341)
Constant	–	–	−0.038 (0.398)	0.230 (0.495)	–	−14.77 (4.043)
N	2,699	1,062	960	564	–	725
(Pseudo) R^2, AIC/BIC	0.048	0.061	0.151	5,461/2,062,880	–	0.411

[1]The district dummy variables are included in the regression but not presented in the table.
[2]D-M S.E is delta-method S.E.
**p < 0.01,*p < 0.05.

Table 3. The effect of leaving camps on study outcomes in gender and district subgroups

	Individual level					Household level
	Sick in last 30 days[1,3]	Visit health providers[1,3]	Health expenditure[1,3]			Total food consumption[1,3]
			2PM (First part: Probit; Second part: GLM)			
	Probit	Probit	1st Part	2nd Part	Combining 2 parts	OLS
	Marginal effect	Marginal effect	Coef.	Coef.	Marginal effect	Coef.
	(D-M S.E.)[2]	(D-M S.E.)[2]	(S.E.)	(S.E.)	(D-M S.E.)[2]	(Robust S.E.)
Male	−0.016	−0.668**	0.227	−0.448	−0.731	−4.490
	(0.109)	(0.120)	(0.497)	(0.441)	(1.192)	(4.804)
N	1,299	457	422	264	–	478
Female	0.234*	0.097	1.613**	0.784	3.922**	1.516
	(0.100)	(0.086)	(0.531)	(0.573)	(1.349)	(3.652)
N	1,400	593	538	300	–	247
Gulu	0.117	0.201	1.357*	0.118	2.223	−10.93
	(0.126)	(0.119)	(0.530)	(0.885)	(1.846)	(7.201)
N	932	366	337	177	–	246
Lira	−0.031	0.002	−3.866**	−0.384	−5.209*	2.503
	(0.123)	(0.076)	(0.529)	(0.723)	(3.875)	(4.184)
N	996	371	325	239	–	261
Kitgum-Pader[4]	0.503**	−0.770**	1.835*	2.531**	6.851**	−1.850
	(0.143)	(0.148)	(0.877)	(0.829)	(2.000)	(4.433)
N	771	318	288	144	–	218

[1]The district dummy variables are included in the regression but not presented in the table.
[2]D-M S.E is delta-method S.E.
[3]All the covariates in Table 2 are included in each regression (subgroup) here but only the coefficient of Post*IDP is reported.
[4]Pader was carved out from Kitgum in December 2001. Therefore, we pool both districts in one subgroup.
**$p < 0.01$,*$p < 0.05$.

illness and less household food consumption than did non-IDPs but most of differences were not significant ($p > 0.05$) except for the difference in incidence of illness in 2003 and food consumption in 2005, respectively. This evolution of differences implies that each outcome in both groups has a similar trend most of time prior to 2006.

4. DISCUSSION

This study provides useful insights into progress towards resettling IDPs following the conflict in northern Uganda. We do not find a significant effect of leaving camps on self-reported illness and household food consumption used to measure human well-being. This finding adds to the literature that argues the positive effect of leaving camps could be offset by the negative effect of insufficient infrastructure or insecurity in places of return (Bozzoli and Brück, 2010; O'Reilly, 2015) using the econometric approach.

We find leaving camps induced IDPs to change their healthcare utilisation. A positive effect on visits to non-free providers in the post-camp period was composed of more visits to informal providers and to formal *private* providers when formal providers were chosen. This finding is consistent with previous studies. Although the majority of formal public providers provided free healthcare after the abolition of user fees in March 2001,

Table 4. The effect of leaving camps on the choice of healthcare visits in gender and district subgroups

	(1)	(2)	(3)	(4)
	Probit	Probit	Probit	Probit
	Visit formal providers (ref: informal)[1,2]	Visit formal public providers (ref: informal)[1,2]	Visit formal private providers (ref: informal)[1,2]	Visit formal private providers (ref: formal public)[1,2]
	Marginal effect (Robust S.E.)	Marginal effect (Robust S.E.)	Marginal effect (Robust S.E.)	Marginal effect (Robust S.E.)
Total sample	−0.285**	−0.440**	−0.291	0.347**
	(0.100)	(0.146)	(0.186)	(0.130)
Male	−0.441**	−0.548*	−0.565*	0.080
	(0.130)	(0.212)	(0.218)	(0.186)
Female	−0.106	−0.326	0.231	0.696**
	(0.171)	(0.211)	(0.349)	(0.171)
Gulu	−0.399*	−0.758**	0.528**	0.903**
	(0.183)	(0.192)	(0.169)	(0.130)
Lira	−0.241	0.086	−0.390	−0.201
	(0.184)	(0.381)	(0.223)	(0.185)
Kitgum-Pader[3]	0.106	−0.018	0.084	0.660**
	(0.204)	(0.236)	(0.350)	(0.215)

[1]The district dummy variables are included in the regression but not presented in the table.
[2]All the covariates in Table 2 are included in each regression (subgroup) here but only the coefficient of Post*IDP is reported.
[3]Pader was carved out from Kitgum in December 2001. Therefore, we pool both districts in one subgroup.
**p < 0.01,*p < 0.05.

Table 5. The effect of leaving camps on food consumption across three sources in gender and district subgroups

	From purchase[1,2]	From home produce[1,2]	From donation[1,2]
	Coef.	Coef.	Coef.
	(Robust S.E.)	(Robust S.E.)	(Robust S.E.)
Total sample	−0.864	2.470	−3.078
	(2.046)	(1.466)	(2.011)
Male	−0.839	1.220	−4.872
	(2.681)	(2.269)	(3.106)
Female	−1.337	3.701*	−0.848
	(3.389)	(1.482)	(1.700)
Gulu	−4.067	2.501	−9.368*
	(2.263)	(1.650)	(4.609)
Lira	2.158	1.864	−1.520**
	(3.468)	(2.502)	(0.534)
Kitgum-Pader[3]	3.883	−6.230	0.496
	(3.585)	(3.508)	(2.296)

[1]The district dummy variables are included in the regression but not presented in the table.
[2]All the covariates in Table 2 are included in each regression (subgroup) here but only the coefficient of Post*IDP is reported.
[3]Pader was carved out from Kitgum in December 2001. Therefore, I pool both districts in one subgroup.
**p < 0.01,*p < 0.05.

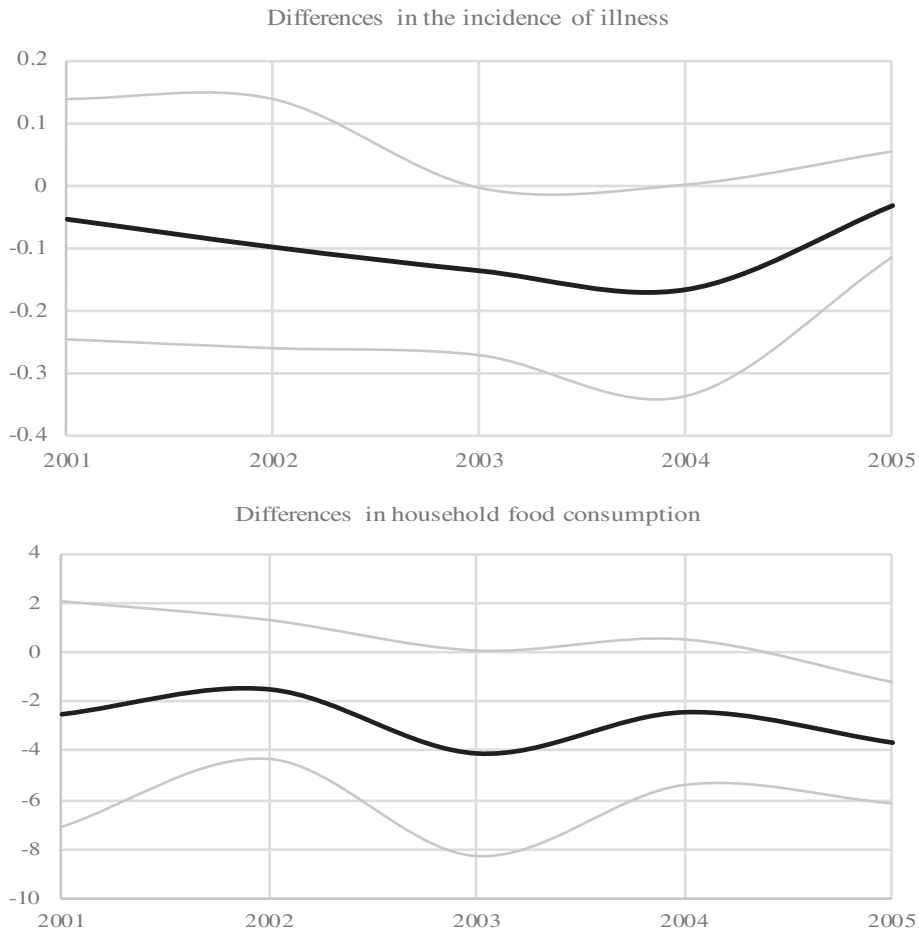

Figure 1. The evolution of differences in self-reported illness and household food consumption
Note: The black line is the marginal effect of differences and grey lines are the lower and upper bound of 95% confident interval.

people tended to seek nearby non-free informal providers after leaving camps perhaps because of physical inaccessibility of formal public facilities associated with destruction of road networks and health infrastructure during the conflict, unavailability of drugs from formal public providers that force patients to purchase drugs from private pharmacies or the requirement to pay informally (Xu *et al.*, 2006; Muyinda and Mugisha, 2015), and inadequate healthcare workers in public facilities as formal private facilities running by INGO offered them alternative employment (Namakula and Witter, 2014). Even though the incidence of visits to non-free healthcare increased, the amount people spent on healthcare visits, on average, did not change significantly, implying that the price of non-free healthcare did not increase when the demand increased or informal payment in the government health facilities was at the similar level of paying for non-free healthcare.

In the subgroup analysis, we find that leaving camps deteriorated IDPs' well-being in females and Kitgum-Pader district due to an increase in incidence of illness, which

induced more health expenditure through more visits to formal private providers. In contrast, Lira district presented a decrease in health expenditure that resulted from more visits to government health facilities though the incidence was not statistically significant. Lira district reached the peace stage a few years earlier compared with the other three districts (Fig. A2) so that it has succeeded in improving well-being as well as the services in formal public healthcare. However, the lower utilisation of healthcare in Kitgum-Pader district could be due to the lack of financial resources, trained personnel and inadequate drugs and supplies in healthcare (Orach *et al.*, 2013). In addition, leaving camps led males to use more informal providers and females to utilise more formal private healthcare. The possible reason could be that formal private providers provide better services in women's health such as reproductive and maternal services. The findings show that different subgroups have different unmet needs in the post-camp period. Moreover, the findings in gender subgroups are of interest in considering the distribution of benefits in resettlement phases of other conflicts in similar cultural settings.

The findings in this study suggest some areas for policy development. First, the unchanged level of food consumption from produce a few years after leaving camps may reflect slow progress in dealing with land rights. Land rights are an issue of social justice, are complicated and usually take a long time to resolve. IDPs are vulnerable to loss of land rights to more powerful members of society. Thus, ensuring IDPs' land rights and speeding up the resolution process can reduce the societal costs occurring from reintegration and social instability.

Second, the findings underline the role played by public health services in protecting against health expenditure burdens where they are sufficiently operational and able to respect the free healthcare policy. Further understanding of the reasons why the returnee IDPs is less likely to use formal public facilities requires more attention. It is likely that in the early stages of IDPs' return, the public health system had not yet recovered operationally from the years of destruction and population absence. Hence, IDPs were dependent on private options.

The differences between the experiences of men and women are stark, with women experiencing increased levels of illness, health expenditure and use of non-free health care, on returning from camps, in contrast to men for whom none of those things applied. This might have a number of explanations that the data cannot distinguish between. Men may be better able to protect themselves from the problems of the return home, for example, by consuming more than their fair share of available food, or simply because they are less vulnerable to reproductive health problems. Alternatively, they may consider health care as a more discretionary expenditure and may not be those making expenditures on behalf of children's health. Whatever the explanation, the results suggest that prioritising women and children's health services in terms of accessibility and affordability, which is a common approach, reflects the felt needs of the population (Table A1).

The study has some limitations imposed by the data. First, the Uganda National Household Survey is a repeated cross-sectional data set. Therefore, the individual effects are unable to be controlled in our estimations. However, the sample is restricted to four districts, which enables us to control for the district effects.

Second, when we restrict the analytic sample to the region of the four districts, there is a risk of introducing selection bias, if the characteristics of IDPs who moved to districts outside this region from the IDP camps would be different from the characteristics

of those who migrated within the region. In our data set, there are only 13 IDPs who moved out of the region and the fraction is about 3.2% (Column 3 in Table A2). The two-sample *t*-test shows there are no significant ($p > 0.05$) differences for the IDPs who moved within and out of the region. This suggests that IDPs who moved outside the region would have similar characteristics. Furthermore, the two-sample *t*-test also shows no significant ($p > 0.05$) differences in characteristics of IDPs who moved within the region and who moved across the regions (Column 6 in Table A2). In addition, we include the IDPs who moved within the region from outside to proxy the IDPs who moved out of the region into the analysis. A similar result is obtained (Table A3). Therefore, we conclude that the exclusion of those who migrated across regions is unlikely to have introduced selection bias in this study.

Third, the number of non-IDPs in Wave II is only 74, which is a relatively small comparison group. To check the likely importance of this issue, we incorporate individuals living in the current location before 2004. This increases the size of the "non-IDP" group from 74 to 806. Replicating the analysis using this alternative comparison group, we find that leaving camps has a significant ($p < 0.05$) effect on the same outcomes (Table A4). However, the effect might be overestimated if those observations comprise those that were IDPs in Wave I and still lived in camps in Wave II.

Fourth, the health outcome used in this paper is self-reported illness in the past one month. The validity of measuring health status using self-report has been questioned, but some studies have indicated that self-reported illness is a reasonable measure of objective health (Ferrie *et al*., 2005; Bourne, 2009).

Finally, this study focuses on the IDPs who left camps. The IDPs staying in camps in the post-conflict period are not included in our analysis. However, those IDPs are also a concern for the policymakers. We leave this issue for future research.

ACKNOWLEDGEMENTS

This paper is based on research conducted by the ReBUILD research consortium, which is funded by UKAID (the Department for International Development). The views expressed do not necessarily reflect the UK government's of official policies.

REFERENCES

AKRESH, R., LUCCHETTI, L. and THIRUMURTHY, H. (2012). Wars and child health: Evidence from the Eritrean-Ethiopian conflict. *Journal of Development Economics*, 99: 330–340.

ALI, H. E. (2013). Estimate of the economic cost of armed conflict: A case study from Darfur. *Defence and Peace Economics*, 24: 503–519.

BLATTMAN, C. and MIGUEL, E. (2010). Civil war. *Journal of Economic Literature*, 48: 3–57.

BOURNE, P. A. (2009). The validity of using self-reported illness to measure objective health. *North American Journal of Medical Sciences*, 1: 232–238.

BOZZOLI, C. and BRÜCK, T. (2010). Child Morbidity and Camp Decongestion in Post-War Uganda. MICROCON Research Working Paper 24, Institute of Development Studies.

BUVINIC, M., DAS GUPTA, M., CASABONNE, U. and VERWIMP, P. (2012). Violent conflict and gender inequality: An overview. *The World Bank Research Observer*, 28: 110–138.

CHECCHI, F. (2006). Humanitarian interventions in Northern Uganda: Based on what evidence? *Humanitarian Exchange*, 36: 7–11.

DAUNFELDT, S.-O. and HELLSTRÖM, J. (2007). Intra-household allocation of time to household production activities: Evidence from Swedish household data. *Labor*, 21: 189–207.

DEB, P. and NORTON, E. C. (2018). Modeling health care expenditures and use. *Annual Review of Public Health*, 39: 489–505.
DEVKOTA, B. and VAN TEIJLINGEN, E. R. (2010). Understanding effects of armed conflict on health outcomes: The case of Nepal. *Conflict and Health*, 4: 20.
DOOCY, S., SIROIS, A., TILEVA, M., STOREY, J. D. and BURNHAM, G. (2012). Chornic disease and disability among Iraqi populations displaced in Jordan and Syria. *International Journal of Health Planning and Management*, 28: e1–e12.
FEARON, J. and LAITIN, D. (2003). Ethnicity, insurgency and civil war. *American Political Science Review*, 97: 75–90.
FERRIE, J. E., KIVIMÄKI, M., HEAD, J., SHIPLEY, M. J., VAHTERA, J. and MARMOT, M. G. (2005). A comparison of self-reported sickness absence with absences recorded in employers' register: Evidence from the Whitehall II study. *Occupational and Environmental Medicine*, 62: 74–79.
GAYER, M., LEGROS, D., FORMENTY, P. and CONNOLLY, M. A. (2007). Conflict and emerging infectious diseases. *Emerging Infectious Diseases*, 13: 1625–1631.
GELSDORF, K., MAXWELL, D. and MAZURANA, D. (2012). Livelihoods, Basic Services and Social Protection in Northern Uganda and Karamoja. Feinstejn Internation Center Working Paper, 4.
GHOBARAH, H. A., HUTH, P. and RUSSETT, B. (2004). The post-war public health effects of civil conflict. *Social Science & Medicine*, 59: 869–884.
GLOBAL IDP DATABASE. (2005). Profile of Internal Displacement: Uganda. Norwegian Refugee Council/Global IPD project. Available at: https://reliefweb.int/sites/reliefweb.int/files/resources/93AA7EAD7E739FF4C125705A00412A1E-globalidpuga-10Aug.pdf [Accessed 14 November 2014].
HEADEY, B. and WOODEN, M. (2004). The effects of wealth and income on subjective well-being and ill-being. *Economic Record*, 80: S24–33.
HOEFFLER, A. and REYNAL-QUEROL, M. (2003). Measuring the Costs of Conflict. Oxford: Oxford University Working Study.
HORN, R. (2009). Coping with displacement: Problems and responses in camps for the internally displaced in Kitgum, northern Uganda. *Intervention*, 7: 110–129.
JONES, A. M. (2000). Health econometrics, Handbook of Health Economics. In A. J. Culyer and J. P. Newhouse (eds), Handbook of Health Economics. Amsterdam: Elsevier, edition 1, volume 1, chapter 6, 265–344.
JUSTINE, N. (2005). Conflict, Poverty and Human Development in Northern Uganda. Research Study, UNU-WIDER, No. 2005/47, ISBN 9291907308, United Nations University (UNU).
JUSTINO, P. (2011). The Impact of Armed Civil Conflict on Household Welfare and Policy. Working Study 384, Institute of Development Studies.
KECMANOVIC, M. (2012). The short-run effects of the Croatian war on education, employment, and earnings. *Journal of Conflict Resolution*, 57: 991–1010.
KRUSE, S. E., SUJI, O. and RUGADYA, M. (2009). Review of livelihood and economic recovery in Northerh Uganda (LEARN) – A cash transfer programme in support of the IDP return and recovery process. *Norad Report* 33/2009 Discussion.
LAI, B. (2007). The effect of civil war on education, 1980–97. *Journal of Peace Research*, 44: 277–292.
LEÓN, G. (2012). Civil conflict and human capital accumulation: The long-term effects of political violence in Perú. *Journal of Human Resources*, 47: 991–1023.
MINISTRY OF HEALTH, R.O.U (2005). Health and Mortality Survey Among Internally Displaced Persons in Gulu, Kitgum and Pader Districts, Northern Uganda. Kampala: World Health Organization.
MURRAY, C. J. L., KING, G., LOPEZ, A. D., TOMIJIMA, N. and KRUG, E. G. (2002). Armed conflict as a public health problem. *British Medical Journal*, 324: 346–349.
MURTHY, R. S. and LAKSHMINARAYANA, R. (2006). Mental health consequences of war: A brief review of research findings. *World Psychiatry*, 5: 25–30.
MUYINDA, H. and MUGISHA, J. (2015). Stock-outs, uncertainty and improvisation in access to healthcare in war-torn Northern Uganda. *Social Science & Medicine*, 146: 316–323.
NAMAKULA, J. and WITTER, S. (2014). Policies to Attract and Retain Health Workers in Northern Uganda During and After Conflict: Findings of Key Informant Interviews. Kampala: ReBuild Consortium.
O'REILLY, C. (2015). Household recovery from internal displacement in northern Uganda. *World Development*, 76: 203–215.
ORACH, C. G., APOROMON, J. F., MUSOBA, N. and MICHEAL, L. (2013). Accesibility and availability of health care services to internally displaced persons, in Kitgum and Pader districts, northern Uganda. *Health*, 5: 1433–1442.
PRICE, J. I. and BOHARA, A. K. (2013). Maternal health care amid political unrest: The effect of armed conflict on antenatal care utilisation in Nepal. *Health Policy and Planning*, 28: 309–319.
RALEIGH, C., LINKE, A., HEGRE, H. and KARLSEN, J. (2010). Introducing ACLED: An armed conflict location and event dataset. *Journal of Peace Research*, 47: 651–660.
RUGADYA, M. A., NSAMBA-GAYIIYA, E. and KAMUSIIME, H. (2008). Analysis of Post Conflict Land Policy and Land Administration: A Survey of IDP Return and Resettlement Issue and Lesson: Acholi and Lango Regions. Northern Uganda Land Study.
SIDEL, V. W. and LEVY, B. S. (2009). The health consequences of diversion of resources to war and preparation of war. *Social Medicine*, 4: 133–135.
STEWART, J. (2009). Tobit or not Tobit. Working Paper 432, U.S. Bureau of Labor Statistics.

STEWART, F. and FITZGERALD, V. (2001a). War and Underdevelopment. Volume 1: The Economic and Social Consequences of Conflict. Oxford: Oxford University Press.
_____. (2001b). War and Underdevelopment. Volume 2: Country Experience. Oxford: Oxford University Press.
UGandA BUREAU OF STATISTICS. (2010). Consumer Price Index. Available at: http://www.ubos.org/onlinefiles/uploads/ubos/cpi/junecpi2010/June%202010%20CPI_Publication.pdf [Accessed 14 November 2014].
UN HIGH COMMISSIONER FOR REFUGEES (UNHCR). (2009). UNHRC Global Report. United Nations.
_____. (2012). UNHCR Closes Chapter on Uganda's Internally Displaced People. Briefing Notes 6 January, United Nations.
XU, K., EVANS, D. B., KADAMA, P., NABYONGA, J., OGWAL, P. O., NABUKHONZO, P. and AGUILAR, A. M. (2006). Understanding the impact of eliminating user fees: Utilization and catastrophic health expenditures in Uganda. *Social Science & Medicine*, 62: 866–876.

APPENDIX

Table A1. The evolution of differences in self-reported illness and household food consumption between both groups

	Self-reported illness		Household food consumption	
Interaction term	**Marginal effect**	**Robust S. E.**	**Coeff.**	**Robust S. E.**
2001*IDP	−0.054	0.098	−2.526	2.320
2002*IDP	−0.099	0.082	−1.525	1.423
2003*IDP	−0.137*	0.068	−4.105	2.113
2004*IDP	−0.167	0.086	−2.445	1.495
2005*IDP	−0.032	0.044	−3.670**	1.249

Note: The other covariates are not reported in the table.
**p < 0.01,*p < 0.05.

Table A2. Two-sample t*-test*

	Wave II (2009-2010)					
	IDP group 1[1]	**IDP group 2[2]**	***t*-test**	**IDP group 1**	**IDP group 3[3]**	***t*-test**
	Mean (S.D.)	**Mean (S.D.)**	**p-value**	**Mean (S.D.)**	**Mean (S.D.)**	**p-value**
Individual characteristics						
Age	28.90 (18.77)	31.08 (19.29)	0.681	28.90 (18.77)	27.85 (16.03)	0.609
Education						
None	0.198 (0.399)	0.077 (0.277)	0.278	0.198 (0.399)	0.14 (0.349)	0.184
Primary	0.709 (0.455)	0.923 (0.277)	0.093	0.709 (0.455)	0.790 (0.409)	0.109
Junior	0.024 (0.155)	0.000 (0.000)	0.569	0.024 (0.155)	0.000 (0.000)	0.115
Secondary or above	0.068 (0.252)	0.000 (0.000)	0.332	0.068 (0.252)	0.070 (0.256)	0.942
Marital status						
Married	0.441 (0.497)	0.538 (0.519)	0.487	0.441 (0.497)	0.420 (0.496)	0.710
Divorce	0.036 (0.187)	0.000 (0.000)	0.487	0.036 (0.187)	0.030 (0.171)	0.768
Widowhood	0.064 (0.245)	0.077 (0.277)	0.858	0.064 (0.245)	0.050 (0.219)	0.593
Single	0.459 (0.499)	0.385 (2.512)	0.599	0.459 (0.499)	0.500 (0.503)	0.462
Male	0.492 (0.501)	0.462 (0.519)	0.828	0.492 (0.501)	0.480 (0.502)	0.827
Household size	6.369 (2.513)	6.154 (2.512)	0.762	6.369 (2.513)	6.630 (2.299)	0.346
Urban	0.005 (0.072)	0.000 (0.000)	0.796	0.005 (0.072)	0.020 (0.141)	0.143
Previous year household asset per capita[4]	84.46 (521.6)	28.33 (17.60)	0.699	84.46 (521.6)	28.59 (35.85)	0.285
Sample size	388	13		388	100	

[1]The IDP camps were in the four districts in Wave I and the IDPs resettled in the four districts when they moved out of camps.
[2]The IDP camps were in the four districts in Wave I and the IDPs moved out of the four districts when they moved out of camps.
[3]The IPD group 2 pluses the IDPs moved into the four districts when their camps were not in the four districts in Wave I.
[4]Unit: UGX1,000.

Table A3. The effects of leaving camps on health outcomes and food consumption including the IDPs moving into the region

	Individual level					Household level
	Sick in last 30 days[1]	Visit health providers[1]	Health expenditure[1]			Total food consumption[1]
			2PM (First part: Probit; Second part: GLM)			
	Probit	Probit	1st Part	2nd Part	Combining 2 parts	OLS
	Marginal effect (D-M S.E.)[2]	Marginal effect (D-M S.E.)[2]	Coef. (S.E.)	Coef. (S.E.)	Marginal effect (D-M S.E.)[2]	Coef. (Robust S.E.)
Post (conflict)	−0.115 (0.066)	−0.076 (0.069)	−0.147 (0.299)	0.390 (0.366)	0.683 (0.942)	7.107* (3.060)
IDP	−0.071* (0.031)	0.023 (0.025)	−1.004** (0.143)	0.193 (0.245)	−1.004 (0.606)	−2.909** (1.037)
Post*IDP	0.111 (0.085)	0.057 (0.074)	0.921** (0.332)	−0.269 (0.443)	0.712 (1.111)	−1.544 (3.238)
Age	0.004** (0.001)	−0.001 (0.001)	−0.004 (0.004)	0.018* (0.008)	0.036 (0.019)	0.051 (0.029)
Education (Ref: No education)						
Primary	−0.064* (0.027)	0.027 (0.021)	0.139 (0.116)	−0.122 (0.202)	−0.080 (0.492)	1.866 (0.978)
Junior	−0.211* (0.087)	0.012 (0.079)	0.423 (0.458)	−0.622 (0.434)	−0.814 (1.197)	4.566 (2.900)
Secondary or above	−0.128** (0.042)	0.042 (0.042)	0.246 (0.193)	0.194 (0.265)	0.798 (0.669)	7.750** (1.878)
Marital status (Ref: Single)						
Married	0.064* (0.033)	0.073* (0.028)	0.126 (0.145)	−0.139 (0.266)	−0.135 (0.645)	−1.125 (1.290)
Divorce	0.060 (0.067)	0.024 (0.052)	−0.081 (0.289)	−0.707* (0.447)	−1.735 (1.117)	−1.179 (2.190)
Widowhood	0.122 (0.069)	0.005 (0.050)	0.046 (0.271)	−0.773 (0.592)	−1.703 (1.417)	−3.854 (2.015)
Male	−0.027 (0.022)	−0.019 (0.019)	0.141 (0.102)	−0.145 (0.142)	−0.129 (0.357)	−1.429 (1.310)
Household size	−0.007 (0.004)	0.003 (0.004)	−0.023 (0.019)	−0.007 (0.027)	−0.049 (0.066)	1.535** (0.239)
Urban	−0.035 (0.031)	0.078* (0.030)	0.129 (0.143)	0.388* (0.173)	1.073* (0.439)	3.359** (1.222)
Log household assets per capita one year ago	−0.013 (0.007)	0.011 (0.006)	0.083* (0.032)	0.085* (0.036)	0.314** (0.094)	1.718** (0.338)
Constant	–	–	0.016 (0.395)	0.171 (0.483)	–	−14.92 (4.000)
N	2,786	1,095	990	583	–	747
(Pseudo) R^2, AIC/BIC	0.046	0.058	0.168	5,414/2,102,618	–	0.411

[1]The district dummy variables are included in the regression but not presented in the table.
[2]D-M S.E is delta-method S.E.
**p < 0.01,*p < 0.05.

Table A4. The effects of leaving camps on health outcomes and food consumption including individuals living in current location before 2004

	Individual level					Household level
	Sick in last 30 days[1]	Visit health providers[1]	Health expenditure[1]			Total food consumption[1]
			2PM (First part: Probit; Second part: GLM)			
	Probit	Probit	1st Part	2nd Part	Combining 2 parts	OLS
	Marginal effect (D-M S.E.)[2]	Marginal effect (D-M S.E.)[2]	Coef. (S.E.)	Coef. (S.E.)	Marginal effect (D-M S.E.)[2]	Coef. (Robust S.E.)
Post (conflict)	−0.063* (0.027)	−0.010 (0.026)	−0.306** (0.127)	0.196 (0.140)	0.018 (0.393)	6.463** (1.199)
IDP	−0.062* (0.029)	0.006 (0.023)	−0.810** (0.132)	0.246 (0.225)	−0.623 (0.583)	−2.966** (1.026)
Post*IDP	0.056 (0.043)	−0.008 (0.037)	0.997** (0.198)	−0.068 (0.293)	1.341 (0.771)	−1.015 (1.526)
Age	0.005** (0.001)	−0.001 (0.001)	−0.007 (0.004)	0.015* (0.007)	0.026 (0.018)	−0.005 (0.030)
Education (Ref: No education)						
Primary	−0.048 (0.025)	0.022 (0.020)	0.131 (0.109)	0.082 (0.213)	0.399 (0.542)	0.735 (1.025)
Junior	−0.106 (0.076)	0.084 (0.074)	0.384 (0.324)	0.126 (0.479)	0.890 (1.269)	7.760* (3.647)
Secondary or above	−0.112** (0.038)	0.039 (0.037)	0.178 (0.182)	0.175 (0.241)	0.698 (0.654)	6.370** (1.943)
Marital status (Ref: Single)						
Married	0.056 (0.029)	0.082** (0.027)	0.277* (0.133)	−0.014 (0.214)	0.386 (0.557)	1.049 (1.393)
Divorce	0.009 (0.060)	0.047 (0.050)	0.244 (0.271)	−0.558 (0.363)	−0.997 (0.992)	1.196 (2.295)
Widowhood	0.125* (0.060)	0.008 (0.044)	0.386 (0.239)	0.024 (0.537)	0.643 (1.359)	−2.209 (2.193)
Male	−0.039* (0.020)	−0.023 (0.018)	0.189* (0.094)	−0.093 (0.125)	0.058 (0.336)	−2.388 (1.281)
Household size	−0.007 (0.004)	0.004 (0.004)	−0.014 (0.017)	−0.010 (0.026)	−0.045 (0.067)	1.713** (0.212)
Urban	−0.011 (0.028)	0.033 (0.027)	0.351** (0.130)	0.428** (0.163)	1.580** (0.435)	2.397 (1.242)
Log household assets per capita one year ago	−0.020** (0.007)	0.009 (0.005)	0.093** (0.031)	0.077* (0.037)	0.330** (0.101)	1.571** (0.302)
Constant	–	–	−0.187 (0.380)	0.112 (0.528)	–	−11.92** (3.741)
N	3,391	1,325	1,199	712	–	916
(Pseudo) R^2, AIC/BIC	0.053	0.061	0.159	6250/3056588	–	0.402

[1]The district dummy variables are included in the regression but not presented in the table.
[2]D-M S.E is delta-method S.E.
**p < 0.01,*p < 0.05.

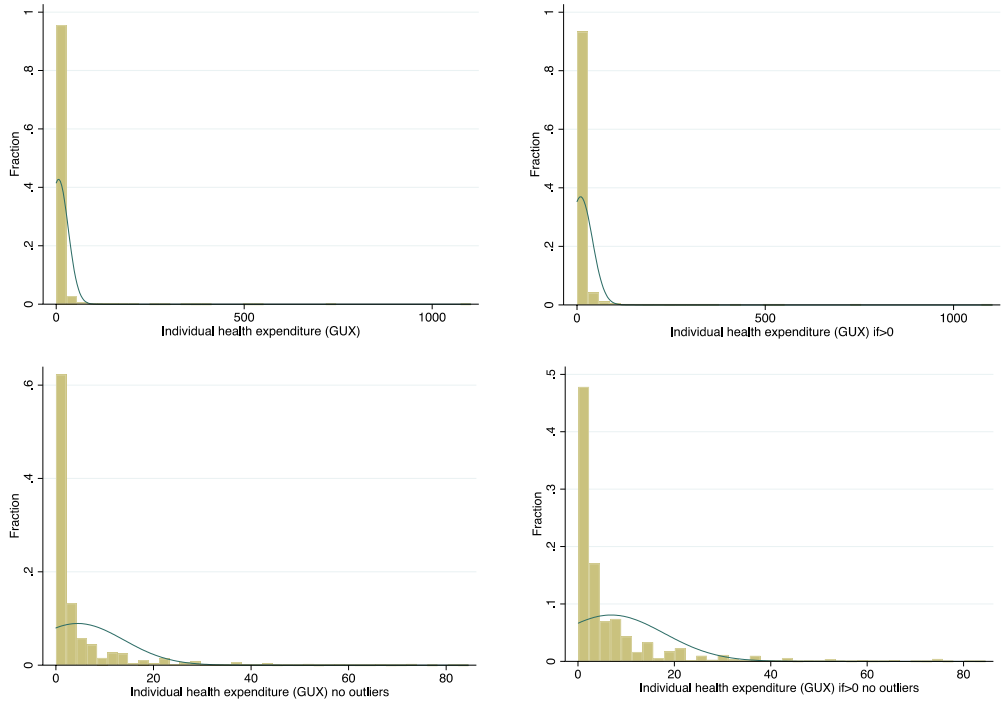

Figure A1. The distribution of health expenditure

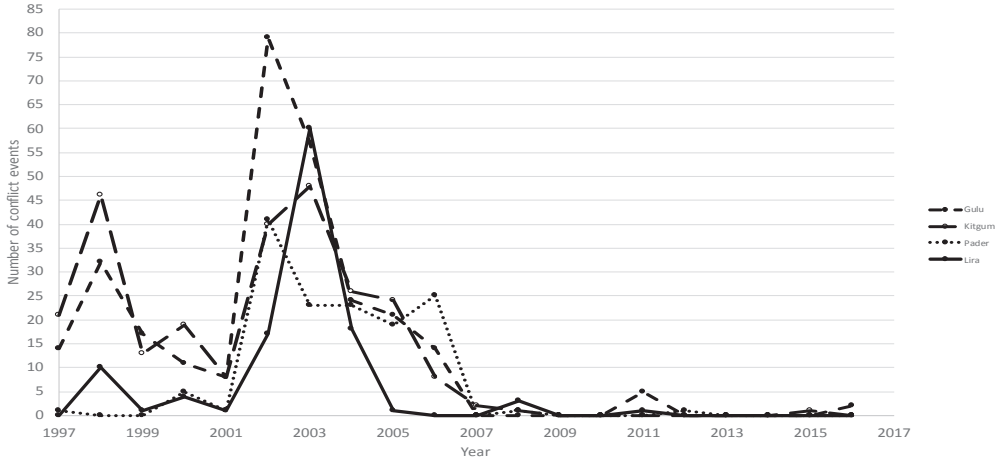

Figure A2. The number of conflict events in the years between 1997 and 2016
Note: The conflict events here only count the fights between LRA and the Uganda Government.
Source*: Armed Conflict Location & Event Data Project.*