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The impact of conflict induced exile on entitlement of food: Evidence from rural Liberia

Shahriar Kibriya, Zhicheng Xu, and Narishwar Ghimire¹

This article is a unique attempt to discover the impact of exile on the most basic human necessity, food entitlement. We argue that exile from society followed by reintegration attempts cause mental and physical trauma, emotional distress, cultural shock, depletion of technical skills, political oppression, loss of social cohesion and articulation. We use survey data randomized on levels of conflict and propensity of migration from 312 rural households in 22 Liberian villages from Loma, Nimba, and Grand Bassa counties. Our findings suggest that accounting for household demographics, farm size, attributes, and income; duration of exile increases the probability of food entitlement failure.

Introduction

The United Nations High Commissioner for Refugees (UNHCR)'s annual Global Trends report (2013) estimated 51.2 million people were forcibly displaced at the end of 2013 while approximately 6 million more than 45.2 million reported in 2012. The displaced population consisted of refugees who were compelled to move to another country as well as people who were forcibly displaced within their own country, often referred to Internally Displaced People (IDP). Most of these incidents of displacement have been caused by or can be linked to violent conflict. Many of the displaced population experience a very long and tedious process of returning and face further challenges reintegrating in their respective societies. Organizations such as UNHCR, Red Cross, and other government and non-government agencies have been constantly

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providing support to reinstate the displaced citizens. However, reinstatement or returning home does not ensure a smooth reintegration in the society. Contemporary refugee literature (Mathur, 1995; Oucho, 1996; Cernea, 1996, 1997; Arowolo, 2000) discusses the challenges of reintegration of the displaced population in developing societies. Their research identifies social, economic, and political obstacles of reintegration. Some recent economics and political science studies have focused on measuring the impact of reintegration programs of former child soldiers (Galvanek, 2008; Blattman and Anan, 2011). Research and subsequent policy have not addressed the conditions of returning migrants who were not active participants in the civil wars. Further, while the two aforementioned strands of research address the potential challenges of reintegration and impact of rehabilitation programs, they have not addressed the consequence of reintegration challenges and the possibility of entitlement failure. Using a unique household survey data from rural Liberia, this article aims to address this gap in the literature by understanding the causal consequences of conflict induced exile on entitlement of food.

Our focus is the welfare of the returning migrants who were exiled due to civil conflicts. Liberia has undergone two violent civil wars in recent decades causing a significant fraction of its population to be forcefully displaced, both in country and to neighbouring countries. Many of these exiled population returned to their homes after the region became relatively stable under the current leadership of Ellen Johnson Sirleaf. Therefore, Liberia provides an ideal context to investigate how exile generated trauma, emotional distress, cultural shock, depletion of technical skills,

political oppression, loss of social cohesion and articulation impact food entitlement. Our data comes from 22 randomly chosen Liberian villages distributed in three counties. We use discrete choice econometric methods to estimate the impact of exile on food entitlement, controlling for household demographics, farm size, entitlement and labour, off-farm income, crop diversity, and education. Our quantitative analysis shows that exile increases the probability of food entitlement failure, even in pervasive conditions of hunger. We perform robustness checks through Jackknifing and Extreme Bound Analysis (EBA).

In the next section, we establish a theoretical framework and the primary hypothesis. In section 3, we present a brief socio-political history of Liberian conflict and its significance to this topic. In section 4, we illustrate the survey setting, data collection mechanisms, research design, and estimation methods. Finally in section 5, we present the results and discuss our findings and in Section 6 we critique the broader conclusions then end with future research and policy recommendations.

Theoretical Framework and Hypothesis

Theories of forced displacement may be derived from migration research of neo-classical economics. Todaro (1969) and Harris and Todaro (1970) introduced seminal theory of migration which were extended by others, notably by Stark (1984, 1991). To summarize, migration theorists suggest agents/households decide to migrate in order to optimize their utility by maximizing their income while minimizing risk of unemployment. Extension of the theory (Stark, 1984, 1991; Stark

and Taylor, 1991; Bhandari, 2004) builds upon the relative deprivation theory which alludes to conflict induced migration and exclusion.² For conflict prone developing societies the act of temporary migration/ refuge can be rationalized as, “agents/households decide to leave their home to maximize their probability of survival while minimizing the cost of moving.” Accordingly, the act of refuge is an unplanned endeavour whereby migration takes place to a closer proximity, sometimes internally but usually not to a financially lucrative location.³ For example, UNHCR reports show that West African refugees from countries such as Guinea, Liberia, Sierra Leone, Niger, Mali, and Cape Verde (Global report UNHCR 2004, 2005, 2006, 2007, 2008) actually take refuge in neighbouring districts and countries. Exiled households who take refuge in another developing conflict prone society are likely to be marginalized and will lack financial and social opportunities. Possible unstable political situation in the host societies exacerbated this situation. Additionally, exiled citizens may have emotional ties to their own village or locality. Therefore the motive to return is based whether their homeland has become safer and/or the host community is being unable to retain them (Arowolo, 2000). However, due to lack of

² Relative deprivation refers to a social group (person) intending to have access to a particular good which is available to some other group (person) but not to them (him) (Runsiman 1966). Gurr’s (1970) theory on social deprivation implied that marginalization of certain groups may induce violent political mobilization. But what happens if groups or households cannot muster strategic mobilization or a violent response. Stark et al. (1984 and 1991) use relative deprivation theory and social inequality to show that individuals who are deprived have incentive to migrate.

³ Our survey shows that exiled household mostly took refuge to neighboring countries such as Ivory Coast, Guinea or in Liberian counties/districts of Bong, Buchanan, and Monrovia. All of these places are in near vicinity to the three countries that were surveyed, but none these places are particularly safe or financially lucrative.

institutionalized integration process and planning, migrants face significant challenges in getting reintegrated in their respective societies.

Following their return, refugees experience significant challenges to get reintegrated in their respective societies. These challenges of reintegration can be characterized as: social, economic and political (Oucho, 1996). Social integration entails understanding the maladjustment of the society and cultural shocks (Arowolo, 2000). Returnees may also have difficulties being absorbed by their extended family and friends after being exiled from a long time. In developing societies citizens compete for limited resources. Thus absence from the society may imply a loss of claim and access to common properties and public good (Mathur, 1995) such as: water, public distribution program of agricultural commodities, education, grazing land, firewood, domestic fuel, community services, and other natural resources. In Eritrea, significant amount local residents felt threatened on access of public goods such as fire wood and pastoral lands due to the return of exiled people (Kibreab, 2002). Cernea (1997) provides an excellent summary of studies in the context of India, where citizens were excluded from entitlement due to long absences. In Namibia, returning population was unable to get accustomed and absorbed by their kinship (Tapscott and Mulongeni, 1990). Informal social networks, local community assistance and mutual service agreements are more difficult to obtain by the returnees (Cernea, 1997). These challenges may worsen the post return stress, sense of belonging state of cultural identity, and anomie (Atteslander, 1995). Several studies conducted in India have shown that social isolation and discrimination to returnees led

to poverty (Nayak, 1986; Baboo, 1992; Sowell, 1996). In Namibia, many returnees were found alienated by their kinship and had to begin their socio-economic lives all over (Tapscott and Mulongeni, 1990).

The economic challenges for the returnees include challenges with employment opportunities, entitlement and ownership of land, loss of skill, and the lack of initial capital. One of the largest obstacles for successful reintegration of exiled citizens is their inability to secure employment opportunities (Arowolo, 2000). Technological change due to agricultural or industrial development may be a hard adjustment for returning migrants. Tapscott and Mulongeni (1990) report that citizens in Namibia faced isolation from the industrial job market upon their return. Additionally exiled returnees may lack information and contemporary societal understanding to discover economic opportunities. Many households lose access to their own land and home following their return. In Maharashtra India, 59 per cent of the households which were exiled were not able to find a suitable living place (Cernea 1996). Namibian farmers did not have sufficient funds and agricultural inputs to initiate agricultural endeavours after returning (Tamas, 1992). In addition, farmers may also lose their possession and access of agricultural land due to displacement. Smaller assets such as fences, soil levels, livestock, and agricultural tools may be destroyed or lost because of exile and/or conflict. Loss of skill due to lack of practice deteriorates agricultural and industrial production levels of the returnees.

The political challenges of reintegration include property entitlement, reception by local population (especially leaders), ability to access information, and to

participate in social decision making process. Lack of support by local chiefs, leaders, and decision makers can seriously hinder the integration process of the returnees (Rogge, 1991). Initial refuge implies that the exiled household did not have enough political voice to ensure security. Unless the leadership dynamics at the sub-national level have changed, households are likely to experience the same problem. A shift in leadership practices may also cause difficulty for returning households. Existing leaders of the society may think of returning migrants as a threat or competition and deprive them of crucial entitlement. Entitlement to land, water, and information are often provided through local leaders. Returnees will have difficulties to claim their farms especially if they do not have adequate political support. Obtaining symmetric access to markets (both agricultural and industrial), price, inputs and supply information are considered as a privilege in rural developing societies. The returnees may be deprived of these privileges through systematic oppression.

A few of the social, political and economic challenges are quantifiable. Variables such as land access and tenure, employment, and access to markets or information can be documented through simple investigative questions and answers. However, entitlement issues related to voice in the society, mobilization, systematic isolation, exact difficulty levels on accessing common properties are not easy to quantify. For example, data may show that there is no significant difference in distance to the water reservoir for citizens of a particular village. However, returnees facing exclusion may be compelled to stand at the back of the line and therefore be deprived of water. Quantitative data may provide information of households' farm size, land access or

tenure, but it is unlikely to show post return loss of agricultural skill and lack of small equipment. The extent of physical stress, cultural shock and emotional trauma cannot be quantified either. Duration of exile was identified to intensify the social challenges (Tapscott and Mulongeni, 1990; Arowolo, 2000). For the scope of this research, exile-induced social exclusion and disarticulation include: loss of skills, social power and status, psychological and physical trauma, discrimination, access to community intangible facilities, and so forth. The duration of exile can capture the impact of these aforementioned variables. A longer length of exile thus portrays a higher level of social isolation and exclusion.

Modern welfare theories of exclusion, relative deprivation and marginalization have been provided by Sen (1981, 1982) and Drèze and Sen (1989).⁴ To develop the notion of (capability) deprivation, Sen reflects on Adam Smith's idea of social exclusion.⁵ He builds on Smith's notions and states that poverty as capability deprivation refers to lack of ability and freedom to live a life that is devoid of bare minimum human necessities. But if lack of freedom and basic necessity defines deprivation, what is the largest indicator of its harshest consequence, entitlement failure? Sen (1981) and Drèze and Sen (1989, 1990) suggest that hunger caused by lack of access to food is the cardinal index of relation deprivation and social exclusion. Hence, we consider the perception of food insecurity as an indicator of

⁴ Griffin and Knight (1990), Crocker (1995) provide further review of poverty and inequality in the realm of capability deprivation.

⁵ Smith view of deprivation involved "the ability to appear in public without shame" (Adopted from Sen 2000), which alludes to social cohesion.

basic entitlement (or lack of it). The primary hypothesis to be tested through this

research is the following:

Hypothesis 1: Social exclusion and disarticulation of the returning migrants explained through duration of exile increases the likelihood of their lack of entitlement to food.

Country Background and Justification

The Republic of Liberia is a war beleaguered West African country with a recent history of severe political instability and armed conflict associated with two civil wars. The first civil war started in 1989 with Charles Taylor's insurgency and the killing of the incumbent president, Samuel Doe. The second civil war spanned from 1999-2003, and ended with the fall of Taylor's regime. Current poverty and food insecurity in Liberia can be largely attributed to these two civil wars. According to IMF statistics (IMF, 2012), GDP per capita of Liberia in 2012 was \$436 in nominal and \$672 in purchasing power, the third-lowest in the world. Liberia's current population is about 4.19 million (World Bank, 2012) which is divided into 16 ethnic groups in thirteen counties. About 95 per cent of the population in Liberia lives under two US dollars a day while 84 per cent live under 1.25 US dollars (World Bank, 2008). Approximately 35 per cent of deaths in children below five years are related to malnutrition (CFNS, 2010).

Although the seeds of conflict and inequality were sown by acute socio-political inequality from the early 1900s, Liberia was relatively peaceful on the surface before 1989. The True Whig party, governed by the ethnic minority, Americo-Liberians, was the country's sole political group. The indigenous population

was systematically excluded from economic and political opportunities by the elites. Violent conflict finally escalated during April 1989 due to president William Tolbert's decision to increase the price of rice, main staple of Liberian citizens. The increase in rice prices raised concerns over food security and was met initially with nonviolent protests, ultimately ascending to mob riots and destruction (Ellis, 1995; Dennis, 2006). Taking advantage of the unrest, master sergeant Samuel Doe organized a coup d'état, killing president Tolbert and overthrowing the Americo-Liberians. Upon assuming power, Doe patronized Krahn, his own ethnic group who are immigrants from Côte d'Ivoire. Krahn was in control of most states and military institutions during the Doe regime. Consequently, the local population was marginalized. Some of the mistreatment ignited community initiated insurgencies while many others preferred outward migration to Côte d'Ivoire and Guinea (Bøås, 2005).

Charles Taylor, a high government official who left Doe's government after being accused of embezzlement, formed a group called National Patriotic Front of Liberia (NPFL) led by persecuted population by Doe's regime. In December 1989, the first civil war officially began when NPFL invaded Nimba county and surroundings areas. Doe's army, Armed forces of Liberia (AFL), retaliated by attacking both civilians and rebels. The attacks caused mass fatalities and many citizens were forced to take refuge to neighbouring Guinea and Côte d'Ivoire. Rebel groups soon started to split into various factions fighting one another. Amongst the anarchy, NPFL emerged as the strongest and largest rebel group. The viciousness of AFL turned general

opinion against Doe and mostly in favour of Taylor (Duyvesteyn, 2005). In September 1990, Doe was captured and executed by Independent National Patriotic Front of Liberia (INPFL), a split faction of NPFL led by Nimba warlord Prince Johnson. But even after his death former members of Doe's fragmented army kept fighting and established United Liberian Movement for Democracy (ULIMO) in Sierra Leone. Finally, in 1995 a peace treaty was reached leading to Taylor's election as president. The Second Liberian Civil War began in 1999 to overthrow Taylor's regime. Liberians United for Reconciliation and Democracy (LURD), a rebel group based out of Lofa county led the insurgency. These groups collaborated and strategically assumed control over the north eastern part and moved towards the capital Monrovia from the southern part (Kamara, 2003). Their systemic insurgency resulted into Taylor resignation in August 2003. A peace agreement in 2003 led to democratic elections in 2005.

The two civil wars in Liberia had devastating effects. The first civil caused more than 200,000 Liberians killed, while about 150,000-300,000 people were killed in the second civil war (Polgreen, 2006). The civil wars caused about 75 per cent of the country's population to be exiled either internally or internationally.⁶ Most of the internationally exiled people fled to neighbouring yet politically unstable countries such as: Sierra Leone, Guinea, Côte d'Ivoire (UNHCR reports, 2002-2014; Bøås, 2005). In between the civil wars and especially after the election of Sirleaf Johnson as president, many of the exiled population returned to their homes either by themselves

⁶ Authors' estimation using data from UNHCR (2002-2014).

or through support from the international community (UNHCR Statistical Yearbook, 2005; IPA report, 2011; United Nations News Center, 2013). These refugees and exiled people included both lower level perpetrators and victims. However, the reintegration process was not smooth. Many obstacles remain in the reintegration of these exiled people in a society that has its agents competing for scarce resources (Galvanek, 2008; Jennings, 2008; Blattman and Annan, 2011; Omata, 2013; Brownell 2014). Although explicit causal reasons are yet to be explored, recent facts of food insecurity and poverty (WFP, 2013) from Liberia allude that the war and challenges in the repatriation processes are having negative repercussions on the levels of hunger.

Survey and Estimation Strategy

Survey Method and Setting

We estimate the impact of conflict induced exile on perception of food entitlement relying on a unique Liberian household survey conducted by the Center on Conflict and Development in partnership with the HGBF foundation during November 2012 to January 2013. A stratified random sampling technique was used for the survey, in order to increase the sampling efficiency by ensuring adequate representation of population and eliminating sampling error (Singleton, Straits, and Straits, 1993). The randomization was conditioned on two levels. First, we chose sample counties in different locations of Liberia with variations in patterns and likelihood of migration due to conflict. Since we want to study the welfare of returning migrants, it was essential to choose regions from which domestic and

international migration were likely to happen. Nimba, Lofa, and Grand Bassa (shown in Figure 1) were chosen due to their strategic vicinity to Monrovia, the Atlantic Ocean, and neighbouring countries: Sierra Leone, Guinea and Côte d'Ivoire. Nimba is located in the northeast part of Liberia, bordered with Guinea and Côte d'Ivoire.⁷ For Lofa citizens, it is easier to migrate to Sierra Leone and Guinea, while it was more convenient for people from Grand Bassa to migrate internally or through the Atlantic Ocean.

⁷ These three counties have significantly distinct agro-ecological zones (FAO 2013; AgriGis 2013). Lofa and Nimba consist of coastal plains and tropical forest ecosystem. Grand Bassa consists of northern savannah and tropical forest ecosystem.

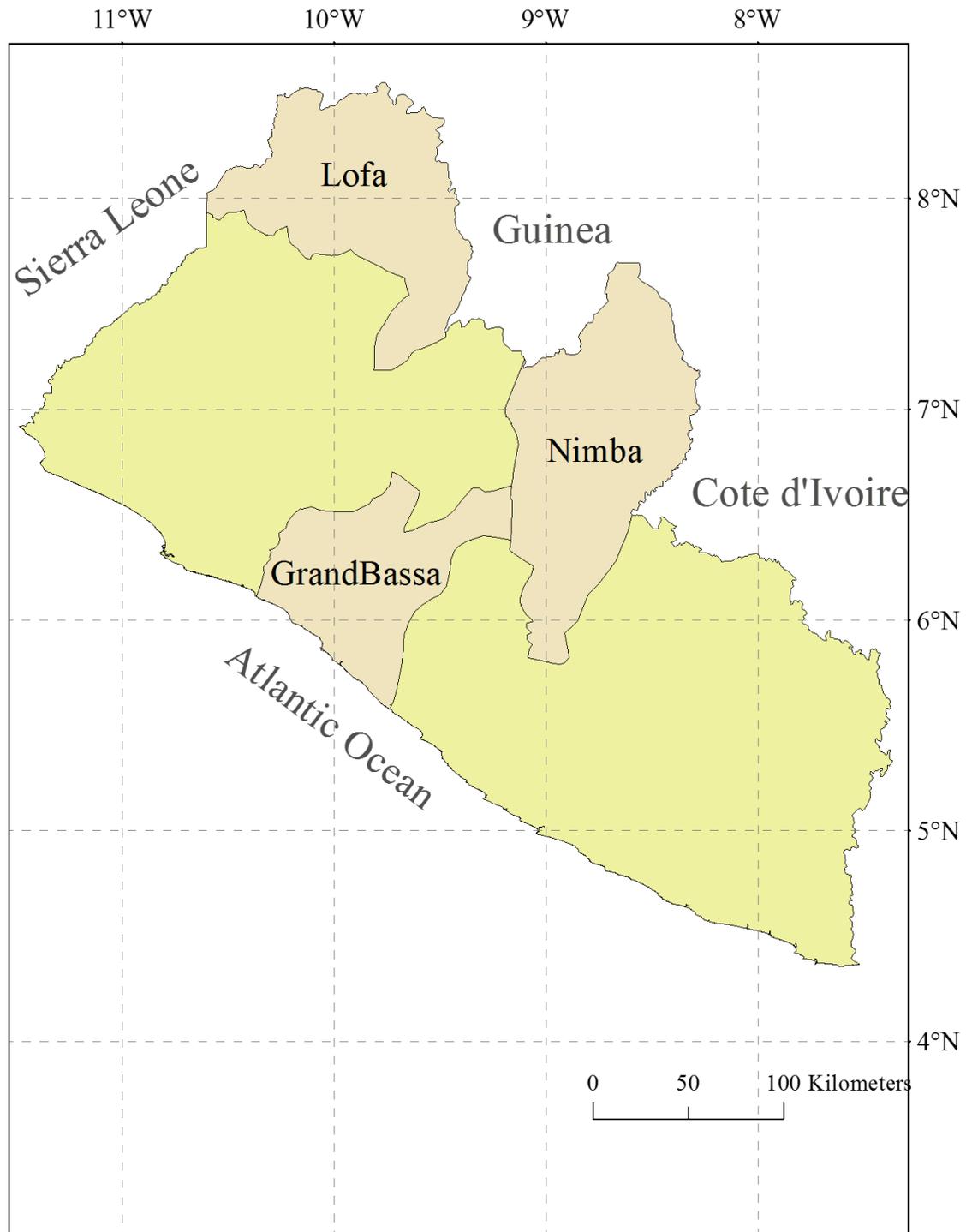


Figure 1. Counties surveyed, with their neighbouring countries.

Following the identification of counties, the second step was to choose sample villages that varied by conflict intensity. The ACLED (Armed Conflict Location and Event Data) database provides disaggregated conflict analysis and crisis in African

countries. The ACLED database collects comprehensive real-time data on political violence in Africa, including the specific dates and locations of conflicts, the types of event, the groups involved, fatalities, and changes in territorial control. Data from ACLED (2014) on conflict events were geocoded to understand the levels of violence. From the geo-referenced information on conflict incidence, regions of Liberia were divided into two levels: Low (less than seven conflict events during 1997-2010) and High (equal or above seven conflict events during the same time). From the ACLED incident data, 22 villages in Liberia were randomly chosen: 11 each from high and low conflict regions. The average duration of exile of households from each village is also shown in Figure 2.

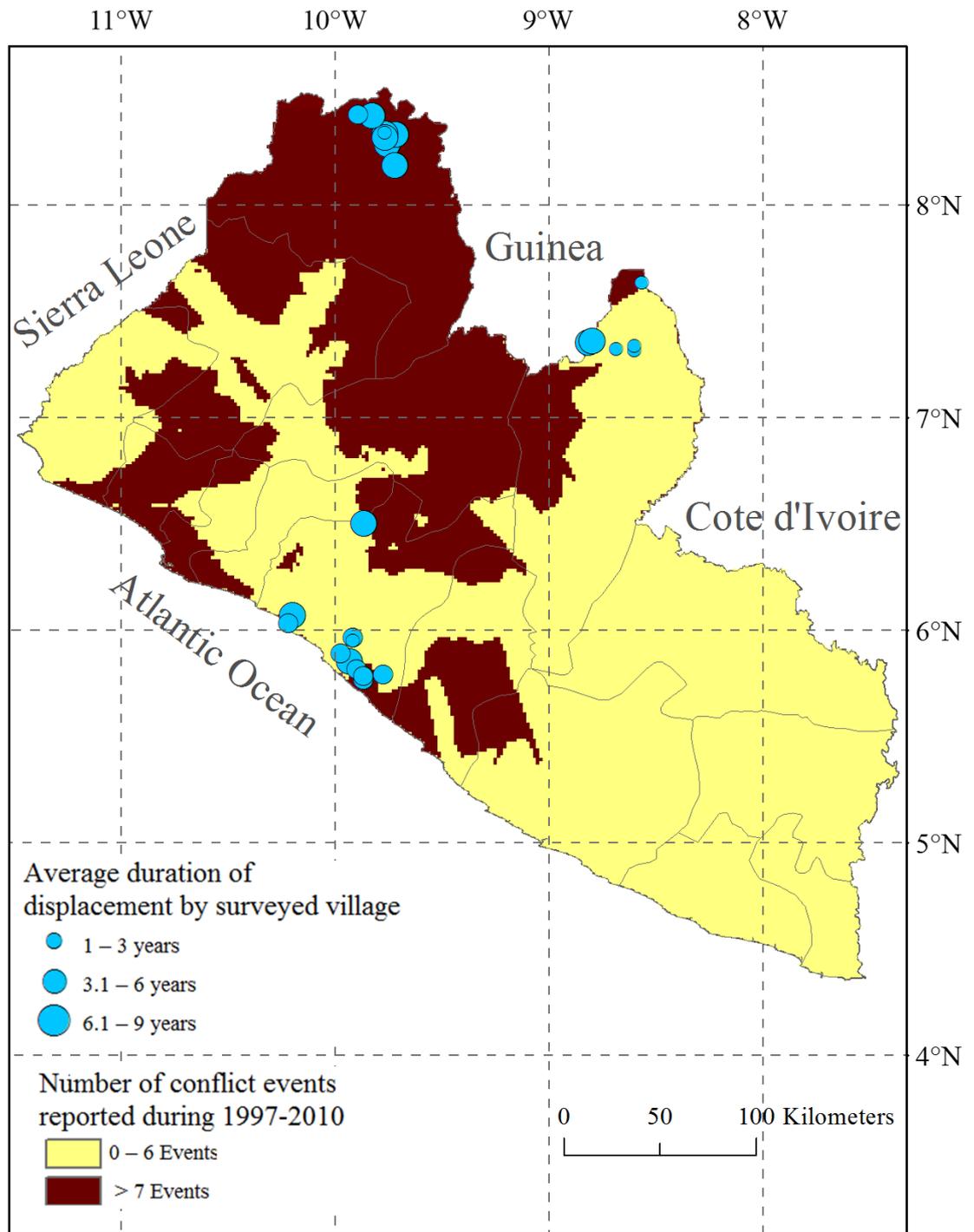


Figure 2. Conflict levels in Liberia and villages surveyed with average years of exile.

Variables, data structure and estimation strategy

The survey covered 312 households in 22 villages from Grand Bassa, Lofa, and Nimba counties. Our dependent variable of interest is perceived status of food

entitlement. We refer to USDA Economic Research Service (ERS, 2014) to measure a households' perceived food insecurity (entitlement). The interviewees were asked the question: 'during the last 12 months, did you worry that your household may run out of food?' In our analysis, therefore, household perceived food insecurity is measured by a binary outcome in nature taking value of 1 if a household perceives not having enough food to eat during the past 12 months and 0 otherwise. Among the factors that affect the status of perceived food insecurity, our primary interest is social exclusion measured by number of years of exile of households due to civil wars. We asked the following question to the respondents: 'Were you displaced during the conflict and if yes, how many years were you displaced?'

The primary agenda of the regression analysis is to isolate the causal effect of social exclusion on food entitlement. Omitted variable bias may be a threat in such a causal identification. Therefore a relevant set of control variables in the regression analysis is necessary to avoid selection bias. Our estimation accounts for the most important determinants of perceived food insecurity according to the previous literature. Babatunde and Qaim (2010) find that off-farm income has a positive net effect on food security and nutrition in Nigeria. Our survey instrument included the variable *off-farm income* that is defined as the household income per year obtained from non-farm activities such as teaching, industrial manufacturing, and so on. Almost half of the surveyed households had members engaged in non-farm employment; however, most did not generate substantial income. The average level of household off-farm income per capita per year is only about 2200 Liberian dollars (less

than 30 US dollars). The maximum of off-farm income in our survey is 91,000 Liberian dollars (about 1,000 US dollars). Most households reported identical and very low levels of formal education. Therefore, we measure knowledge and education through access to vocational and agricultural information. Based on a survey in Kenya, Mude et al (2012) show the effective market information can provide a guide for appropriate cash transfer to help agricultural production. *Access to information* is a dummy variable taking value of 1 if a household has access to information and 0 otherwise. The loss of family members might be detrimental in sense that it resulted in a harder recovery from war-induced mental trauma to the regular life (Whitaker *et al.*, 2006). It can be captured by *Parents killed/dead* dummy taking value of 1 if one or both parents are killed or dead in war and 0 otherwise. Loss of a parent due to conflict may also reflect loss of household labour and social power. The elderly father may have had better relationship and respectability with the village leadership. Empirical evidence shows that larger family size often implies higher likelihood of food insecurity (Oh and Hong, 2003; Wilde and Nord, 2005). But it is also important to recognize that larger families with more active labours may also produce and earn more. To isolate the effect of unproductive members of family members on food entitlement, we consider *number of dependent children*. The households owning larger farm are usually less likely to suffer from food insecurity (for example, evidence from Nigeria, in Amaza *et al.*, 2006). A larger farm size or arable land may imply higher production or rental returns for land. Measure of food production will bias the regression analysis but land size will proxy for production and returns from

fixed assets. However, larger families who inhabit “jointly” may have access to more land.⁸ To account for the “joint family-large family size” scenario, we decided to include *farm size per capita*. Labour shortage often contributes to household food insecurity. A small number of active male labourers may imply smaller production of off-farm income that may contribute to food security or entitlement. *Number of male labour* is a variable used in our econometric analysis that denotes the number of working males in a household. The predictive caveat is that more adult male labour may also increase households need for food demand and thereby exacerbate food availability concerns. *Gender of household head* is a dummy variable taking value of 1 if household head is male and 0 otherwise. It is expected that a female-headed household be more food insecure than male-headed ones, as females are likely to be more vulnerable to violence and less entrepreneurial in a male dominated society (Jackson, 1996). Horell and Krishnan (2007) find that once inputs are controlled for, it is only for growing cotton that female-headed households' productivity is lower than that found for male-headed households. Additionally, almost of the families that were headed by females in our sample lacked a fatherly adult male. A large body of literature exists on the correlation between land tenure and food insecurity (Guyer, 1995; Stanbury, 1995; Fine, 1997). A long hiatus may weaken the property entitlement rights of the returning migrants. To control for property entitlement, we include *land title* as a dummy variable taking 1 if the household owns their crop field and 0 otherwise. Consistent with the demographics of Liberia most households in the

⁸ As mentioned before many household were “joint families,” whereby siblings or other adult family /family members lived together.

survey were Christian. The ethnic minorities may be marginalized and thereby denied food entitlement.

In order to assess our major hypothesis, we exploit a formal econometric analysis using the household survey data described in the previous section. Due to the nature of dependent variable of interest, our estimation equations take the Probit/Logit model form:

$$y_i = 1(\alpha + \beta * \textit{duration of exile}_i + \gamma X_i + \varepsilon_i > 0) \quad (1)$$

where y_i represents a dummy variable of *food entitlement* indicating whether or not household i worried about not having sufficient amount of food in the past 12 months.

The intercept is α . In equation (1), *duration of exile_i* is measured by the number of years of exile of households due to civil wars. X_i is the vector of explanatory variables, including economic and demographic characteristics. The error term ε_i is standard normally distributed in the Probit model and logistic distributed in the Logit model.

Results and Discussion

Summary Statistics

We commence our analysis with means, unit and standard deviations of variables in Table 1. About 83 per cent of households reported that they had concerns over entitlement of food. The lack of food entitlement is very skewed but reflective of the severe poverty in post war rural Liberia. Considering the poverty head count of Liberia is about 95 per cent (\$2 baseline) and 84 per cent (\$1.25 baseline), these numbers are hardly surprising. The average years of exile reported was 5.6 years. One household reported that they moved due to the oppressive nature of the Americo-Liberian government and came back recently after 34 years of exile. Almost all of the households who were forced to move were exiled between the years 1989 to 2004. Approximately 14 per cent of the households reported that they had their parent(s) killed in the civil wars. The average number of adult male labourers in each household is 1.86, with a relatively high standard deviation. Average farm size was 1.08 acres with little variance from the mean for most of the household. A few households owned or had access to relatively high volume of land. The average number of children per household was 3.44 with a large standard deviation of 2.4. About 47 per cent of the households reported to have access to agricultural information. 25% of household heads are female. The average household off-farm income was 2200 Liberian dollars (26.67 US dollars) with a high variation. Only 12 per cent of farmers had titles to their land, while the average number of crops was 5. An

overwhelming majority of 87 per cent of households in the survey are Christian, while others are Muslim (1 per cent), traditional religion believers (7 per cent), and non-believers (5 per cent). The overall summary statistics of the data collected show very low variance and prevalent poverty.

Table 1. Summary Statistics of variables (n=312)

	Mean	Unit	S.D	Max
Lack of food entitlement	.83	Dichotomous	.37	1
Duration of exile	5.63	Years	4.6	34
Parents killed	.14	Dichotomous	.34	1
Male labour	1.86	Members	1.5	10
Dependent children	3.44	Members	2.4	14
Access to Information.	.47	Dichotomous	.5	1
Female Headed	.25	Dichotomous	.43	1
Farm size	1.08	Acres	5.3	83.3
Off-farm income (000LD)	2.20	LRD'000	6.9	91
Land title	.12	Dichotomous	.32	1
Crop diversity	5.0	Number of Crops	3.31	15
Religion (Christian=1)	.87	Dichotomous	.48	1

We start our regression analysis with a discrete conditional bivariate relationship of food entitlement and duration of exile. Figure 3 shows the predicted probability of lack of food entitlement is increasing in duration of exile, suggesting a strong bivariate relationship between lack of food entitlement and social exclusion.

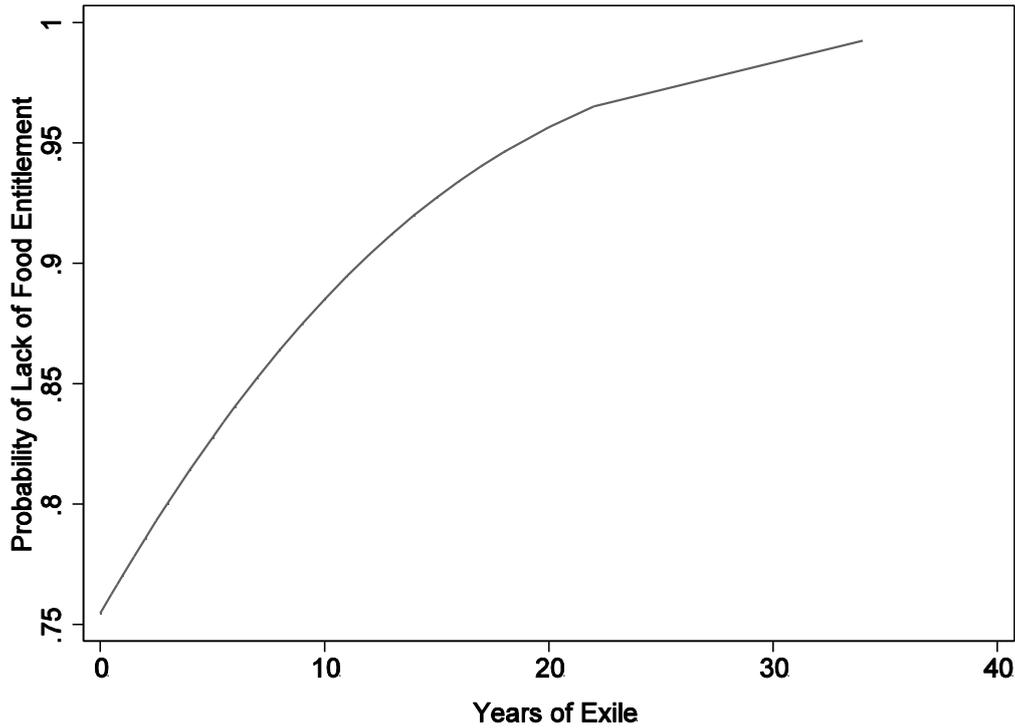


Figure 3. Predicted probability of entitlement of food on social exclusion and disarticulation (Probit without any controls)

We estimate different Probit and Logit models in order to increase the robustness of coefficient estimates. We present the regression results with variation in control variables in Table 2. Columns 1-3 of Table 2 apply the Probit method to estimate the coefficients of the factors that affect perceived food insecurity, while column 4-6 of Table 2 show the Logit estimation results. All the columns show the quite consistent result that longer duration of exile increases the probability of lack of food entitlement among the rural households in Liberia. Our major hypothesis is supported by the bare-bone models without any controls in column 1 and 4 of Table 2. This estimate appears to be statistically robust with more control variables in the other columns of Table 2. The estimates can be converted to marginal probability effect at mean that is easily interpreted. As predicted by the Probit model in columns 1 and 2,

one additional year of exile causes a 1.3 per cent increase in the probability of perceived food insecurity conditional on that years of exile is at the mean (5.6 year). In column 3, one additional year of exile increases the probability of perceived food insecurity by 1.5 per cent conditional on that all covariates including the years of exile are at the mean level.

Columns 2 and 5 add some control variables associated with household production practice, including off-farm income per capita, access to agricultural information and crop diversity to the Probit and Logit models, respectively. The results show that off-farm income has a positive but negligible contribution in reducing lack of food entitlement. This indicates that legitimate off-farm income opportunities are so few that it does not increase the level of food entitlement. Differing from intuitive expectation, the impact of access to agricultural information is negative. However, the statistical significance of the access is insignificant, while the economic significant is trivial as well. Many of the Liberian households commented of information systems being ineffective. One possible explanation of the positive coefficient of the information system may be that only food insecure groups seek assistance from them. *Crop diversity*, which may reflect the agricultural knowledge and expertise, risk coping mechanisms, does not have any significant impact on food entitlement as well.

Columns 3 and 6 add all other demographic control variables. Insignificant effect of parents killed or dead during the war era (column 3) indicates that loss of parents in the war did not have significant impact on post-conflict household's food

entitlement. It might be possible that shock of parental loss gets diffused over time. In theory, more dependent children could increase the likelihood of food insecurity as they may not contribute to agricultural production and income generation but they need food for sustenance. However, many of the respondents revealed that their children do not go school and assist with trivial household chores related to farm work. Therefore, it is not surprising to see statistical insignificance in our estimation. Farm size per capita has very similar impact, showing insignificant positive impact on perceived food insecurity. Larger farm size did not ensure a higher probability of food entitlement. Columns 3 and 6 also show that number of male labour and gender of house head do not significantly affect food entitlement status. Column 3 (Probit) and column 6 (Logit) both show that entitlement of land does not significantly reduce the probability of food entitlement. Loose land property rights and lack of property right implementation by the government may be the reason behind this non-relationship. In columns 3 and 6 we also examine if religious identity has any effect on entitlement of food. To do this, we created a binary dummy variable of being Christian or not. We find no significant difference in perceived food insecurity between Christians and other minority religious groups.

Table 2. Exile and perceived food insecurity, Probit/Logit

Method	Probit			Logit		
	(1)	(2)	(3)	(4)	(5)	(6)
Duration of exile ⁹	0.051** (0.023)	0.051** (0.025)	0.063** (0.030)	0.100** (0.051)	0.105** (0.051)	0.119** (0.059)
Off-farm income per capita (000 LD)		-0.025 (0.017)	-0.029 (0.024)		-0.048 (0.036)	-0.049 (0.042)
Access to Ag. Information		0.138 (0.195)	0.170 (0.227)		0.222 (0.352)	0.288 (0.408)
Crop diversity		-0.009 (0.030)	0.006 (0.034)		-0.010 (0.054)	0.009 (0.061)
Parents killed/dead (yes=1)			-0.414 (0.291)			-0.724 (0.516)
Number of children			0.037 (0.050)			0.063 (0.091)
Farm size per capita (acre)			0.013 (0.027)			0.022 (0.049)
Number of male labour			0.095 (0.073)			0.173 (0.139)
Gender of household head (Female=1)			-0.159 (0.272)			-0.233 (0.487)
Land title			-0.169 (0.332)			-0.250 (0.59-)
Religion (Christian=1; Other=0)			-0.743 (0.512)			-1.362 (1.052)
Intercept	0.689*** (0.142)	0.714*** (0.248)	1.163* (0.639)	0.689*** (0.142)	1.338*** (0.481)	1.974 (1.243)
Log likelihood	-128.49	-106.83	-84.42	-128.40	-106.63	-84.55
Pseudo R ²	0.022	0.047	0.087	0.023	0.049	0.086
Number of households	288	247	207	288	247	207

Standard errors are in the parentheses.

* Significance at 10% level.

** Significance at 5% level.

*** Significance at 1% level.

((b) Robustness tests

⁹ We also try to add squared term of duration of exile in the regression. But we do not find increasing or decreasing marginal effect.

To validate the findings, we perform two important robustness tests. The first one is the Jackknife method that estimates more robust standard errors. It is a resampling procedure that form N resamples of size $(N-1)$ by sequentially deleting each observation and then estimating the parameters of interest in each resample. We report the Jackknife estimates of Probit models in Table 3. Comparison between Table 2 and 3 indicates the evidence of robustness, in spite of slight decrease in the statistical significance. All estimates except constant term in column 3 show consistency in Tables 2 and 3.

Table 3. Jackknife estimation results, Exile and perceived food insecurity, Probit

Method: Probit			
	(1)	(2)	(3)
Duration of exile	0.051*	0.051*	0.063*
	(0.026)	(0.030)	(0.28)
Off-farm income per capita (000 LD)		-0.025 (0.015)	-0.029 (0.021)
Access to Ag. Information		0.138 (0.199)	0.133 (0.208)
Crop diversity		-0.009 (0.029)	0.001 (0.031)
Parents killed/dead (yes=1)			-0.332 (0.270)
Number of children			0.037 (0.046)
Farm size per capita (acre)			0.009 (0.079)
Number of male labour			0.095 (0.097)
Gender of household head (Female=1)			-0.180 (0.281)
Land title			-0.173 (0.320)
Religion (Christian=1; Other=0)			-0.760 (0.493)
Intercept	0.689*** (0.151)	0.714*** (0.238)	0.503 (0.374)
Log likelihood	-128.49	-108.34	-86.82
Pseudo R ²	0.021	0.038	0.068
Number of households	288	247	207

Standard errors are in the parentheses.

* Significance at 10% level.

** Significance at 5% level.

*** Significance at 1% level.

Next, we examine robustness with respect to the choice of controls. This formal robustness check employs the method proposed by Young *et al.* (2013) that builds on conceptual foundations of model uncertainty and multi-model inference such as Extreme Bound Analysis (EBA) proposed by Leamer (1983) and developed by Sala-i-Martin (1997). We draw K possible samples $\{S_1, \dots, S_K\}$, and compute many estimates $\{b_1, \dots, b_K\}$ which would make up a sampling distribution including mean and variance. The mean of the estimates is denoted as \bar{b} , and the variance is $V_s = \frac{1}{K} \sum_{k=1}^K (b_k - \bar{b})^2$. The sampling variance indicates how much an estimate is expected to change if we draw a new sample. We repeat the process by applying many different models $\{M_1, \dots, M_J\}$ to the data. Through repetition, we obtain the estimated total modelling distribution, that is, the average denoted as $\bar{\bar{b}}$ and variance of the estimates, i.e., $V_M = \frac{1}{J} \sum_{j=1}^J (b_j - \bar{\bar{b}})^2$. The overall mean of estimates across different sampling and model specifications is $\bar{\bar{b}}$. Hence, the overall variance of our estimates is $V_M = \frac{1}{KJ} \sum_{k=1}^K \sum_{j=1}^J (b_{kj} - \bar{\bar{b}})^2$. Knowing this, we can easily report the robustness of the major estimates. For the robustness check of each estimate with k possible control variables, the program generates a list of 2^k unique possible combinations of those variables.

As shown in Table 4, we tried 1024 models to check the robustness of coefficients of exile and other main variables. We find that the estimates of exile are always positive. The mean of coefficients of exiled years in the 1024 models is close to 0.059, while sampling standard error of its coefficients in the 1024 models is 0.027. All of those models show significance of duration of exile. The distribution of

estimates are also shown in the Figure 4 below. Therefore, the major hypothesis in our paper is indeed robust. We show that the estimates for all other control variables are quite consistent across all models.

Table 4. Robustness checks, Probit model

Variables	Number of models	Mean	Sampling SE	Sign Stability	Significance rate
Duration of Exile	1024	0.059	0.027	100%	100%
Off-farm income	1024	-0.030	0.021	100%	0%
Access to ag.information	1024	0.133	0.027	100%	0%
Crop diversity	1024	-0.001	0.031	61%	0%
Parents killed	1024	-0.332	0.027	100%	0%
Children number	1024	0.037	0.046	100%	0%
Farm size	1024	0.007	0.023	100%	0%
Male labours	1024	0.067	0.066	100%	0%
Land title	1024	-0.160	0.312	100%	0%
Female household head	1024	0.029	0.240	73%	0%
Christian	1024	-0.747	0.490	100%	0%

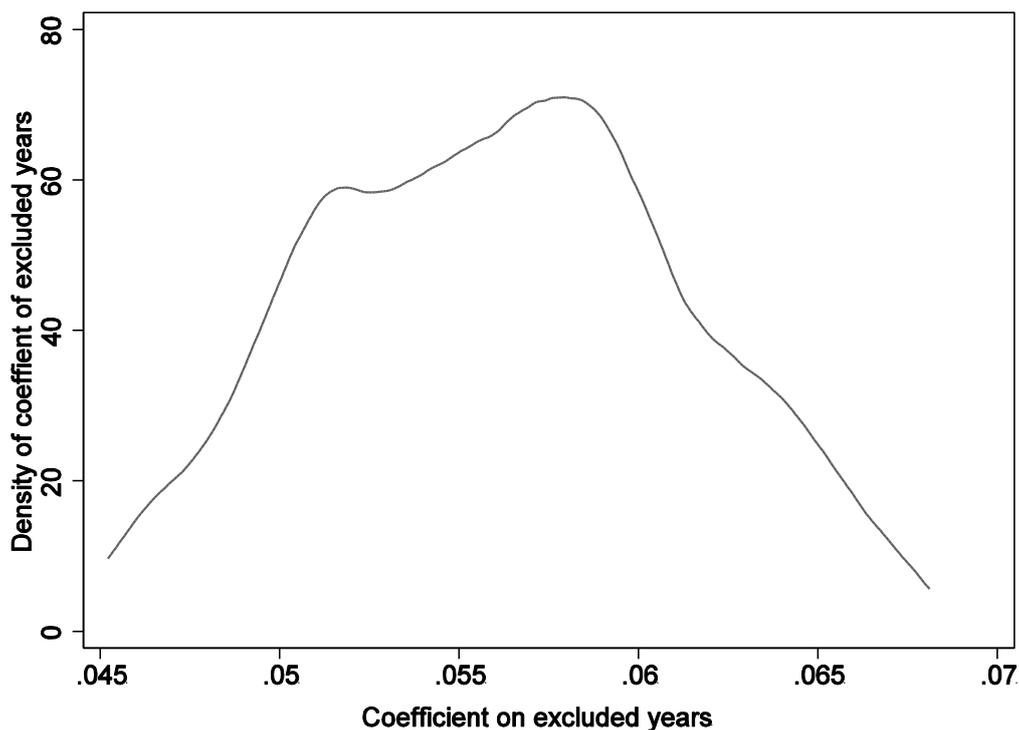


Figure 4. Distribution of coefficient on exile in robust test

Conclusion

Our article is an original attempt to discover the impact of exile on entitlement of food for the returning migrants of Liberia. The theoretical framework uses exclusion theory and relevant literature to argue that exile from the society creates mental and physical trauma, emotional distress, cultural shock, loss of social cohesion and articulation and technical skills, all of which reduces the probability of food entitlement. Through a survey of 312 households of Liberia conditioned upon conflict areas and probable migration, we show that for each year of exile reduces the probability of food entitlement by 1.5 per cent. Given the average duration of exile is 5.6 years and prevalence of food insecurity in rural Liberia, the economic implication of this result is significant. We use control variables for household demographics,

farm size and entitlement, off-farm income, religion and ethnicity. The statistical non-significance of most of the control variables emphasizes the importance of social exclusion on food entitlement in conflict beleaguered Liberia. We verified the robustness of econometric estimations through a rigorous set of Jackknife and EBA tests. However, given the uniqueness of the Liberian history and the lack of variation in welfare of interviewed households' larger cross country research projects are suggested to further generalize our conclusions.

Apart from the primary conclusion, several aspects of the article deserve comments. First, the dearth of technology, education, extension services, and variable assets is conspicuous in every facet of rural Liberian living. Second, while we have tried to isolate the effect of exclusion, we did not distinguish between physical and mental trauma upon returning and social alienation by existing members of the society. We expect future research should continue to disentangle these effects. Third, a more rigorous randomization and a time series study of refugees and IDPs may be ideal to shed more light on this issue. However, achieving perfect randomization and control groups would be improbable considering the regularity of conflict and exile. We expect our pioneering study would be followed with more research involving a cross country dataset. Since most of the West African countries are conflict prone and have constant forced migration to each other, a cross-country research of neighbouring countries would provide useful insight.

Our findings support the growing concerns for efficient refugee reintegration and suggest certain germane policy adjustments. Though organizations such as UNHCR

are working assiduously to help returning refugees, returning households still appear to be marginalized. Programs and impact evaluations (Bennet, 2002; Awodola, 2009; Blattman and Annan, 2011) to reintegrate child soldiers in post conflict societies are commendable yet do not often cater to the needs of returning peasants who were victims of war. Programs targeted especially to returnees and IDPs are necessary. While short training programs may be beneficial to an extent, longer programs that address sociological aspects of reintegration are also imperative. Exiled returnees need to be slowly and systematically reintegrated in their respective societies. We coincide with Drèze and Sen's (1989) suggestion of systematic government interventions programs for the marginalized, especially for post conflict states. Institutionally structured prolonged 'affirmative action' type programs should be designed by the government and supported through the international development agencies to ensure the successful reintegration of the excluded.

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