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Unraveling Food Security, Drought and Conflict Exposure of Somali Households

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Abstract
This paper aims at disentangling the mutual link between conflict, drought and food security in Somalia. The analysis is conducted using various indicators for food security and on different sub-national aggregation levels. The evidence is based on data from three household-level surveys, collected in various regions in Somalia between 2013-2015. While the general these that drought triggers conflict is confirmed, a negative effect of both drought and conflict on non-food expenditures is found, suggesting that these households buy less non-food items when confronted with distressing situations. Increasing drought and conflict effects on food consumption scores and food expenditures are furthermore encountered for households in Somaliland and Puntland. We test the hypothesis of differing effects of conflict and drought for households in various food security situations, with different food consumption scores, and find empirical support for the existence of a potential 'food insecurity trap'.

[1] This paper is a revision of an essay on Food Security, drought, and conflict in Somalia, written as a contribution to a larger study on the link between conflict and food security, conducted by ISDC and commissioned by FAO in 2016-2017. I would hereby like to express my gratitude to Marco D'Errico (FAO) and other FAO staff for their valuable comments and the permission to use FAO survey data for this paper and furthermore thank Prof. Tilman Bruck (Dir. ISDC, Greenwich University, LSE) and the participants to the project and the FAO-HiCN workshop in Rome (2016) for their multiple useful comments.

1 Introduction

Over the past decades, the state of certain food security indicators has vastly improved in Somalia, whilst less progress has been booked on others. The proportion of the population that is malnourished, expressed in percentages, declined strongly between 2004-2006 and 2021-2023, going from 70.0 % to 51.3 % respectively (FAO, 2024). Furthermore, major improvements have been booked on key indicators like access to clean water, prevalence of anemia, under-5 mortality, among others (FAOSTAT, 2025). Nevertheless, according to the Global Report on Food Crisis (2024) Somalia has been identified as one of the 16 countries undergoing major protracted food crisis. Per capita food production variability and mostly cereal import dependency ratio follow an upward trend and might be responding more to external shocks like political instability, conflict, etc.

At the same time, the country has witnessed critical streaks of drought and periods of excessive rainfall. Somalia is highly vulnerable to weather shocks (FSNAU, 2011) given its geographic location and fragile environments. Over the past decades, extreme weather events have become more frequent and various streaks of severe drought have been followed by excessive rainfall. Excessive rainfall and floods in 2023 during the rainy season followed a period of unusual drought. This posed a severe threat on Somali households, especially in riverine areas. It led to cropland inundation, livestock loss, asset damage, access to clean water and displacement (REACH, 2024).

Moreover, since 2003, violent events have become more frequent in Somalia and have been increasing sharply since 2011. In order of importance conflict events in Somalia are predominantly intrastate, against civilians ('one-sided'), or internationalized[1]. Violent events and fatalities seem to be more concentrated in the South and South-West of the country. Most of the violent conflicts against civilians (one-sided) are taking place in the Banadir district/region due to the presence of the capital. Most of Somalia's armed clashes since 1991 have been fought in the name of clan (ACLED, 2014). Clan-based violence, as well as militia-driven events are included in the forementioned conflict typologies. Based on ACLED conflict data (2014), it seems that about 61 percent of events against civilians are committed by an unidentified actor, which may be attributed to various conflict actors.

In this particular setting of protracted conflict and food crises in a drought ridden country, studying the link between conflict, and food security is both highly necessary and challenging at the same time,

[1]Intrastate and Internationalized Intrastate typologies of conflict correspond to the definitions used in the UCDP/PRIO Armed Conflict Dataset (Pettersson and Wallensteen, 2015).

due to the complexity of the situation and the simultaneous multi-effects. As argued many times, food insecurity can be both a consequence and an important driver of conflict. Among the various factors that have proven to be triggers of conflict, the level of drought experienced in a certain geographic area of the country within a given time-frame is a key determinant.

Several studies examine the effect of drought and food insecurity as conflict triggers, but there is little evidence on the effect of conflict on food security outcomes in drought affected areas. This study hence contributes to the literature by looking at the impact of conflict on food security of Somali households in the presence of drought. Moreover, we test the hypothesis that conflict and drought affect households in different food security situations differently. Being in a certain food security situation may lead for instance to stronger effects of drought and conflict on present (and future) outcomes, leading to aggravating situations. The employed household data in this study are restricted to the districts of Bosasso and Iskushuban in the northeastern Bari Region (Puntland) and Burao and Odweyne districts in the northwestern region of Toghdeer (Somaliland). Furthermore, based on data from a household mid-term impact evaluation in 2013-2015 in Gedo, the effect of conflict and drought shocks on food security outcomes is examined. Finally, we investigate the relationship between drought and specific health outcomes for Somali households by looking at the effect of drought (or low levels of rainfall) on waterborne diseases. More specifically, we look at diarrhoea and typhoid, both important causes of under-5-mortality, where water plays a role in the development of the disease transmitter.

Findings that were not visible or averaged out at higher levels of aggregation may be revealed at the level of the household or may only hold for urban or rural households. This distinction, together with exacerbating effects of certain food security situations, may increase insights in the linkages between conflict, food security and drought and their distribution across the country. This in turn may result in policy design, decision-making and development programmes to be better targeted for improving livelihoods and food security of vulnerable populations.

This paper is structured as follows. Section 2 reviews the existing literature on the links and multi-effects between conflict, drought and food security. Section 4 sets out the empirical strategy and describes the data used for this analysis. Finally, Section 5 discusses the regression results and Section 6 concludes and discusses potential implications.

2 Literature

A vast amount of literature has identified food insecurity to be an important threat to violent conflict (Pinstrup-Andersen and Shimokawa, 2008; Breisinger, Ecker, and Al-Riffai 2011; Brinkman and Hendrix, 2011; Breisinger et al. 2012; Maystadt et al., 2014), especially in the presence of unstable political regimes, slow or falling economic growth, and high between-group inequality. Particularly, rising food prices have been found to increase the risk of political unrest and conflicts (Arezki and Brückner, 2011; Bellemare, 2011). At the same time, conflict poses a threat to food security, both directly and indirectly. For example, conflicts may destroy transportation infrastructure or diminish productive assets which could lead to income losses (Deininger and Castagnini 2006; Devereux, 2006; Verpoorten, 2009). Conflict may also indirectly affect food security through its effect on local food prices. These negative effects on food availability will impact household-level food security.

Furthermore, other key determinants of food insecurity such as nutrition and health indicators will be affected by conflict. Bundervoet et al. (2009) show that in Burundi an additional month of war exposure decreases children's height-for-age z-scores by 0.047 standard deviations, compared with non-exposed children, and Akresh et al. (2010) find that the Rwandan genocide affected child stunting. Minoiu and Shemyakina (2012) found that children in Côte d'Ivoire undergoing conflict exposure in utero or during early life experienced health setbacks, compared to those born in non-affected regions during the same period. Furthermore, D'Souza and Jolliffe (2013) show that in Afghanistan levels of conflict and food security measured by calorie intake or real food consumption are negatively correlated (after controlling for household characteristics and key commodity prices) when faced with food price spikes. They did not find overall higher food insecurity levels in conflict affected areas as compared to non-affected areas, but based on a multivariate analysis, they do find that conflict may negatively affect household coping strategies when faced with food prices spikes.

The combined effect of drought and conflict on food security outcomes has received less attention in the literature. A study by Maystadt and Ecker (2014) finds a triggering effect of drought on conflict in Somalia through decreased livestock prices. Raleigh et al. (2015) encounter a positive feedback between food price and violence based on data from 113 African markets between 1997 and 2010 where higher food prices increase conflict rates within markets and conflict increases food prices. Next, anomalously dry conditions are found to be associated with increased frequencies of conflict (Raleigh et al., 2015).

Drought has in turn been identified as an important conflict trigger by several authors (Kurukalasuriya et al., 2006; Burke et al., 2009; Hsiang, 2011; Schlenker and Lobell, 2010; Dell, Jones, and Olken, 2012; O'Loughlin, 2012; Maystadt and Ecker, 2014), thereby aggravating the food security status of people living in these drought and conflict affected areas. Moreover, excessive rainfall is, like drought, expected to impact food security outcomes. Both for very low levels of drought (with a lot of rainfall), and for very high levels of drought, there may be a deterioration of an individual's food security status. Therefore, the relationship between drought and food security outcomes might be a non-linear one. Maertens (2016) finds a U-shaped relationship between rainfall and conflict risk in Sub-Saharan African countries, mirroring the hump-shaped relationship between agricultural output and rainfall. Furthermore, Schlenker and Roberts (2011) examine temperature and precipitation effects for African agriculture and Gutieras (2019) highlights the importance of non-linear temperature effects for agricultural yields in India. A recent study in Somalia at the regional level finds evidence of a non-linear relationship between drought and the percentage of underweight individuals in riverine areas (Sneyers, 2025).

In addition, excessive rain and drought may not only impact nutrition outcomes directly, but will have an influence on health outcomes as well (Levy et al., 2018, REACH, 2024; Stanke et al., 2013 and Vorosmarty et al., 2000) or be highly correlated with them. For instance, a strong effect of high pathogen exposure on conflict risk is found by Cervelatti et al. (2016), which is amplified by weather shocks. Since health outcomes are closely linked with nutrition outcomes, both nutrition and health are considered important for food security. Lack of access to adequate food, both qualitatively as quantitatively, will deteriorate an individual's health condition and vice versa. To illustrate, it is estimated that unhealthy diets and malnutrition are responsible for nearly one third of the global disease burden (WHO, 2025).

Finally, households are affected differently depending on their net food consumption or production status by increasing prices. They may have either an unfavourable or either beneficial effect on a household's poverty status and thus affect consumption in a different way. Moreover, urban households tend to be net consumers of food, while rural households tend to be net producers of food. Therefore, it is recommendable to not only look at various food security indicators, but also at various population groups when studying the link between conflict, drought, and food security. Particularly for Somalia, we distinguish between urban, IDP (Internally Displaced Persons), pastoral, agro-pastoral and riverine households, in accordance with the self-reported livelihood system.

3 Methodology and data

3.1 Data description

The data are derived from 3 household-level surveys, conducted in June 2014, in various districts and regions in both Somaliland and Puntland, and an impact evaluation survey, conducted in 2013 (baseline) and 2015 (midline) in Gedo. The surveys are a joint effort from the United Nations Food and Agriculture Organization (FAO), World Food Programme (WFP) and United Nations Childrens' Fund (UNICEF). The main variables of interest in this analysis are a household's food consumption score, food expenditures and non-food expenditures. The food consumption score is calculated based on the recollection of food items' consumption by the household during the past seven days. Furthermore, food consumption scores are subdivided in categories according to WFP standards that take into account daily consumption of oil and sugar (FAO, UNICEF, WFP, 2016a).

To measure the household's conflict exposure[2], we use information on the threat of conflict between clans in daily life. This conflict variable is reported by the household and can be interpreted as a perception of conflict threat (or lack thereof). Whenever conflict is the most, second most or third most important security threat for the household, conflict exposure coincides with value three, two and one, respectively, and zero otherwise. Ideally, we would like to have information on exogenous conflict shocks, to avoid biased estimates due to endogeneity. Information on conflict shocks is unfortunately not available separately for households surveyed in Somaliland and Puntland. Nevertheless, since the conflict exposure measure is based on the reported order of threats in the surrounding of the household, this measure takes into account past events as well to some extent, accounting for endogeneity. The dataset furthermore includes information on the amount of aggregate household shocks over the past 12 months ($shockslastyr$) and over the past 13 to 24 months ($shockspast$). Information on the amount of shocks is additionally available per following categories: income shocks (directly affecting household income) - food and input prices, death of main earner, inability to work - weather shocks, agricultural shocks and social or personal shocks - including political crisis, displacement, clashes, accidents and severe illness. Furthermore, details of the income effects as a result of last year's shocks ($\Delta income1$)

[2]Due to a lack of reliable conflict data that contain enough variation, we will not be able to include conflict event variables according to Pettersson and Wallensteen (2015) in the analysis.

and past shocks ($\Delta income2$) is available as well.

We start by describing the data derived from the household-level surveys in Somaliland and Puntland, conducted in June 2014. The survey sample in Puntland consists of 805 households: 287 in Bossaso and 518 in the Iskushuban district. The total number of individuals covered by the survey was 4720 in Somaliland and 5197 in Puntland, comprising 49.70% females and 50.30% males. The sample in Somaliland included 786 households: 360 in Burao and 426 in Odweyne district, 74.17% of the total were male-headed households and 25.83% were female-headed households. In Puntland, 23.48% of the households is female-headed and 76.52% male-headed in Puntland. The largest group of household livelihoods in Puntland is urban (29.81%), followed by Internally Displaced Persons (IDPs) with 28.07%. The pastoralists make up 15.03% of households, the fishing (riverine) community 6.96%; and agro-pastoralists 6.46% of the households. In contrast, in Somaliland the households interviewed were mainly pastoral (75.06%), followed by agro-pastoralists with 20.87% of the households. Urban, together with IDPs and riverine livelihoods, represent less than 5% of the livelihoods in Somaliland.

Food and non-food expenditures for households in Burao, Odweyne (Somaliland), Bossaso and Iskushuban (Puntland) are depicted in Figure 1. Average household expenditures on food and non-food items in Somaliland are lower than - almost half - those in Puntland, with the lowest expenditures in Burao.

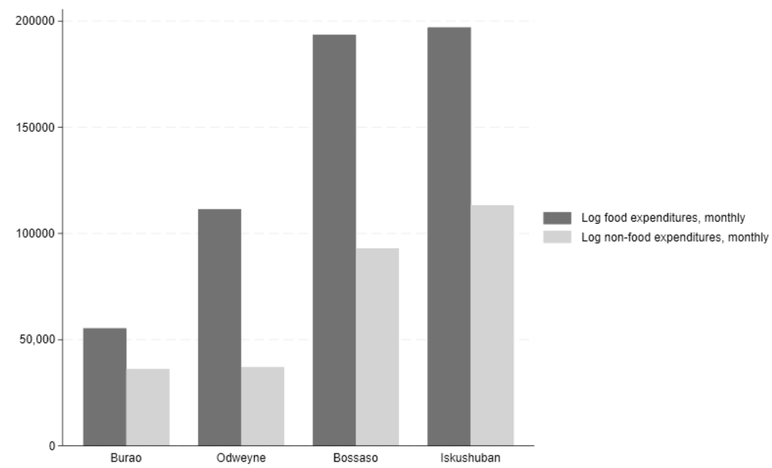

Figure 1: Food and non-food expenditures for households in the districts of Burao, Odweyne, Bossaso, Iskushuban. Based on household survey data (FAO, WFP, UNICEF).

Remarkably, food security scores[3] seem to differ less between districts (Figure 2). At the same time, reported aggregate shocks during the year preceding the interview, appear to follow the same spatial pattern as for food and non-food expenditures, with the lowest amount of shocks in Bossaso. Contrary to this, reported conflict (clashes), as well as aggregate shocks one (1) to two (2) years before the interview are highest in Iskushuban (Puntland). Income effects as a result of these shocks - $\Delta income1$ resulting from household shocks during the past 12 months and $\Delta income2$ resulting from household shocks during the past 13-24 months - are seemingly highest in Iskushuban for both shock variables and in Odweyne for shocks one to two years prior to the interview.

A few t-tests are run to test the significance of the differences in food consumption scores, food and non-food expenditures between the regions of Somaliland (13) and Puntland (16). Based on these tests, the hypothesis that said differences are significant cannot be rejected. This could be due to differences in income, food and non-food prices, or other declaring variables. A quick t-test on the proportion of income spent on food and non-food items reveals that these indicators remain significantly lower in Puntland. To disentangle the relationship between drought, conflict, and food security, these and other confounding factors need to be taken into account in the next section. In addition, there may be differing effects of conflict and drought for households in different food security situations.

[3]Food security scores are recalibrated between 0 and 1 in Figure 2, for the purpose of readability.

Figure 2: Household food security score, conflict exposure, past shocks and income change as the response to shocks. Based on household survey data (FAO, WFP, UNICEF).

Food consumption score

diff = mean(13) - mean(16) / t = -15.0091 / H0: diff =0 / Degrees of freedom = 1562

Ha: diff < 0 (p-val = 0.0000) / Ha: diff != 0 (p-val = 0.0000) / Ha: diff > 0 (Pr(T > t) = 1.0000)

Food expenditures

diff = mean(13) - mean(16) / t = -12.7274 / H0: diff =0 / Degrees of freedom = 1147

Ha: diff < 0 (p-val = 0.0000) / Ha: diff != 0 (p-val = 0.0000) / Ha: diff > 0 (p-val) = 1.0000)

Non-food expenditures

diff = mean(13) - mean(16) / t = -18.9545 / H0: diff =0 / Degrees of freedom = 1269

Ha: diff < 0 (p-val = 0.0000) / Ha: diff != 0 (p-val = 0.0000) / Ha: diff > 0 (Pr(T > t) = 1.0000)

Food expenditures proportion

diff = mean(13) - mean(16) / t = -1.5606 / H0: diff =0 / Degrees of freedom = 1147

Ha: diff < 0 (p-val = 0.0594) / Ha: diff != 0 (p-val = 0.1189) / Ha: diff > 0 (p-val = 0.9406)

Non-food expenditures proportion

diff = mean(13) - mean(16) / t = -3.5872 / H0: diff =0 / Degrees of freedom = 1269

Ha: diff < 0 (p-val = 0.0002) / Ha: diff != 0 (p-val = 0.0003) / Ha: diff > 0 (p-val = 0.9998)

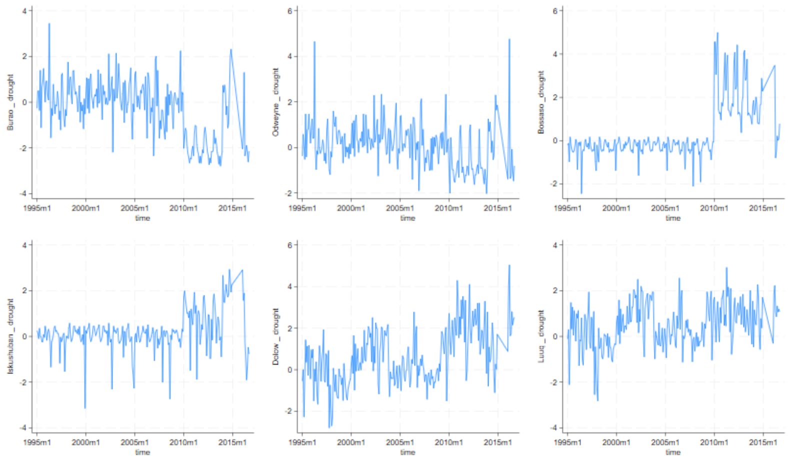

Figure 3: Evolution of drought by district (Bossaso, Iskushuban, Burao, Odweyne, Dolow and Luuq) between 1996 and 2014 (SPEI Global Drought Monitor, 2016).

The survey data are combined with monthly varying spatial drought data from the SPEI Global Drought Monitor. This information is merged to the household-level data, based on information on the district location of the household. The monthly SPEI1 index measures deviation (more than one standard deviation) from long-term normal rainfall for that particular month (Begueria et al., 2014). In this study, to simplify the interpretation of the results, the drought anomaly values are inversed and as such a higher value coincides with higher drought levels (or lower precipitation levels) than normal and vice versa. Months that are drier than normal have a positive drought anomaly and months that are wetter than normal have a negative drought anomaly. Figure 3 depicts, from left to right, the evolution of drought anomalies in the districts of Burao, Odweyne, Bossaso (above) and Iskushuban, Dolow, Luuq (below), where positive values coincide with periods drier than usual and negative values with periods wetter than usual. In what follows, these anomalies will be referred to as *drought*. In a few regressions, we will only look at positive drought anomalies or negative drought (high rainfall) anomalies. To account for potential endogeneity of the conflict-drought regressions, a SPEI-based drought shock variable is constructed, taking on value one if the deviation from the district average is bigger than the average deviation by district, and zero otherwise[4].

Furthermore, various control variables (used in a limited number of estimations) are obtained from the PRIOGRID database and aggregated at the district level. Unfortunately, there is no information on the exact location of the household given that the spatial coordinates of the household are not

[4]This entails a deviation from the average drought anomaly by district.

available. *Capdist* captures the distance to the national capital from the center of the district, indicating the remoteness of the district (Weidmann et al., 2010). This is an important control variable, since nowadays the majority of poor and food insecure people still live in remote areas. Lnpop measures the log of the district-specific population and is calculated departing from 'Gridded Population of the World' data. Population estimates are available for 1990, 1995, 2000, and 2005 and the remaining data points are calculated based on interpolation. Finally, history of conflict is controlled for by taking into account the total number of violent events lagged by one or two time periods (12 months or 24 months).

We also control for a number of other variables measured at the household level, since they may affect a household's food security situation as well: household size (hhsize), the log of monthly aggregate household income (loghhincome), the log of formal and informal transfers received, and a set of variables depicting the share of total household income derived from agricultural wage or non-agricultural wage employment, crop or livestock production, and self-employed activities (shagrwage, shnonagrwage, shcrop, shlivestock, shselfemp). We also include information on the distance to the nearest health facility (distance health), the nearest primary water source (distance water) and nearest market (distance market). The latter information could also serve as a measure of proximity to urban areas and/or market access. Furthermore, a dummy variable indicating whether the household is headed by a female (femhead) is added to the regression. The latter is an important determinant of household wealth, given the fact that female headed households are comparatively income-poor (Buvinic and Gupta, 1997; Fafchamps and Quisumbing, 2002). Finally, education of the household head is taken into account (eduhead). Education is an important tool to reduce poverty and to fight food insecurity, as it creates better future income opportunities by targeting illiteracy and the lack of numeracy (FAO, 2005).

To measure the effect of drought and conflict on food security that is not attributable to price effects (Arezki and Brückner, 2011; Bellemare, 2011; Raleigh et al., 2015, Maystadt and Ecker, 2014), we control for price differences between the four districts in a number of regressions by including a price index approximating the (food) price level in 2014. The latter is constructed based on survey price information on (production) prices for crops and livestock byproducts (mainly milk), corrected by applying consumption score weights (WFP, 2023). Over a third of the households in this study are livestock or crop producers increasing the relevance of this price index. In addition, income shocks include information on food price shocks and input price shocks, which is controlled for[5].

Next, we look at the effect of conflict and (self-reported) drought shocks on food security outcomes in the region of Gedo, based on another household survey. This panel dataset is the result of a household impact evaluation, carried out in April 2013 (baseline) and April 2015 (midline) in the districts of Dolow and Luuq. The impact evaluation was set up to evaluate and improve the conditions of households in Somalia, based on an evaluation of the Joint Resilience Strategy (JRS) programme. This programme was launched in 2012, as a joint effort from FAO, WFP and UNICEF. One of the programme's main purposes was to improve household income generating capacity through a set of interventions[6]. Another objective of the programme was improved access to infrastructures such as waste disposal facilities, safe water and sanitary provisions (FAO, 2016).

Households in Dolow received the treatment in 2013, while households in Luuq did not (control group). The first part of the analysis in Gedo is limited to the set of pre-treatment and control households in Dolow and Luuq, to avoid confounding the analysis by the programme treatment effect. In a second set of regressions, we take into account the treatment effect and look at the baseline (2013) and midline (2015). We again look at the effect of conflict and drought on food security outcomes, namely the food consumption score (fcs), food expenditures (foodexp), and non-food expenditures (nonfood exp). To measure the effect of conflict, data on self-reported conflict shocks 12 months prior to the interview is used. Drought anomalies, based on data the Standardized Precipitation and Evapotranspiration Index SPEI1 from the SPEI Global Drought Monitor, are measured at the start of the rainy season (before the interviews took place). Furthermore, to account for potential endogeneity of the conflict-drought regressions, again a SPEI-based drought shock variable is employed, which takes value one if the deviation from the district average is bigger than the average deviation by district, and zero otherwise, as well as household survey data on self-reported drought shocks. Finally, the same set of household control variables is added to the regression as for households in Somaliland and Puntland.

Pre- and post-treatment household poverty, vulnerability and food consumption indicators in

[5] Price information is available for non-food items but it is difficult to get information on the quality, quantity and luxury status - even within categories - out of the survey data. However, controlling for the food price level is relevant through budget allocation dynamics.

[6] Income increases derived from livestock have been obtained through project implementations e.g. the 'Cash for Work' projects, through rehabilitations of physical market structures and the provision of training lessons to communities. Improvement of productive assets are attributed to a multiplication of cultivated land area by factor 3.6. and to increased livestock selling revenues.

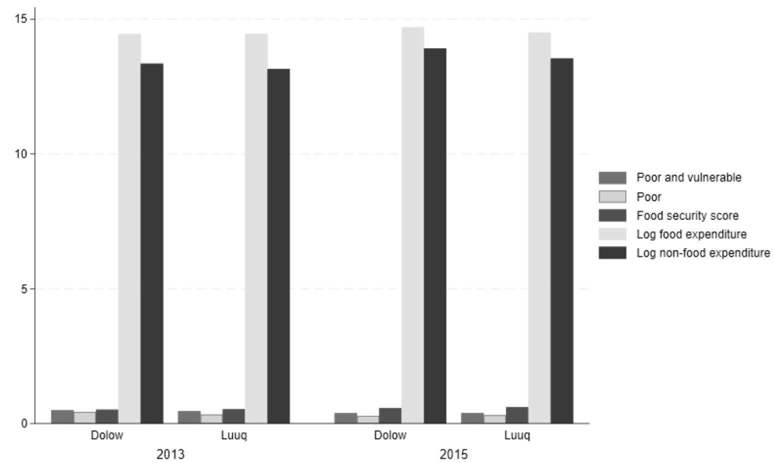

Figure 4: Household poverty, vulnerability, food comsumption scores and log monthly food and non-food expenditures in Dolow and Luuq in 2013 and 2015 - Based on household survey data (FAO, WFP, UNICEF).

Dolow and Luuq are shown in Figure 4, together with their monthly expenditures for food and non-food items. Households in Dolow and Luuq are relatively comparable when it comes to absolute food and non-food expenditures (not shown) but appear to differ more in their proportional food and non-food expenses and their food security scores and poverty indicators. Nevertheless, in order to obtain estimates for the changes in indicators that are attributable to the programme or to other (confounding) factors, the treatment effect needs to be taken into account based on a counter-factual approach.

Table 1 summarizes the descriptive statistics of the regression variables. The majority of households have food consumption scores above 42 (food secure, category 3) and belong to pastoral, traditionally livestock herders, and urban livelihoods. Interestingly, urban households have a higher food consumption score (about 18%) compared to pastoral households. At the same time, urban households seem to have reported lower threats of conflict (12% lower) between clans than pastoral households[7]. Thus, living in urban areas seems to be associated with higher food consumption scores, but lower reported threats of conflict, when compared to pastoral households. This result may be driven by differences in household income - including received transfers in cash or in kind for Togdheer and Bari but excluding them for Gedo - market access, food prices, etc. Controlling for these factors will be essential in determining the causal relationship between conflict and food consumption scores

[7]Summary statistics decomposed by livelihood are not included in Table 1.

at the household level[8].

3.2 Empirical strategy

Firstly, we examine the effect of drought and conflict exposure on the food consumption score (fcs) of the household. The food consumption score captures the dietary diversity and nutrient value of food consumed by households. It is calculated from the types of foods and the frequency with which they are consumed over a seven day period (FAO, 2016), reported by the respondent. Furthermore, we examine the effect of drought and conflict exposure on food expenditures ($foodexp$) and non-food expenditures ($nonfoodexp$) of the household[9]. The amount a household spends on food and non-food is an indicator for household food security. However, in times of distress, the household will more likely cut down on the expenses on non-food items first, since food consumption is a more basic need than non-food consumption. Therefore, it is interesting to look at how both variables behave under conflict and drought exposure.

In more general terms we run the following regressions across sections in a single time period t, with the drought variable lagged one month (t-1/12):

$$FoodSecurity_{jt} = \alpha + \beta_1 Drought_{it-1} + \beta_2 X_{jt} + \mu_k + \epsilon_j, \tag{1}$$

to measure the effect of drought on food security. We also examine the effect of drought on conflict and the effect of conflict on food security:

$$Conflict_{jt} = \alpha + \beta_1 Drought_{it-1/12} + \beta_2 X_{jt} + \mu_k + \epsilon_j, \tag{2}$$

$$FoodSecurity_{jt} = \alpha + \beta_1 Conflict_{jt} + \beta_2 X_{jt} + \mu_k + \epsilon_j, \tag{3}$$

We then look at the effect of conflict exposure in daily life on food security when drought is added as a control variable:

$$FoodSecurity_{jt} = \alpha + \beta_1 Conflict_{jt} + \beta_2 Drought_{it-1/12} + \beta_3 X_{jt} + \mu_k + \epsilon_j, \tag{4}$$

[8] A small number of households reported a total food consumption score of zero in the week prior to the interview.

[9] Based on recollection of expenditures during a week preceding the interview for food and one month for non-food items.

For households in Dolow and Luuq, the following equation is tested to take into account the treatment effect:

$$FoodSecurity_{jt} = \alpha + \beta_1 Treatment_{jt} + + \beta_2 Conflict_{jt-1} + \beta_3 Drought_{it-1} + \beta_4 X_{jt} + \mu_k + \eta_t + \epsilon_j, \quad (5)$$

where the subscripts $i = 1, ..., C$; $k = 1, ..., K$; $j = 1, \dots, J$ and $t = 1, .., T$ denote respectively district, region, household, and time; $FoodSecurity_{it}$ the food security indicator; $Conflict_{it}$ the conflict exposure variable one month prior to the survey, and $Drought_{it-1/12}$ the drought value measured one month prior to the survey or a self-reported drought shock $DroughtShock_{it-1/12}$ during the 12 months preceding the interview. X_{it} is a vector of controls, μ_k are region fixed effects and ϵ_{jt} is the error term. The majority of estimations are across sections and are run using ols regression and standard errors are clustered at the district level. Other estimation methods used in this analysis will be discussed in section 5. Time fixed effects η_t are included in the panel regressions using the difference in difference estimator.

4 Discussion of results

We conduct this analysis on the household level and perform a comparative analysis between the regions where the surveys took place. The advantage of different aggregation levels is that certain effects that may cancel out on a certain level of analysis can be picked up on a different level. In addition, the household level analysis offers more details on household characteristics, health outcomes, direct and indirect transfers received, etc., which we can account for. Furthermore, we also exploit the available information on the type of livelihood to complement our analysis to verify whether the type of livelihood matters for the obtained results.

To measure the food security status of the household, we use different food security outcomes, namely the imputed food consumption score, based on food consumption measured over 7 days prior to the interview, food expenditures, and non-food expenditures. These variables are directly related to food prices, since prices will determine the household purchasing power. As mentioned before, studying expenditures on non-food items may be interesting, because cutting expenses on non-food items may serve as a household coping strategy in times of hardships (Christiaensen and Sarris, 2007;

D'Souza and Jolliffe, 2012). Reducing expenditure on non-food items is a less costly coping mechanism and therefore likely to be preferred by households who can afford it over reducing food expenditures (Christiaensen and Sarris, 2007). The household dataset allows us to distinguish between urban and pastoral livelihoods (the biggest groups in the dataset), next to agro-pastoral, IDP, and riverine livelihoods.

We start by running a few bivariate regressions of drought on reported conflict exposure in daily life (Table 2). It seems that drought has a positive triggering effect on conflict exposure. When including both drought and temperature and later a set of district and household control variables in the regression equation, the increasing drought effect remains significant. Furthermore, controlling for the amount of agricultural shocks and income shocks over the past year reveals a negative effect of income shocks on conflict exposure. Likewise, a negative effect on conflict exposure from income changes resulting from last year's shocks ($\Delta income1$) becomes apparent[10]. Shocks from 13 to 24 months prior to the interview and the resulting income changes seem to have had little effect on conflict exposure.

The effect of drought on food security indicators is listed in Table 3. Overall, drought seems to have an increasing effect on food security indicators (food consumption scores, food and non-food expenditures) while temperature has a significant negative effect. Income has the expected positive effect on food and non-food expenditures and the income share stemming from livestock and self-employed activities in general a negative one. Overall, having a female household head impacts food and non-food expenditures negatively. Even though caution is due when interpreting these results, the positive sign of the drought variable for food consumption scores could be explained by 'alleviating' drought effects, more particularly in areas prone to excessive rainfall[11].

Table 4 shows the drought - food security regression outcomes per livelihood. Drought seems to have negative effects on food consumption scores and expenditures for IDP livelihoods and to a lesser degree pastoral, but positive effects in urban, riverine and agro-pastoral zones. More specifically in this analysis, areas prone to excessive rainfall are predominantly located in the region of Togdheer (Somaliland).

[10] This negative effect remains when including last year's aggregate shocks in the regression equation instead of the aforementioned categories separately.

[11] We do not include the quadratic drought term in the remainder of estimations, due to data limitations and potential collinearity with the drought variable.

Table 5 shows the results of the regressions of the conflict exposure measures on the food security outcomes. We find a positive effect of conflict exposure on food consumption scores and food expenditures and a negative insignificant effect on non-food expenditures. The latter is in line with the 'non-food coping strategy hypothesis', where households experiencing shocks lower their consumption of non-food items as a coping mechanism (amongst other possible coping mechanisms) (Christiaensen and Sarris, 2007; D'Souza and Jolliffe, 2012). Furthermore, income has the expected increasing effect on expenditures while the income shares for livestock and self-employed activities come in negatively again. Next, Table 6 shows the results of the effect of conflict on the food security indicators, when including the drought variable in the model. The results remain largely the same as in Table 5, and the effect of conflict very similar when estimated with the continuous drought variable or the drought shock variable. The drought shock variable is a dummy variable taking value one for drought anomalies differing more than one standard deviation from the average drought anomaly by district. Drought has positive but insignificant effects on food consumption scores and food expenditures, while drought shocks have a strong significant negative effect hereon. This could be explained by the shock effect of the severe climatic condition, suggesting a non-linear relation between drought and food security indicators as well. By region, strong positive drought effects are found in Togdheer, while significant positive conflict effects are found in Bari (Table 7), similar to those shown in Table 6. To verify whether the results are rather related to absence or presence of drought rather than rainfall, separate regressions are run (Table 8), where increasing values now coincide with higher drought (column 1-3) or rainfall (column 4-6). In Bari, a region less prone to excessive drought or rainfall, positive conflict and drought effects are found and in Togdheer strong negative rainfall effects are revealed[12] while conflict effects are insignificant[13].

We now examine the hypothesis that drought and conflict affect food and non-food expenditures differently depending on the food security status of the household, namely their food consumption score. Food consumption scores are subdivided in three categories according to WFP developed standards for diets with daily consumption of oil and sugar (WFP, 2023) where the starting points of category 2 and 3 start above 28 and 42 instead of 28.5 and 42.5. Food consumption scores below or equal to the threshold of 28 belong to $Category1$, between 28 and 42 to $Category2$ and strictly above

[12]This is in line with the drought shock effect shown in Table 7, which is almost entirely related to heavy rainfall ('low (negative) levels of drought').

[13]Regressions limited to rainfall anomalies for Bari districts and to drought anomalies in Togdheer districts have no observations.

42 to $Category3$. As mentioned before, regressions are run using a linear SEM technique, using the aforementioned categories as grouping variable in the maximum likelihood estimations.

Methodologically, we run the following estimations, where γ denotes the food consumption category (1, 2, or 3) and the subscripts $i = 1, ..., C$; $j = 1, \ldots, J$ and $t = 1, .., T$ denote respectively district, household, and time:

$$FoodSecurity_{jt}|fcs_{\gamma} = \begin{bmatrix} \alpha_{\gamma} + \beta_{1\gamma}Conflict_{jt} + \beta_{2\gamma}Drought_{it-1/12} + \beta_{3\gamma}X_{jt} + \epsilon_{j\gamma} \\ \alpha_{\gamma} + \beta_{1\gamma}Conflict_{jt} + \beta_{2\gamma}Drought_{it-1/12} + \beta_{3\gamma}X_{jt} + \epsilon_{j\gamma} \\ \alpha_{\gamma} + \beta_{1\gamma}Conflict_{jt} + \beta_{2\gamma}Drought_{it-1/12} + \beta_{3\gamma}X_{jt} + \epsilon_{j\gamma} \end{bmatrix} \tag{6}$$

The results presented in Table 9 indicate a strong effect of drought on food expenditures, in absolute figures and as a proportion of income for food secure households. For food insecure households, food expenditures as a proportion of income are positively affected by drought as well but not in absolute numbers. This may point at a drought-related decrease of income which may be an indication of a potential poverty trap. Drought-triggered income effects for food insecure households may keep them in a difficult situation or even aggravate it.

Conflict exposure on the other hand has a strong increasing effect on (absolute) food expenditures for food insecure households, while the effect on non-food expenditures is negative for borderline secure households. To compare, conflict seemed to have an increasing effect on food consumption scores and food-expenditures and an insignificant negative effect on non-food expenditures for the average household in Togdheer and Bari. Furthermore, distance to the primary water source has the biggest decreasing effect on food expenditures for food insecure households and agricultural shocks have significant effects on their absolute food expenditures. The income share of livestock sales however affects absolute and proportional food expenditures and absolute non-food expenditures significantly for borderline secure households. For food secure households, the share of livestock sales is important for food expenditures and proportional non-food expenditures.

We now turn to the region of Gedo, where a midterm evaluation took place in 2015, and a baseline survey in 2013. Table 10 shows the results of the regressions for pre-treatment households in Dolow and Luuq, in 2013. In Gedo, we find similar increasing effects of conflict shocks on food consumption scores. When looking at the median of food and non-food expenditures as a proportion of income by livelihood, significant negative conflict effects are found for both indicators. However, no significant drought shock effect is encountered. Having a female household head impacts proportional expenditures negatively, but leads to higher food consumption scores. Nevertheless, in contrast with the results from the cross-sectional analysis in Togdheer and Bari, the income share of self-employed activities has a positive effect on non-food expenditures.

Finally, Table 11 displays the estimation results of the programme effects on food security indicators, using a difference-in-difference approach which includes both baseline and midline data. The programme was targeted at improving household income generating capacity through a set of interventions. This analysis reveals a significant increasing effect on household non-food expenditures resulting from the programme, as an absolute figure and as a proportion of income. By controlling for the treatment effect, the effect of the exogenous drought variable on food security outcomes becomes visible. The positive drought effect on food consumption scores (fcs) disappears, while the negative effect on absolute and median proportional non-food expenditures (by livelihood) becomes apparent. This finding is in accordance with the non-food coping strategy hypothesis, which applies when households are faced with distressing (budget) situations. The latter could be explained by the use of a two year panel which us allows to control better for unobserved household heterogeneity, as opposed to the cross-sectional analysis of the Somaliland and Puntland survey data where the effect on non-food expenditures was less conclusive (Table 3).

To extend the analysis, we now examine the effect of drought on the prevalence of waterborne diseases (diarrhoea, typhoid). The incidence of both diseases is measured at the household level as a dummy variable, taking a value between one to three whenever one or several the household members was suffering from the respective diseases in the two weeks prior to the survey or zero otherwise (four categories). Results are estimated using ols estimation[14]. Interestingly, we find a negative drought effect on both typhoid and diarrhoea (insignificant), presented in Table 12, column 1-2)[15] This indicates that drought could lead to a lower incidence of waterborne diseases. This finding is important, since diarrhoea remains one of the most important causes of under-5-mortality in Somalia. Battling this disease, especially in riverine regions, is of great importance. Indirectly, lack of access to

[14]Ordered logit leads to convergence problems and may not be the best estimation method.

[15]Running the regressions with drought anomalies only confirms that the estimation results are drought-based. There are however not enough observations for obtaining rainfall-based estimates to measure opposite effect.

adequate food, both qualitatively as quantitatively, will deteriorate an individual's health condition as well. By livelihood, results are less conclusive for diarrhoea where no significant effect is found, except for strong negative drought effects in riverine areas (Table 10, column 3-12). Results by livelihood for typhoid show strong effects in pastoral areas, whereto the majority of households in this study belong, and in riverine areas.

5 Conclusion

In this study, we look at the impact of conflict exposure and drought on various food security measures based on data from two household-level surveys in Somaliland and Puntland (2014) and an impact evaluation in Gedo (2013-2015) - the result of joint efforts from FAO, WFP and UNICEF. Somalia is a particularly interesting country to study these interlinked effects given the protracted situation of conflict and a food security situation that remains challenging in a climatic environment with periods of severe drought and excessive rainfall that poses threats on food security and other development outcomes.

One of the challenges of this analysis is the potential problem of endogeneity between food security, drought and conflict. The conflict variable measures exposure to conflict (clashes) in daily life, reported by the household, and may be subject to reversed causality. Nevertheless, the conflict measure takes into account past events as well to some extent, accounting for endogeneity. The use of drought shocks - calculated based on the deviation from monthly SPEI anomaly values or self-reported drought shocks one month prior to the interview in Gedo - furthermore account for endogeneity between drought and conflict.

In contrast with evidence from a Somalian case-study conducted at the district level (Sneyers, 2025), we do find evidence that drought triggers conflict, suggesting that conflict analysis at a lower aggregation level does reveal findings that we may not pick up on at a higher level of analysis. For the average household in Togdheer (Somaliland) and Bari (Puntland) conflict appears to have an increasing effect on food consumption scores and food-expenditures but an insignificant decreasing effect on non-food expenditures while in Gedo positive conflict shock effects on food consumption scores and negative effects on the livelihood median of food and non-food expenditures as a proportion of income are encountered. Furthermore, we find an increasing effect of drought on food security consumption scores and food expenditures. Using drought shocks based on deviation from average district anomalies, a strong negative effect is found on the latter which could point at a non-linear relation between drought and food security outcomes. Moreover, rainfall-based anomalies strongly decrease food consumption scores and food expenditures in Togdheer whereas drought increases non-food expenditures in Bari, a region less prone to excessive drought or rainfall. Nevertheless, using a panel dataset obtained from a household survey that took place in Dolow and Luuq (Gedo region), a significant negative effect of drought on non-food expenditures is revealed, confirming the literature that households decrease non-food expenditures as a coping strategy when confronted with distressing situations.

We test the hypothesis that drought and conflict affect food and non-food expenditures differently depending on the food security status of the household, namely their food consumption score. Effectively, conflict exposure has a strong increasing effect on food expenditures for food insecure households, while non-food expenditures are negatively affected for borderline secure households. Drought has differing effects on food expenditures for food insecure and food secure households. Food expenditures in absolute figures and as a proportion of income are positively affected for food secure households while for food insecure households income effects may be present as food expenditures are only affected as a proportion of income but not in absolute numbers. This may indicate a 'food insecurity trap', leading food insecure household to remain in a difficult situation or even towards aggravating situations.

Furthermore, our results confirm the hypothesis that more than average drought leads to a lower incidence of typhoid for the majority of households and diarrhoea for riverine and pastoral households. Waterborne disease infection could be a channel through which rainfall or drought affect food security in an indirect way, confirming the close link between food security and health outcomes, while poor food security outcomes on the other hand will inevitably result in poorer resistance to infections. The policy implication of this finding is that battling and preventing these diseases, especially in riverine regions, is of great importance. This holds even stronger in the case of diarrhoea, which remains one of the most important causes of under-5-mortality in Somalia.

Findings that were not visible or averaged out at higher levels of analysis are revealed at the level of the household in this study, or hold for specific regions only, for urban vs pastoral households, or for food insecure vs (borderline) secure households. This distinction increases insights in the linkages between conflict, food security and drought and their distribution across the country. This in turn may result in policy design, decision-making and development programmes to be better targeted for improving livelihoods and food security of vulnerable populations.

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	Obs	mean	sd	min	max
fcs	1564	55.737	18.838	0	112
fcs secure	1564	.826	.379	0	1
fcs bdline	1564	.062	.241	0	1
fcs insecure	1564	.119	.315	0	1
log food exp	1149	10.638	2.975	0	14.531
log non-food exp	1271	10.419	1.617	0	12.903
conflict	1570	.241	.730	0	3
drought	1591	.873	1.241	-.542	2.270
shock drought	1591	2.470	2.501	0	5
log formal transfer	1591	3.112	5.529	0	16.148
log informal transfer	1591	2.045	4.854	0	17.687
femhead (ratio)	1591	.246	.431	0	1
hhsize	1591	6.233	2.726	1	17
educhead	1417	2.084	3.372	0	13
log hhincome (m)	1568	11.532	4.613	0	17.759
distance market	1577	18.805	23.747	0	130
distance health	1586	73.108	101.586	0	480
distance water	1509	21.229	24.967	0	180
shagrwage	1462	.003	.051	0	.979
shnonagrwage	1454	.223	.382	0	1
shcrop	1462	.024	.123	0	1
shlivestock	1415	.442	.431	0	1
shselfemp	1427	.141	.305	0	1
shtransfer	1460	.100	.244	0	1
agr shocks	1591	.450	.802	0	5
weather shocks	1591	.421	.646	0	3
income shocks	1591	.464	.785	0	4
social shocks	1591	.127	.374	0	2
shock lastyr	1591	1.041	1.393	0	8
shocks past	1501	.569	1.102	0	7
Dincome1	1501	-1.195	1.419	-8	5
Dincome2	1501	-.497	1.057	-6	2
price index	1591	24190.83	20317.15	8060	57016.23
urban	259	1	0	1	1
IDP	237	1	0	1	1
pastoral	711	1	0	1	1
agropastoral	216	1	0	1	1
riverine	58	1	0	1	1
diarrhoea hh	1547	.562	.515	0	3
typhoid hh	1547	.412	.507	0	3
fcs	1136	62.024	23.896	0	112
log food expenditures	1,136	14.546	2.820	0	16.377
log nonfood expenditures	1,136	13.546	2.210	0	17.994
conflict shock	567	.009	.094	0	1
drought shock	567	.866	.341	0	1
drought	1136	.790	.403	.198	1.273
log formal transfer	1,136	5.725	6.005	0	17.758
log informal transfer	1,136	1.320	3.985	0	17.845
femhead	1134	.210	.407	0	1
hhsize	1134	7.192	2.552	1	17
educhead	1134	.923	2.247	0	14
log hhincome (m)	1136	12.727	3.107	0	18.103
distance market	1127	.665	.472	0	1
distance health	1127	.653	.476	0	1
distance water	1127	.388	.487	0	1
shagr wage	1082	.020	.116	0	1
shcrop	1081	.082	.217	0	1
shlivestock	1070	.378	.374	0	1
shselfemp	1073	.099	.253	0	1
shtransfer	1074	.110	.231	0	1
weather shocks	567	1.083	.559	0	3
agr shocks	567	.665	.931	0	5
income shocks	567	1.208113	.893	0	4
social shocks	567	.065	.274	0	2

Table 1: Summary statistics

	est1	est2	est3	est4	est5	est6	est7	est8	est9
	b/se	b/se	b/se	b/se	b/se	b/se	b/se	b/se	b/se
drought	0.388**	0.105	2.889***	0.582**	2.916***	0.624***	3.917***	4.144***	4.185***
	(0.163)	(0.045)	(0.144)	(0.133)	(0.054)	(0.000)	(0.300)	(0.309)	(0.343)
temp					0.122***	0.120***	0.338**	0.341**	0.479***
					(0.006)	(0.000)	(0.131)	(0.155)	(0.148)
femhead							-0.154	-0.047	-0.048
							(0.329)	(0.343)	(0.353)
hhsize							0.068***	0.067**	0.070**
							(0.024)	(0.027)	(0.030)
educhead							-0.039	-0.027	-0.026
							(0.029)	(0.030)	(0.027)
log hhincome							-0.045***	-0.034*	-0.037**
							(0.014)	(0.018)	(0.017)
distance market							-0.004	-0.003	-0.002
							(0.004)	(0.005)	(0.004)
distance health							-0.002	-0.002	-0.002
							(0.002)	(0.002)	(0.002)
distance water							-0.020	-0.036*	-0.037*
							(0.018)	(0.021)	(0.022)
income shocks								-0.262***	-0.428***
								(0.092)	(0.084)
agr shocks								0.317**	0.046
								(0.131)	(0.093)
shocks past								-0.172	-0.420
								(0.200)	(0.413)
Dincome1									-0.338***
									(0.084)
Dincome2									-0.186
									(0.268)
C		0.148**		0.339**		-2.954***			
		(0.031)		(0.069)		(0.000)			
/									
cut1	2.497***		1.569***		4.893***		9.577***	9.482**	13.429***
	(0.289)		(0.043)		(0.122)		(3.554)	(4.471)	(4.155)
cut2	2.824***		1.903***		5.227***		9.954***	9.881**	13.840***
	(0.262)		(0.253)		(0.368)		(3.525)	(4.610)	(4.183)
cut3	3.477***		2.566***		5.890***		10.646***	10.576**	14.547***
	(0.260)		(0.244)		(0.368)		(3.537)	(4.640)	(4.226)
R^2	0.023		0.048		0.048		0.074	0.102	0.115
N	1570	1570	1570	1570	1570	1570	1294	1230	1230
Region FE	no	no	yes	yes	yes	yes	yes	yes	yes
Method	OLOGIT	OLS	OLOGIT	OLS	OLOGIT	OLS	OLOGIT	OLOGIT	OLOGIT

Table 2: Conflict exposure / Drought

Notes. Dep var conflict exposure. Regressions are run with and without region **dummies (as indicated)**, using ols and ologit regression with standard errors clustered at the district level. The drought variable is lagged 1 month. * p<.10, ** p<.05, *** p<.01

	est1	est2	est3	est4	est5	est6	est7	est8	est9
	b/se	b/se	b/se	b/se	b/se	b/se	b/se	b/se	b/se
drought	12.167***	0.219***	0.225***	6.088***	0.288**	0.253*	6.103**	0.493***	0.167
	(0.000)	(0.000)	(0.000)	(1.018)	(0.076)	(0.080)	(1.454)	(0.069)	(0.101)
temp	-4.045***	-1.117***	-0.136***	-1.642	-0.534**	0.230	-2.798	-0.416	0.217
	(0.000)	(0.000)	(0.000)	(1.783)	(0.108)	(0.191)	(2.332)	(0.211)	(0.228)
log formal transfer				0.020	0.018	-0.021	0.048	0.022	-0.022
				(0.047)	(0.022)	(0.019)	(0.054)	(0.029)	(0.019)
log informal transfer				-0.134	-0.038	-0.007	-0.095	-0.040	-0.002
				(0.147)	(0.025)	(0.004)	(0.159)	(0.025)	(0.004)
femhead				-0.795	-0.298	-0.223*	-0.900**	-0.336	-0.242*
				(0.383)	(0.680)	(0.092)	(0.270)	(0.673)	(0.099)
hhsize				0.359	0.054**	0.026	0.311	0.051	0.024
				(0.293)	(0.015)	(0.012)	(0.241)	(0.024)	(0.014)
educhead				0.396	-0.020	0.006	0.474	-0.014	-0.005
				(0.280)	(0.032)	(0.023)	(0.317)	(0.027)	(0.024)
log hhincome				0.466	0.345*	0.435*	0.391	0.344	0.434*
				(0.420)	(0.146)	(0.168)	(0.420)	(0.153)	(0.171)
price index				0.000	0.000**	0.000	0.000	0.000**	-0.000
				(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
distance market				-0.019	-0.005*	-0.000	-0.019	-0.006*	-0.001
				(0.021)	(0.002)	(0.001)	(0.022)	(0.002)	(0.000)
distance health				-0.002	0.001	0.001*	-0.000	0.001	0.001*
				(0.004)	(0.000)	(0.000)	(0.005)	(0.001)	(0.000)
distance water				-0.041	-0.007	-0.001	-0.029*	-0.009	-0.000
				(0.019)	(0.007)	(0.001)	(0.010)	(0.008)	(0.002)
shagr wage				5.640	-0.120	-0.196	6.615	-0.513	-0.200
				(10.960)	(0.457)	(1.034)	(10.392)	(0.556)	(1.166)
shnonagr wage				1.547	-1.206**	-0.380	1.896	-1.370**	-0.454
				(5.123)	(0.293)	(0.359)	(5.636)	(0.284)	(0.375)
shcrop				-6.393	-1.741	-0.483*	-5.331	-1.616	-0.392
				(6.042)	(1.192)	(0.159)	(7.441)	(1.053)	(0.234)
shlivestock				2.158	-2.174**	-0.951*	3.575	-2.251**	-0.968*
				(2.332)	(0.508)	(0.346)	(2.646)	(0.531)	(0.409)
shselfemp				-1.779	-1.771*	-0.882***	-0.446	-2.012**	-0.983**
				(3.275)	(0.703)	(0.137)	(4.271)	(0.607)	(0.228)
agr shocks							-0.828	-0.406	-0.037
							(0.768)	(0.195)	(0.082)
income shocks							-1.377	-0.010	0.183
							(1.316)	(0.357)	(0.095)
social shocks							-0.399	-0.219	0.021
							(1.606)	(0.156)	(0.069)
shocks past							-0.366*	0.061	0.020
							(0.125)	(0.129)	(0.017)
C	164.520***	40.784***	13.853***	85.425	21.592**	-1.288	117.534	18.433*	-0.850
	(0.000)	(0.000)	(0.000)	(50.827)	(4.742)	(6.399)	(66.110)	(7.436)	(7.595)
R^2	0.159	0.080	0.067	0.184	0.133	0.219	0.185	0.141	0.215
N	1564	1149	1271	1108	892	992	1056	848	945
Region dummies	yes	yes	yes	yes	yes	yes	yes	yes	yes
Dep. var:	fcs	food exp	nonfood exp	fcs	food exp	nonfood exp	fcs	food exp	nonfood exp

Table 3: Drought / Food Security

Notes. Dep var imputed food consumption score, food expenditures, and non-food expenditures. Results are depicted by livelihood (urban and pastoral livelihoods). Regressions are run with region dummies, using ols regression with standard errors clustered at the district level. * p<.10, ** p<.05, *** p<.01

	est1	est2	est3	est4	est5	est6	est7	est8	est9	est10	est11	est12	est13	est14	est15
	b/se	b/se	b/se	b/se	b/se	b/se	b/se	b/se	b/se	b/se	b/se	b/se	b/se	b/se	b/se
drought	7.871***	1.057**	1.160***	-61.891***	-8.824***	-1.756**	-1.915	-3.302*	-0.705*	28.357***	0.093	0.695*	41.527**	5.520	-2.931*
	(0.565)	(0.256)	(0.138)	(5.439)	(0.452)	(0.226)	(1.370)	(1.059)	(0.227)	(1.129)	(0.164)	(0.235)	(4.420)	(5.008)	(0.820)
temp	-8.772**	1.114*	1.786***				-15.444***	-7.184**	-1.566**	31.124***	-0.322	1.769*			
	(1.870)	(0.380)	(0.268)				(2.505)	(2.122)	(0.399)	(1.347)	(0.407)	(0.632)			
log formal transfer	0.144***	-0.004	-0.032**	-0.133*	0.009***	-0.019**	0.221**	0.059**	-0.013	-0.561*	0.024	0.004	0.267	0.267	-0.156
	(0.009)	(0.014)	(0.006)	(0.044)	(0.000)	(0.002)	(0.044)	(0.012)	(0.014)	(0.210)	(0.041)	(0.021)	(0.115)	(0.306)	(0.110)
log informal transfer	-0.588***	-0.010	-0.002	0.381***	0.054***	-0.006	-0.223**	-0.057	-0.010	0.021	-0.014	0.040	4.608	0.000	0.000
	(0.026)	(0.019)	(0.010)	(0.030)	(0.001)	(0.002)	(0.042)	(0.040)	(0.011)	(0.335)	(0.022)	(0.018)	(3.345)	(.)	(.)
femhead	3.329**	-0.066	0.053	0.417	0.062	-0.198***	-0.675	-0.882	-0.225	-1.873	0.614*	-0.071	-5.173	-0.863	-1.010*
	(0.865)	(0.407)	(0.445)	(0.209)	(0.021)	(0.008)	(0.357)	(0.864)	(0.145)	(0.859)	(0.195)	(0.209)	(4.328)	(2.293)	(0.260)
hhsize	-0.354**	-0.042	-0.018	0.257	0.154***	0.028	0.165	0.054**	0.007	0.220	-0.104**	-0.030	0.759	-0.279	0.296**
	(0.070)	(0.034)	(0.030)	(0.195)	(0.000)	(0.015)	(0.191)	(0.011)	(0.035)	(0.341)	(0.031)	(0.079)	(1.348)	(0.510)	(0.048)
educhead	0.358**	0.006	-0.028	0.275	0.063***	0.002	0.411**	-0.047	0.026	-0.022	-0.080	-0.030	-0.945**	0.651*	0.051
	(0.072)	(0.015)	(0.017)	(0.202)	(0.001)	(0.016)	(0.113)	(0.022)	(0.019)	(0.420)	(0.056)	(0.039)	(0.178)	(0.189)	(0.037)
totincome1	1.351***	0.744***	0.785***	-0.427	0.101***	0.347**	0.810**	0.232	0.268	0.293	0.094	0.598	1.986	1.733	-0.056
	(0.081)	(0.099)	(0.033)	(0.404)	(0.002)	(0.039)	(0.226)	(0.117)	(0.149)	(0.875)	(0.264)	(0.364)	(4.731)	(0.975)	(0.686)
price index	0.000**	0.000*	0.000***	-0.016***	-0.002***	-0.000**	-0.000**	-0.000**	-0.000**	0.001***	-0.000*	0.000***	0.001*	0.000	-0.000***
	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
distance market	-0.252	-0.010*	-0.017	-0.110**	0.002***	-0.000	-0.005	-0.013	-0.000	-0.061	0.003	-0.005	1.661**	0.310***	0.147*
	(0.184)	(0.004)	(0.010)	(0.017)	(0.000)	(0.001)	(0.015)	(0.007)	(0.001)	(0.030)	(0.005)	(0.003)	(0.225)	(0.006)	(0.046)
distance health	0.020	0.004	0.002	0.154**	-0.004*	-0.000	0.001	0.000	0.001	-0.014*	0.002	0.001**	0.096*	-0.646***	0.028***
	(0.043)	(0.002)	(0.004)	(0.026)	(0.001)	(0.002)	(0.010)	(0.001)	(0.000)	(0.006)	(0.001)	(0.000)	(0.022)	(0.054)	(0.002)
distance water	0.020	0.000	0.006*	-0.050	-0.000	0.002	0.020***	-0.006	0.003	-0.087	-0.038	-0.024	0.403***	0.069	-0.002
	(0.015)	(0.002)	(0.002)	(0.057)	(0.000)	(0.004)	(0.001)	(0.006)	(0.003)	(0.092)	(0.029)	(0.019)	(0.031)	(0.025)	(0.007)
shagr wage	-11.152**	-1.701	-2.050**	0.000	0.000	0.000	8.976	-1.005	0.605	6.460	1.748	-0.367	-0.948	1.144	0.584
	(1.950)	(0.809)	(0.614)	(.)	(.)	(.)	(14.137)	(1.036)	(0.584)	(12.647)	(1.231)	(2.646)	(10.299)	(4.784)	(1.806)
shnonagr wage	-5.952**	-1.216***	-0.949***	3.112	-0.480***	0.521**	-7.723	-2.104*	-0.775*	1.821	1.291	-1.965	29.959	5.342	-2.309
	(1.677)	(0.188)	(0.097)	(5.415)	(0.026)	(0.087)	(5.392)	(0.742)	(0.302)	(9.648)	(1.444)	(2.413)	(13.468)	(8.155)	(3.717)
shcrop	-83.487	-19.833***	-5.748				1.117	0.292	0.399	9.114	0.715	-0.095	23.829*	1.161	-1.814
	(49.685)	(0.906)	(5.130)				(7.167)	(1.510)	(0.586)	(17.301)	(0.658)	(0.781)	(6.697)	(3.587)	(1.355)
shlivestock	-0.561	-1.030**	-1.549***	11.357***	-1.225*	0.610	-3.072	-3.085**	-0.925	13.973	-0.124	-0.299	34.508***	3.483**	-6.279***
	(1.108)	(0.190)	(0.233)	(1.054)	(0.329)	(0.250)	(2.628)	(0.752)	(0.423)	(14.195)	(0.954)	(0.601)	(1.380)	(0.424)	(0.178)
shselfemp	-6.801**	-1.845***	-1.390***	-2.827	-0.612***	0.054	-9.801	-3.151*	-0.947*	8.959	0.573	-1.522	-555.180	1460.985	143.874
	(1.969)	(0.131)	(0.129)	(5.498)	(0.016)	(0.081)	(4.867)	(1.196)	(0.298)	(10.648)	(1.416)	(1.276)	(1635.208)	(550.282)	(348.488)
agr shocks	1.753***	0.138**	0.033	2.133**	-1.489***	-0.042	2.154**	0.079	0.069	3.081	0.281	0.180	-5.223**	-0.834*	0.662
	(0.222)	(0.038)	(0.045)	(0.265)	(0.003)	(0.025)	(0.611)	(0.120)	(0.085)	(1.645)	(0.162)	(0.174)	(0.539)	(0.269)	(0.292)
income shocks	-6.370*	0.043	0.083	-1.683	0.307***	0.004	-0.457	-0.463	0.019	3.706	-0.414	0.183**	7.566	-1.266	0.881
	(2.052)	(0.093)	(0.096)	(0.893)	(0.010)	(0.060)	(0.263)	(0.303)	(0.063)	(1.579)	(0.241)	(0.043)	(5.732)	(4.685)	(2.625)
social shocks	1.928***	-0.157	0.179	0.953*	-0.104***	-0.077***	-2.759	-0.119	-0.021	-1.061	-1.616***	-1.030	-67.175**	-4.998	-3.827
	(0.215)	(0.068)	(0.200)	(0.230)	(0.003)	(0.004)	(1.912)	(0.209)	(0.264)	(2.442)	(0.087)	(0.604)	(9.641)	(4.077)	(1.340)
shocks past	-3.373***	0.240**	0.274*	-1.261***	-0.264***	0.015	-1.328**	0.204	0.056	-2.129*	0.122	-0.157	-7.175***	0.919	-0.022
	(0.310)	(0.071)	(0.105)	(0.079)	(0.008)	(0.022)	(0.380)	(0.112)	(0.079)	(0.780)	(0.067)	(0.081)	(0.703)	(0.553)	(0.217)
C	274.627**	-29.811*	-49.551***	304.987***	39.504***	12.485***	478.169***	213.155**	51.910**	-847.134***	20.051	-45.867	-110.233	-23.733**	15.648
	(52.767)	(9.900)	(7.385)	(19.133)	(1.660)	(0.646)	(71.872)	(62.425)	(11.025)	(22.804)	(13.306)	(20.862)	(82.875)	(3.419)	(7.279)
R^2	0.269	0.621	0.602	0.274	0.649	0.380	0.295	0.167	0.150	0.390	0.203	0.325	0.570	0.863	0.534
N	138	104	109	125	87	94	535	451	506	138	126	134	38	23	34
Region dummies	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Dep. var:	fcs	food exp	nonfood exp	fcs	food exp	nonfood exp	fcs	food exp	nonfood exp	fcs	food exp	nonfood exp	fcs	food exp	nonfood exp
Livelihood	urban	urban	urban	IDP	IDP	IDP	pastoral	pastoral	pastoral	agro-pastoral	agro-pastoral	agro-pastoral	riverine	riverine	riverine

Table 4: Food Security / Drought

Notes. Dep var imputed food consumption score, food expenditures, and non-food expenditures. Results are depicted by livelihood (urban and pastoral livelihoods). Regressions are run with region dummies, using ols regression with standard errors clustered at the district level. The drought variable is lagged one month. * p<.10, ** p<.05, *** p<.01

	est1	est2	est3	est4	est5	est6
	b/se	b/se	b/se	b/se	b/se	b/se
conflict	2.481*	0.168*	-0.041	2.501*	0.269**	-0.018
	(0.828)	(0.054)	(0.039)	(0.802)	(0.055)	(0.037)
log formal transfer	0.086	0.010	-0.017	0.104	0.015	-0.019
	(0.061)	(0.020)	(0.016)	(0.062)	(0.027)	(0.015)
log informal transfer	-0.053	-0.047	-0.006	-0.020	-0.049	0.000
	(0.147)	(0.024)	(0.006)	(0.165)	(0.025)	(0.006)
femhead	-0.551	-0.258	-0.243*	-0.724	-0.292	-0.258*
	(0.709)	(0.664)	(0.090)	(0.521)	(0.659)	(0.098)
hhsize	0.309	0.052*	0.025	0.259	0.046	0.023
	(0.273)	(0.019)	(0.014)	(0.219)	(0.026)	(0.016)
educhead	0.426	-0.022	0.007	0.486	-0.014	-0.006
	(0.305)	(0.034)	(0.022)	(0.329)	(0.030)	(0.023)
log hhincome	0.239	0.363*	0.434*	0.175	0.364*	0.436*
	(0.484)	(0.141)	(0.160)	(0.512)	(0.144)	(0.164)
price index	0.000***	0.000**	-0.000	0.000***	0.000**	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
distance market	-0.017	-0.005*	-0.001	-0.017	-0.006*	-0.001
	(0.023)	(0.002)	(0.001)	(0.025)	(0.002)	(0.001)
distance health	-0.001	0.001	0.000*	-0.000	0.001	0.000*
	(0.004)	(0.001)	(0.000)	(0.005)	(0.001)	(0.000)
distance water	-0.030	-0.006	-0.001	-0.016	-0.007	0.000
	(0.027)	(0.007)	(0.002)	(0.018)	(0.007)	(0.002)
shagr wage	4.290	0.107	-0.223	4.883	-0.240	-0.269
	(11.090)	(0.450)	(1.059)	(10.582)	(0.636)	(1.172)
shnonagr wage	-0.825	-0.865*	-0.512	-0.543	-1.047*	-0.601
	(4.693)	(0.295)	(0.439)	(5.098)	(0.403)	(0.473)
shcrop	-8.761	-1.322	-0.719**	-7.303	-1.193	-0.597**
	(6.363)	(1.107)	(0.158)	(8.285)	(0.991)	(0.144)
shlivestock	-0.498	-1.940**	-1.026*	0.773	-2.005**	-1.092*
	(3.603)	(0.344)	(0.348)	(3.311)	(0.470)	(0.409)
shselfemp	-4.248	-1.475*	-0.980**	-3.064	-1.716**	-1.122**
	(3.159)	(0.472)	(0.211)	(3.829)	(0.377)	(0.281)
shtransfer	-7.763	1.362	-0.315	-7.420	1.329	-0.379
	(5.666)	(0.709)	(0.353)	(5.104)	(0.730)	(0.308)
weather shock				0.186	-0.025	0.090
				(1.816)	(0.115)	(0.088)
agr shocks				-1.089	-0.436*	-0.067
				(1.685)	(0.177)	(0.076)
income shocks				-1.207	-0.000	0.173
				(1.179)	(0.369)	(0.094)
casual shocks				-0.819	-0.204	-0.015
				(1.413)	(0.170)	(0.079)
shocks past				-0.342**	0.073	0.016
				(0.061)	(0.121)	(0.021)
C	38.799***	5.416*	5.284**	37.563***	5.466*	5.427**
	(4.575)	(1.932)	(1.588)	(4.626)	(1.953)	(1.580)
R^2	0.194	0.135	0.220	0.196	0.145	0.218
N	1091	880	979	1040	837	933
Region dummies	yes	yes	yes	yes	yes	yes
Dep. var:	fcs	food exp	nonfood exp	fcs	food exp	nonfood exp

Table 5: Food Security / Conflict exposure

Notes. Dep var imputed food consumption score, food expenditures, and non-food expenditures. Regressions are run with region dummies, using ols regression with standard errors clustered at the district level. * p<.10, ** p<.05, *** p<.01

	est1	est2	est3	est4	est5	est6
	b/se	b/se	b/se	b/se	b/se	b/se
conflict	2.470*	0.247**	-0.018	2.497*	0.247**	-0.004
	(0.973)	(0.056)	(0.018)	(0.959)	(0.064)	(0.032)
drought	0.781	0.002	0.443			
	(3.653)	(0.296)	(0.324)			
shock drought				-4.192***	-0.401***	-0.006
				(0.122)	(0.052)	(0.039)
log formal transfer	0.046	0.022	-0.022	0.050	0.022	-0.020
	(0.043)	(0.031)	(0.019)	(0.025)	(0.030)	(0.017)
log informal transfer	-0.090	-0.041	-0.002	-0.090	-0.041	-0.002
	(0.166)	(0.026)	(0.004)	(0.165)	(0.026)	(0.005)
femhead	-0.650	-0.291	-0.247*	-0.660	-0.291	-0.255*
	(0.541)	(0.673)	(0.098)	(0.549)	(0.675)	(0.100)
hhsize	0.266	0.044	0.026	0.260	0.044	0.023
	(0.228)	(0.027)	(0.014)	(0.204)	(0.025)	(0.017)
educhead	0.501	-0.013	-0.006	0.504	-0.013	-0.004
	(0.343)	(0.030)	(0.024)	(0.341)	(0.031)	(0.022)
log hhincome	0.406	0.357	0.436*	0.409	0.357	0.438*
	(0.523)	(0.153)	(0.171)	(0.511)	(0.152)	(0.171)
price index	0.000***	0.000**	-0.000	0.000***	0.000**	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
distance market	-0.021	-0.006*	-0.001	-0.022	-0.006*	-0.001
	(0.024)	(0.002)	(0.000)	(0.025)	(0.002)	(0.000)
distance health	0.000	0.001	0.001*	0.000	0.001	0.001*
	(0.005)	(0.001)	(0.000)	(0.005)	(0.001)	(0.000)
distance water	-0.017	-0.007	-0.000	-0.016	-0.007	-0.000
	(0.023)	(0.007)	(0.002)	(0.021)	(0.007)	(0.002)
shagr wage	6.955	-0.568	-0.208	7.047	-0.568	-0.168
	(10.694)	(0.589)	(1.157)	(10.743)	(0.565)	(1.125)
shnonagr wage	2.081	-1.394**	-0.426	1.971	-1.394**	-0.494
	(6.360)	(0.314)	(0.402)	(5.835)	(0.320)	(0.414)
shcrop	-4.601	-1.528	-0.379	-4.817	-1.529	-0.529*
	(8.786)	(1.045)	(0.235)	(8.332)	(1.042)	(0.171)
shlivestock	3.419	-2.336**	-0.975*	3.410	-2.336**	-0.987*
	(3.329)	(0.532)	(0.402)	(3.292)	(0.532)	(0.406)
shselfemp	-0.516	-2.070**	-0.985**	-0.543	-2.070**	-1.009**
	(4.840)	(0.555)	(0.228)	(4.716)	(0.548)	(0.237)
agr shocks	-1.102	-0.457	-0.036	-1.067	-0.457	-0.018
	(0.774)	(0.211)	(0.081)	(0.646)	(0.202)	(0.075)
income shocks	-1.226	0.007	0.179	-1.231	0.007	0.177
	(1.122)	(0.367)	(0.098)	(1.122)	(0.366)	(0.094)
shocks past	-0.280***	0.071	0.022	-0.288***	0.071	0.018
	(0.043)	(0.119)	(0.016)	(0.021)	(0.122)	(0.016)
C	32.786**	5.932*	5.599**	53.204***	7.935**	5.326*
	(5.956)	(2.198)	(1.651)	(5.067)	(2.355)	(1.776)
R^2	0.194	0.144	0.218	0.194	0.144	0.217
N	1044	838	935	1044	838	935
Region dummies	yes	yes	yes	yes	yes	yes
Dep. var:	fcs	food exp	nonfood exp	fcs	food exp	nonfood exp

Table 6: Food Security / Conflict exposure / Drought / Drought shock

Notes. Dep var imputed food consumption score, food expenditures, and non-food expenditures. The drought variable is included in the model. Regressions are run with region dummies, using ols regression with standard errors clustered at the district level. * p<.10, ** p<.05, *** p<.01

	est1	est2	est3	est4	est5	est6
	b/se	b/se	b/se	b/se	b/se	b/se
conflict	1.358	0.104	-0.086	3.055***	0.354**	0.003
	(0.919)	(0.342)	(0.110)	(1.049)	(0.153)	(0.091)
drought	24.006***	3.835***	0.089	4.344	0.656	0.880*
	(4.249)	(1.143)	(0.389)	(4.992)	(0.606)	(0.493)
log formal transfer	0.055	0.058**	0.000	0.024	-0.019	-0.048***
	(0.106)	(0.023)	(0.009)	(0.179)	(0.023)	(0.016)
log informal transfer	-0.226*	-0.059*	0.003	0.046	-0.009	0.002
	(0.121)	(0.034)	(0.009)	(0.205)	(0.033)	(0.014)
femhead	-1.069	-0.799**	-0.260**	-0.401	0.136	-0.257
	(1.213)	(0.397)	(0.108)	(2.342)	(0.301)	(0.203)
hhsize	-0.005	0.029	0.052***	0.565	0.039	0.005
	(0.209)	(0.049)	(0.018)	(0.384)	(0.044)	(0.030)
educhead	0.174	-0.062	0.043***	0.697**	0.028	-0.033
	(0.168)	(0.051)	(0.015)	(0.286)	(0.042)	(0.031)
log hhincome	0.752**	0.136	0.121***	0.170	0.551***	0.607***
	(0.357)	(0.160)	(0.042)	(0.304)	(0.119)	(0.071)
distance market	-0.018	-0.009	-0.000	-0.104	0.006	0.001
	(0.017)	(0.006)	(0.001)	(0.072)	(0.008)	(0.006)
distance health	-0.002	-0.000	0.001	0.169	0.008	0.005
	(0.005)	(0.001)	(0.000)	(0.116)	(0.018)	(0.009)
distance water	-0.012	-0.012	0.003	-0.020	-0.007*	-0.001
	(0.044)	(0.011)	(0.004)	(0.031)	(0.004)	(0.003)
shagr wage	18.623***	-1.513	1.590***	2.212	-1.100	-1.818***
	(3.936)	(1.083)	(0.281)	(7.449)	(0.694)	(0.496)
shnonagr wage	-12.767***	-2.051**	0.125	8.357**	-1.289***	-0.799**
	(4.439)	(1.017)	(0.309)	(4.116)	(0.473)	(0.347)
shcrop	-23.901***	-1.552	-0.168	5.205	-0.924	-0.182
	(6.725)	(1.127)	(0.426)	(8.823)	(1.849)	(0.733)
shlivestock	-4.091	-3.270***	-0.095	5.557	-2.072***	-1.606***
	(3.605)	(0.967)	(0.252)	(4.170)	(0.523)	(0.438)
shselfemp	-10.903***	-3.324***	-0.305	6.164	-1.195**	-1.067***
	(4.093)	(1.064)	(0.275)	(4.581)	(0.508)	(0.399)
agr shocks	1.032	-0.246	0.191**	-1.969	-0.696***	-0.103
	(0.990)	(0.258)	(0.083)	(1.210)	(0.248)	(0.088)
income shocks	0.730	-0.702***	0.039	-2.060*	0.443**	0.295***
	(0.941)	(0.233)	(0.073)	(1.192)	(0.188)	(0.092)
shocks past	-1.056*	0.344**	-0.032	-0.746	-0.112	0.003
	(0.575)	(0.139)	(0.045)	(1.105)	(0.207)	(0.084)
C	55.225***	12.857***	8.136***	41.929***	3.412	1.653
	(4.599)	(2.251)	(0.601)	(12.268)	(2.069)	(1.285)
R^2	0.161	0.122	0.102	0.089	0.193	0.329
N	563	489	541	481	349	394
Region	Togdheer	Togdheer	Togdheer	Bari	Bari	Bari
Dep. var:	fcs	food exp	nonfood exp	fcs	food exp	nonfood exp

Table 7: Food Security / Conflict exposure / Drought

Notes. Dep var imputed food consumption score, food expenditures, and non-food expenditures. The drought variable is included in the model. Regressions are run by region, using ols regression with robust standard errors. * p<.10, ** p<.05, *** p<.01

	est1	est2	est3	est4	est5	est6
	b/se	b/se	b/se	b/se	b/se	b/se
conflict	1.358	0.104	-0.086	3.055***	0.354**	0.003
	(0.919)	(0.342)	(0.110)	(1.049)	(0.153)	(0.091)
rainfall	-24.006***	-3.835***	-0.089	NA	NA	NA
	(4.249)	(1.143)	(0.389)			
drought	NA	NA	N	4.344	0.656	0.880*
				(4.992)	(0.606)	(0.493)
log formal transfer	0.055	0.058**	0.000	0.024	-0.019	-0.048***
	(0.106)	(0.023)	(0.009)	(0.179)	(0.023)	(0.016)
log informal transfer	-0.226*	-0.059*	0.003	0.046	-0.009	0.002
	(0.121)	(0.034)	(0.009)	(0.205)	(0.033)	(0.014)
femhead	-1.069	-0.799**	-0.260**	-0.401	0.136	-0.257
	(1.213)	(0.397)	(0.108)	(2.342)	(0.301)	(0.203)
hhsize	-0.005	0.029	0.052***	0.565	0.039	0.005
	(0.209)	(0.049)	(0.018)	(0.384)	(0.044)	(0.030)
educhead	0.174	-0.062	0.043***	0.697**	0.028	-0.033
	(0.168)	(0.051)	(0.015)	(0.286)	(0.042)	(0.031)
log hhincome	0.752**	0.136	0.121***	0.170	0.551***	0.607***
	(0.357)	(0.160)	(0.042)	(0.304)	(0.119)	(0.071)
distance market	-0.018	-0.009	-0.000	-0.104	0.006	0.001
	(0.017)	(0.006)	(0.001)	(0.072)	(0.008)	(0.006)
distance health	-0.002	-0.000	0.001	0.169	0.008	0.005
	(0.005)	(0.001)	(0.000)	(0.116)	(0.018)	(0.009)
distance water	-0.012	-0.012	0.003	-0.020	-0.007*	-0.001
	(0.044)	(0.011)	(0.004)	(0.031)	(0.004)	(0.003)
shagr wage	18.623***	-1.513	1.590***	2.212	-1.100	-1.818***
	(3.936)	(1.083)	(0.281)	(7.449)	(0.694)	(0.496)
shnonagr wage	-12.767***	-2.051**	0.125	8.357**	-1.289***	-0.799**
	(4.439)	(1.017)	(0.309)	(4.116)	(0.473)	(0.347)
shcrop	-23.901***	-1.552	-0.168	5.205	-0.924	-0.182
	(6.725)	(1.127)	(0.426)	(8.823)	(1.849)	(0.733)
shlivestock	-4.091	-3.270***	-0.095	5.557	-2.072***	-1.606***
	(3.605)	(0.967)	(0.252)	(4.170)	(0.523)	(0.438)
shselfemp	-10.903***	-3.324***	-0.305	6.164	-1.195**	-1.067***
	(4.093)	(1.064)	(0.275)	(4.581)	(0.508)	(0.399)
agr shocks	1.032	-0.246	0.191**	-1.969	-0.696***	-0.103
	(0.990)	(0.258)	(0.083)	(1.210)	(0.248)	(0.088)
income shocks	0.730	-0.702***	0.039	-2.060*	0.443**	0.295***
	(0.941)	(0.233)	(0.073)	(1.192)	(0.188)	(0.092)
shocks past	-1.056*	0.344**	-0.032	-0.746	-0.112	0.003
	(0.575)	(0.139)	(0.045)	(1.105)	(0.207)	(0.084)
C	55.225***	12.857***	8.136***	41.929***	3.412	1.653
	(4.599)	(2.251)	(0.601)	(12.268)	(2.069)	(1.285)
R^2	0.161	0.122	0.102	0.089	0.193	0.329
N	563	489	541	481	349	394
Region	Togdheer	Togdheer	Togdheer	Bari	Bari	Bari
Dep. var:	fcs	food exp	nonfood exp	fcs	food exp	nonfood exp

Table 8: Food Security / Conflict exposure / Drought / Rainfall, by region

Notes. Dep var imputed food consumption score, food expenditures, and non-food expenditures. The drought variable is included in the model. Regressions are run by region, using ols regression with robust standard errors. * p<.10, ** p<.05, *** p<.01

		est1	est2	est3	est4	b/se(est1)	b/se(est2)	b/se(est3)	b/se(est4)
1.fcs categories	conflict	1.039*	0.328	-0.056*	-0.012	(0.631)	(0.304)	(0.029)	(0.021)
2.		0.158	-1.649***	-0.006	-0.042***	(0.553)	(0.444)	(0.031)	(0.013)
3.		0.123	-0.018	-0.014	0.008	(0.114)	(0.066)	(0.011)	(0.009)
1.fcs categories	drought	0.769	-0.101	0.127**	0.079	(1.794)	(1.011)	(0.065)	(0.057)
2.		0.781	-0.289	0.054	-0.013	(0.598)	(0.297)	(0.053)	(0.032)
3.		0.609**	0.118	0.062***	-0.013	(0.242)	(0.169)	(0.022)	(0.018)
1.fcs categories	temp	0.578	0.190	0.117	0.084	(1.916)	(1.496)	(0.075)	(0.062)
2.		-0.213	-0.021	-0.035	-0.025	(0.671)	(0.415)	(0.074)	(0.035)
3.		-0.411	0.046	-0.002	-0.040*	(0.345)	(0.281)	(0.030)	(0.024)
1.fcs categories	log formal transfer	0.049	-0.077	0.003	-0.004	(0.084)	(0.055)	(0.005)	(0.003)
2.		-0.085*	-0.030	-0.006	-0.001	(0.048)	(0.019)	(0.004)	(0.002)
3.		0.028*	-0.012	-0.000	-0.001	(0.015)	(0.009)	(0.001)	(0.001)
1.fcs categories	log informal transfer	0.042	0.089**	-0.003	0.004	(0.062)	(0.045)	(0.003)	(0.003)
2.		-0.021	0.017	0.001	-0.000	(0.046)	(0.022)	(0.006)	(0.003)
3.		-0.034	0.003	0.001	0.001	(0.025)	(0.008)	(0.002)	(0.001)
1.fcs categories	femhead	-1.790**	-0.555	-0.092**	-0.037	(0.853)	(0.393)	(0.036)	(0.030)
2.		-1.032	-0.246	-0.009	0.007	(0.739)	(0.328)	(0.066)	(0.043)
3.		-0.045	-0.301***	0.013	-0.028**	(0.246)	(0.111)	(0.018)	(0.012)
1.fcs categories	hhsize	-0.016	0.148*	0.012	0.010**	(0.155)	(0.079)	(0.007)	(0.005)
2.		0.099	0.038	0.011	0.008*	(0.088)	(0.042)	(0.009)	(0.005)
3.		0.037	0.008	0.001	0.000	(0.036)	(0.016)	(0.003)	(0.002)
1.fcs categories	educhead	-0.005	-0.094	-0.010*	-0.003	(0.144)	(0.134)	(0.006)	(0.004)
2.		-0.105	0.018	0.001	0.007**	(0.132)	(0.032)	(0.008)	(0.003)
3.		-0.024	-0.014	-0.001	0.003	(0.029)	(0.015)	(0.002)	(0.002)
1.fcs categories	log hhincome	0.517	0.430**	-0.101***	-0.075***	(0.449)	(0.192)	(0.026)	(0.018)
2.		0.300	0.368***	-0.151***	-0.075***	(0.203)	(0.111)	(0.030)	(0.014)
3.		0.251**	0.408***	-0.098***	-0.071***	(0.109)	(0.056)	(0.014)	(0.007)
1.fcs categories	price index	0.000	-0.000	0.000**	0.000	(0.000)	(0.000)	(0.000)	(0.000)
2.		0.000	-0.000***	0.000	-0.000*	(0.000)	(0.000)	(0.000)	(0.000)
3.		0.000	-0.000	0.000	-0.000**	(0.000)	(0.000)	(0.000)	(0.000)
1.fcs categories	distance market	0.006	0.002	0.001	0.001	(0.007)	(0.005)	(0.001)	(0.001)
2.		0.007	-0.008*	0.000	-0.000	(0.015)	(0.004)	(0.001)	(0.000)
3.		-0.012*	-0.000	-0.001**	-0.000	(0.006)	(0.002)	(0.000)	(0.000)
1.fcs categories	distance health	-0.003	0.002	-0.000**	0.000	(0.004)	(0.002)	(0.000)	(0.000)
2.		-0.002	0.004*	0.001*	0.000**	(0.007)	(0.002)	(0.000)	(0.000)
3.		0.002*	0.000	0.000	0.000**	(0.001)	(0.000)	(0.000)	(0.000)
1.fcs categories	distance water	-0.058**	-0.002	-0.002	0.001	(0.024)	(0.011)	(0.001)	(0.001)
2.		0.004	-0.005	-0.001	-0.000	(0.017)	(0.006)	(0.001)	(0.001)
3.		-0.004	-0.000	-0.001**	0.000	(0.004)	(0.002)	(0.000)	(0.000)
1.fcs categories	shlivestock	1.135	-0.038	0.083	-0.004	(0.963)	(0.463)	(0.051)	(0.040)
2.		-2.678**	-1.017**	-0.255***	-0.055	(1.042)	(0.438)	(0.087)	(0.050)
3.		-0.974***	-0.301	-0.014	-0.037**	(0.298)	(0.189)	(0.029)	(0.018)
1.fcs categories	agr shocks	-2.757***	0.102	-0.030	-0.026	(0.995)	(0.234)	(0.043)	(0.026)
2.		-0.203	-0.202	-0.062**	-0.028*	(0.239)	(0.156)	(0.029)	(0.015)
3.		-0.256*	0.009	-0.003	0.001	(0.153)	(0.057)	(0.011)	(0.008)
1.fcs categories	income shocks	-0.564	0.593*	-0.012	0.007	(0.789)	(0.308)	(0.035)	(0.017)
2.		-0.113	-0.124	-0.052**	-0.020	(0.204)	(0.126)	(0.023)	(0.015)
3.		0.056	0.119*	0.006	0.007	(0.144)	(0.063)	(0.014)	(0.007)
1.fcs categories	shocks past	0.988**	0.244*	0.024	0.031	(0.468)	(0.147)	(0.030)	(0.021)
2.		-0.042	0.101	0.010	0.009	(0.208)	(0.095)	(0.018)	(0.011)
3.		0.016	0.008	-0.006	-0.004	(0.104)	(0.039)	(0.008)	(0.004)
1.fcs categories	C	-12.288	-2.122	-1.877	-1.341	(52.846)	(41.752)	(2.034)	(1.712)
2.		12.170	7.876	3.204	1.847*	(19.791)	(11.665)	(2.123)	(0.982)
3.		18.031*	3.901	1.522*	2.222***	(9.810)	(7.822)	(0.810)	(0.689)
R^2									
N		854	953	854	953				
Dep. var:		food exp	nonfood exp	food exp/income	nonfood exp/income				

Table 9: Food Security by fcs categories / Conflict exposure / Drought

Notes. Dep var food expenditures, non-food expenditures, income proportions of food and non-food expenditures. The drought variable is included in the model. Regressions are run by fcs category, using a linear SEM with robust standard errors. * p<.10, ** p<.05, *** p<.01

	est1	est2	est3	est4	est5	est6	est7	est8	est9	est10
	b/se	b/se	b/se	b/se	b/se	b/se	b/se	b/se	b/se	b/se
conflict shock	6.028**	-0.097	0.109	-0.283**	-0.029	6.518***	-0.194	0.028	-0.283*	-0.031**
	(0.164)	(0.162)	(0.195)	(0.010)	(0.018)	(0.048)	(0.088)	(0.329)	(0.034)	(0.002)
drought shock						-4.956	0.981	0.814	-0.001	0.015
						(3.026)	(0.580)	(1.207)	(0.247)	(0.207)
log formal transfer	-0.858**	-0.044	0.027	-0.032	-0.023	-0.821**	-0.051	0.021**	-0.032	-0.024
	(0.055)	(0.036)	(0.011)	(0.038)	(0.027)	(0.057)	(0.027)	(0.001)	(0.036)	(0.025)
log informal transfer	1.986	0.044	-0.001	-0.051	-0.005	1.814	0.078	0.027	-0.051	-0.004
	(0.687)	(0.015)	(0.031)	(0.104)	(0.059)	(0.430)	(0.107)	(0.070)	(0.096)	(0.050)
femhead	5.224*	-0.096	-0.056***	0.056	0.050	5.344*	-0.120	-0.075	0.056	0.050
	(0.764)	(0.198)	(0.000)	(0.014)	(0.016)	(0.789)	(0.175)	(0.037)	(0.020)	(0.021)
hhsize	0.900	0.065**	0.064	0.028	0.013	0.896*	0.066*	0.065	0.028	0.013
	(0.165)	(0.003)	(0.013)	(0.007)	(0.003)	(0.134)	(0.010)	(0.020)	(0.007)	(0.003)
educhead	1.211	-0.023	-0.085	0.015	0.002	1.154	-0.012	-0.075	0.015	0.002
	(2.077)	(0.033)	(0.075)	(0.019)	(0.004)	(2.153)	(0.032)	(0.067)	(0.016)	(0.002)
log hhincome	6.437*	0.236	0.154	0.023	0.015	6.457*	0.232	0.150	0.023	0.015
	(0.603)	(0.083)	(0.061)	(0.015)	(0.007)	(0.606)	(0.089)	(0.054)	(0.014)	(0.006)
distance market	4.756	-0.176	0.033	0.467	0.234**	4.635	-0.152	0.053	0.467	0.234*
	(4.560)	(0.168)	(0.152)	(0.132)	(0.015)	(4.855)	(0.140)	(0.158)	(0.138)	(0.019)
distance health	9.808**	0.315*	0.471	0.246*	0.143*	10.044**	0.269	0.432	0.246**	0.142
	(0.541)	(0.040)	(0.223)	(0.028)	(0.020)	(0.333)	(0.054)	(0.176)	(0.016)	(0.030)
distance water	12.805*	0.382*	0.538*	1.106	0.445	13.122*	0.320	0.485**	1.106	0.444
	(1.782)	(0.051)	(0.065)	(0.276)	(0.143)	(2.003)	(0.084)	(0.008)	(0.260)	(0.130)
shagr wage	2.041	-0.295	0.610	-0.697	-0.333***	2.248	-0.336	0.576	-0.697	-0.334**
	(2.883)	(0.346)	(0.163)	(0.147)	(0.003)	(2.857)	(0.291)	(0.239)	(0.137)	(0.007)
shcrop	0.723	-0.957*	-0.426	-0.135	-0.049	0.559	-0.925*	-0.399	-0.135	-0.048
	(2.677)	(0.146)	(0.256)	(0.040)	(0.050)	(2.766)	(0.090)	(0.185)	(0.032)	(0.042)
shlivestock	-6.953	-0.000	0.054	-0.298	-0.148*	-6.573	-0.076	-0.009	-0.298	-0.150***
	(10.338)	(0.011)	(0.207)	(0.103)	(0.016)	(10.590)	(0.055)	(0.299)	(0.122)	(0.001)
shselfemp	0.046	0.162	1.151**	0.101	0.023	-0.635	0.296	1.263*	0.101	0.025
	(3.164)	(0.248)	(0.034)	(0.102)	(0.033)	(2.255)	(0.267)	(0.118)	(0.068)	(0.006)
agr shocks	1.695	0.015	0.093	-0.179	-0.067	1.860	-0.018	0.066	-0.179	-0.068
	(1.847)	(0.016)	(0.015)	(0.074)	(0.057)	(1.578)	(0.031)	(0.027)	(0.082)	(0.063)
income shocks	-0.350	0.194	0.132	-0.057	-0.006	-0.156	0.155	0.100	-0.057	-0.006
	(0.833)	(0.036)	(0.039)	(0.014)	(0.013)	(0.903)	(0.069)	(0.095)	(0.023)	(0.005)
C	-40.805	10.758*	10.220**	3.560*	0.853	-37.492	10.102**	9.676*	3.561*	0.843
	(7.467)	(0.893)	(0.694)	(0.288)	(0.155)	(9.455)	(0.498)	(1.509)	(0.453)	(0.293)
R^2	0.451	0.151	0.216	0.573	0.573	0.453	0.183	0.234	0.573	0.573
N	385	385	385	385	385	385	385	385	385	385
District and time FE	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Dep. var:	fcs	food exp	nonfood exp	Pfood li	Pnonfood li	fcs	food exp	nonfood exp	Pfood li	Pnonfood li

Table 10: Food security / Conflict shock / Drought

Notes. Dep var imputed food consumption score, food expenditures, and non-food expenditures. Regressions are run with district dummies using the diols regression, with standard errors clustered at the district level. * p<.10, ** p<.05, *** p<.01

	est1	est2	est3	est4	est5
	b/se	b/se	b/se	b/se	b/se
drought	32.105	-0.374	-13.700***	-1.984	-0.989
	(16.723)	(0.737)	(0.195)	(0.484)	(0.211)
femhead	2.761	-0.188	0.031	0.143	0.064
	(2.207)	(0.344)	(0.268)	(0.024)	(0.022)
hhsize	0.342	0.055	0.068	-0.014	-0.008
	(0.422)	(0.036)	(0.051)	(0.029)	(0.013)
educhead	-0.138	-0.006	0.034	0.046***	0.018
	(0.185)	(0.039)	(0.021)	(0.000)	(0.004)
log hhincome	3.708	0.108	0.099	-0.063	-0.014
	(0.648)	(0.060)	(0.019)	(0.038)	(0.016)
distance market	2.522	-0.469*	0.141	0.193	0.128
	(2.606)	(0.063)	(0.150)	(0.158)	(0.048)
distance health	1.107	0.562	0.113	0.163	0.118
	(1.644)	(0.218)	(0.214)	(0.166)	(0.055)
distance water	13.716*	0.541**	0.402	1.293*	0.530*
	(1.786)	(0.017)	(0.149)	(0.128)	(0.044)
shagr wage	7.845	0.940	0.446	0.294	0.142
	(6.159)	(0.773)	(0.127)	(0.603)	(0.326)
shcrop	2.996	-0.035	-0.176	-0.409	-0.011
	(11.133)	(1.237)	(0.501)	(0.214)	(0.192)
shlivestock	2.820	0.402	-0.066	-0.034	0.056
	(6.506)	(0.494)	(0.156)	(0.034)	(0.058)
shselfemp	8.525	0.361	0.688	0.746	0.412
	(6.018)	(0.350)	(0.270)	(0.284)	(0.147)
C	-35.577	12.620*	31.750**	7.108	2.229
	(17.883)	(1.782)	(0.647)	(1.818)	(0.704)
R^2	0.172	0.039	0.153	0.487	0.462
N	850	850	850	850	850
target	-4.586	0.189	-2.655*	-0.384	-0.037
	(4.477)	(0.176)	(0.250)	(0.282)	(0.107)
p	22.647	-0.840	-12.609***	-1.186	-0.677
	(18.401)	(0.857)	(0.104)	(0.525)	(0.232)
diff	-8.036	0.590	5.039***	0.482	0.328
	(9.059)	(0.476)	(0.044)	(0.189)	(0.097)
Dep. var:	fcs	food exp	nonfood exp	Pfood li	Pnonfood li

Table 11: DROUGHT / FOOD SECURITY

Notes. Dep var imputed food consumption score, food expenditures, and non-food expenditures. Regressions are run with district dummies using the difference-in-difference approach, with standard errors clustered at the district level. * p<.10, ** p<.05, *** p<.01

	est1	est2	est3	est4	est5	est6	est7	est8	est9	est10	est11	est12
	b/se	b/se	b/se	b/se	b/se	b/se	b/se	b/se	b/se	b/se	b/se	b/se
drought	-0.123	-0.400**	-0.315	0.475	-3.407	-10.311	-0.572	-0.597***	0.310	0.048	-5.113***	-3.257**
	(0.205)	(0.118)	(0.412)	(0.633)	(1.557)	(4.015)	(0.266)	(0.036)	(0.374)	(0.255)	(0.391)	(0.350)
log formal transfer	-0.002	0.000	0.006***	0.005**	0.012***	0.010***	0.002	0.000	-0.008	0.002	-0.001	0.003
	(0.002)	(0.002)	(0.000)	(0.001)	(0.000)	(0.000)	(0.002)	(0.003)	(0.004)	(0.006)	(0.001)	(0.005)
log informal transfer	0.000	-0.005**	-0.017***	-0.010*	-0.002*	-0.006*	0.007**	-0.003	0.003	-0.009***	0.123**	0.052
	(0.001)	(0.001)	(0.001)	(0.003)	(0.001)	(0.002)	(0.002)	(0.002)	(0.003)	(0.001)	(0.022)	(0.054)
femhead	0.028	0.004	-0.010	-0.022	0.137**	0.115**	0.026	0.019	0.026	-0.068	0.232*	0.086*
	(0.030)	(0.027)	(0.029)	(0.042)	(0.016)	(0.019)	(0.020)	(0.022)	(0.117)	(0.070)	(0.071)	(0.021)
hhsize	0.135***	0.141***	0.102***	0.124***	0.105***	0.126***	0.140***	0.149***	0.133***	0.139***	0.189**	0.221***
	(0.005)	(0.005)	(0.004)	(0.004)	(0.003)	(0.003)	(0.008)	(0.005)	(0.004)	(0.004)	(0.020)	(0.017)
educhead	0.007	0.008	0.001	0.013***	0.014*	0.013	0.008	0.005	0.010**	0.007	-0.002	0.022
	(0.004)	(0.004)	(0.001)	(0.000)	(0.004)	(0.005)	(0.004)	(0.005)	(0.003)	(0.006)	(0.003)	(0.026)
log hhincome	0.000	0.001	-0.015***	-0.013***	0.001	-0.003	-0.006	-0.003	0.018	0.007	0.173**	0.044
	(0.002)	(0.003)	(0.001)	(0.002)	(0.003)	(0.005)	(0.005)	(0.012)	(0.011)	(0.006)	(0.028)	(0.087)
distance market	-0.001**	-0.000	-0.001	0.000	0.001**	0.001	-0.001*	-0.001	-0.001***	-0.001	0.030***	0.026
	(0.000)	(0.000)	(0.002)	(0.003)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.003)	(0.009)
distance health	-0.000	-0.000	-0.002***	-0.003***	-0.001*	-0.006***	-0.000	0.000	-0.000	-0.000*	0.010	0.001
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)	(0.005)	(0.005)
distance water	0.000	-0.000	-0.001*	-0.001*	0.000	0.000	0.002	0.001	-0.002	0.000	-0.001	0.003
	(0.000)	(0.001)	(0.000)	(0.000)	(0.001)	(0.002)	(0.001)	(0.001)	(0.003)	(0.004)	(0.002)	(0.003)
shagr wage	0.028	-0.043	0.888***	1.017***	0.000	0.000	0.375	-0.120	-0.592	-0.277**	-1.048***	-0.385
	(0.058)	(0.061)	(0.081)	(0.056)	(.)	(.)	(0.234)	(0.298)	(0.314)	(0.075)	(0.074)	(0.269)
shnonagr wage	0.032	-0.020	0.220***	0.064*	-0.062*	0.049	0.233***	-0.025	-0.419*	-0.176	-0.540**	-0.146
	(0.028)	(0.038)	(0.022)	(0.021)	(0.015)	(0.057)	(0.038)	(0.061)	(0.174)	(0.080)	(0.093)	(0.407)
shcrop	0.132**	0.029	5.399***	5.739***	0.000	0.000	0.536	-0.739**	-0.117	-0.042	-0.203***	-0.192
	(0.032)	(0.083)	(0.614)	(0.771)	(.)	(.)	(0.687)	(0.140)	(0.230)	(0.168)	(0.014)	(0.189)
shlivestock	0.055	-0.056	0.330***	0.070	0.314	0.004	0.158*	-0.094	-0.123	-0.027	0.176*	-0.426**
	(0.032)	(0.054)	(0.035)	(0.062)	(0.215)	(0.468)	(0.054)	(0.047)	(0.141)	(0.141)	(0.057)	(0.044)
shselfemp	0.042	-0.099**	0.122	-0.062	-0.341***	-0.004	0.237***	-0.064	-0.073	-0.251	-81.851*	5.216
	(0.029)	(0.028)	(0.091)	(0.092)	(0.010)	(0.045)	(0.033)	(0.052)	(0.180)	(0.127)	(21.852)	(33.695)
agr shocks	0.008	-0.007	-0.008	-0.012**	-0.019**	-0.093***	-0.037*	-0.024	0.015	-0.066**	-0.002	-0.044
	(0.006)	(0.017)	(0.007)	(0.002)	(0.003)	(0.003)	(0.013)	(0.011)	(0.040)	(0.014)	(0.007)	(0.037)
income shocks	-0.015	-0.013	-0.067***	-0.060**	-0.004	0.013	-0.043	-0.015	0.042	0.040	-0.034	-0.188
	(0.008)	(0.008)	(0.006)	(0.010)	(0.013)	(0.013)	(0.030)	(0.040)	(0.050)	(0.037)	(0.030)	(0.212)
casual shocks	-0.050**	-0.003	-0.084**	-0.066	0.004	0.008	-0.011	0.082	-0.124*	-0.088	-0.599**	-0.692
	(0.010)	(0.016)	(0.023)	(0.029)	(0.003)	(0.003)	(0.042)	(0.045)	(0.044)	(0.040)	(0.128)	(0.402)
shocks past	0.008	0.021*		-0.004	-0.043**	-0.007	0.050***	0.034**	-0.031*	0.018*	-0.084**	0.017
	(0.016)	(0.007)		(0.008)	(0.005)	(0.010)	(0.008)	(0.009)	(0.011)	(0.006)	(0.018)	(0.040)
C	-0.201	-0.173*	0.384	-0.089	1.327	4.675	-0.077	-0.079	-0.444	-0.471*	-1.802	0.624
	(0.101)	(0.072)	(0.183)	(0.357)	(0.788)	(2.002)	(0.178)	(0.142)	(0.249)	(0.177)	(1.398)	(2.142)
R^2	0.520	0.585	0.483	0.660	0.410	0.458	0.564	0.620	0.643	0.705	0.882	0.872
N	1039	1039	157	135	121	121	529	529	137	137	37	37
Region dummies	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Livelihood	all	all	urban	urban	IDP	IDP	pastoral	pastoral	agropastoral	agropastoral	riverine	riverine
Dep. var:	diarrhoea	typhoid	diarrhoea	typhoid	diarrhoea	typhoid	diarrhoea	typhoid	diarrhoea	typhoid	diarrhoea	typhoid

Table 12: Extension - Dep var waterborne diseases / Drought (2 months lag)

Notes. Dep var waterborne diseases (diarrhea,typhoid/parathypoid). Results are depicted by livelihood (urban, pastoral, agro-pastoral). Regressions are run with region dummies, using ols regression with standard errors clustered at the district level. The drought variable is lagged two months. * p<.10, ** p<.05, *** p<.01