



**Working Paper**  
**No. 560**

**Coping with shocks in rural Ethiopia**

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May 2013

ISSN 0921-0210

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## **Abstract**

Based on household survey data and event history interviews undertaken in a highly shock prone country, this paper investigates which shocks trigger which coping responses and why? We find clear differences in terms of coping strategies across shock types. The two relatively covariate shocks, that is, economic and natural shocks are more likely to trigger reductions in savings and in food consumption while the sale of assets and borrowing is less common. Coping with relatively idiosyncratic health shocks is met by reductions in savings, asset sales and especially a far greater reliance on borrowing as compared to other shocks. Reductions in food consumption, a prominent response in the case of natural and economic shocks is notably absent in the case of health shocks. Across all shock types, households do not rely on gifts from family and friends or on enhancing their labour supply as coping approaches. The relative insensitivity of food consumption to health shocks based on the shocks-coping analysis presented here is consistent with existing work which examines consumption insurance. However, our analysis leads to a different interpretation. We argue that this insensitivity should not be viewed as insurability of food consumption against health shocks but rather as an indication that a reduction in food consumption is not a viable coping response to a health shock as it does not provide cash to meet health care needs.

## **Keywords**

Health shocks, shocks, adversity of shocks, coping response, Ethiopia.

## 1. Introduction

Acquiring a greater understanding of the risks, vulnerabilities and existing coping mechanisms available to deal with shocks in developing countries, such as Ethiopia, is essential in order to design appropriate social safety nets.<sup>1</sup> Indeed, recognizing the role played by a range of natural, health and economic shocks in perpetuating poverty, a relatively recent strand of development research has been concerned with determining the effect of health and other shocks on consumption, income and labour supply. Typically such studies examine the effect of a single shock on a key welfare measure, usually consumption, and focus on identifying the effect of past shocks on current household consumption.<sup>2</sup>

While results vary across countries, in the Ethiopian context, Asfaw and von Braun (2004) conclude that food consumption is protected against the illness of the household head while non-food consumption is not insured. In their multi-shock analysis on Ethiopia, Dercon et al. (2005) show that droughts occurring in the five years before the survey reduce total per capita consumption by 20% while illnesses reduce consumption by 9%. Before concluding that the consequences of droughts are worse than illnesses or that health shocks do not affect food consumption, it is important to consider whether the coping responses to different types of shocks has a bearing on such outcomes. In the context of a formal test of consumption insurance, Chetty and Looney (2006) argue that insurability of consumption

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<sup>1</sup> Shocks are defined as the unexpected occurrence of a certain event without regard to the magnitude of the effect. Other studies define the term as “adverse events that lead to reduction in income, consumption or loss of assets” (e.g. Dercon et al. (2005)). To avoid judging whether a shock has an adverse effect or not, we use, perhaps, a more neutral definition.

<sup>2</sup> Typically such papers examine whether current household consumption is affected by a shock that has occurred in the past and interpret the lack of a negative effect on consumption as a sign that households are able to insure themselves against the consequences of a shock. See for example, Islam and Maitra (2012), Gertler et al. (2009), Wagstaff (2007), Hoddinot (2006), de Weerd and Dercon (2006), Gertler and Gruber (2002), Kochar (1999), Sparrow et al. (forthcoming). For instance, Islam and Maitra (2012) have examined the effect of health shocks in Bangladesh, Kochar (1999) studies the effect of an agricultural shock in India, Wagstaff (2007) looks at the effect of health shocks in Vietnam and Hoddinot (2006) analyzes the effect of drought in Zimbabwe.

should be interpreted with caution and that it is important to consider what underlies such a result. To elaborate, drawing the conclusion that households are able to protect (current) consumption against a certain shock without considering the manner in which such protection has been achieved may be misleading especially if such protection has come at the cost of borrowing or the sale of productive assets.

Obtaining a deeper understanding of household ability to respond to and to insure against different types of shocks calls for a multi-shock analysis, an examination of coping responses triggered by each type of shock and an evaluation of the short and long-term consequences of the coping strategies adopted in response to a shock. While there are papers that have adopted such a multi-shock approach, as pointed out by Wagstaff and Lindelow (2010), the bulk of the work adopts a partial approach and analyzes the effects of a single shock or a limited set of shocks. Studies that have analysed a broad range of shocks to understand the incidence, distribution and welfare implications of various risks faced by rural households in developing countries include Wagstaff and Lindelow (2010), Heltberg and Lund (2009) and Dercon et al. (2005). Such comparative studies are informative and have challenged the conventional wisdom that covariate shocks such as crop failure are more difficult to deal with as compared to idiosyncratic shocks like illnesses (see Wagstaff and Lindelow 2010, Heltberg and Lund 2009, Kenjiro 2005).

Motivated by the idea that the apparent insurability of consumption may be driven by different coping responses to different types of shocks, this paper uses purposively collected household data and event history interviews conducted in a highly shock prone country, Ethiopia, to investigate a neglected question, that is, which shocks trigger which coping responses and why. Similar to Wagstaff and Lindelow (2010) and Heltberg and Lund (2009), the paper relies on cross-section data and a retrospective shock module and uses

both regression and descriptive analysis to analyse the shock-coping strategy link. The paper adds to the scant literature on multi-shock comparative studies and is timely from a policy perspective as the Ethiopian government intends to upscale its recently introduced (in June 2011) pilot community based health insurance (CBHI) scheme.

To preview our results, unlike recent multi-shock studies by Wagstaff and Lindelow (2010) and Heltberg and Lund (2009), we find that health shocks do not dominate in terms of frequency, natural shocks do. Health shocks are more likely to trigger borrowing and selling of assets as compared to non-health shocks while natural shocks stand out in triggering a reduction in consumption and dissaving. Economic shocks and crime/conflict shocks do not seem to induce an active response. The differential coping response to health and natural shocks highlights the potentially different consumption effects associated with the two types of shocks.

The paper unfolds by providing in section 2 a description of the data and the sampling design. Section 3 presents methods and model specification for the regression analysis. Section 4 examines the frequency of shocks, their scope and distribution and then goes on to provide a bivariate and a multivariate analysis of which shocks trigger which coping responses. Section 5 contains concluding observations.

## **2. Data and Sampling**

This study, which is a part of a larger project designed to investigate the effect of a recently introduced pilot community based health insurance scheme, is based on a household survey which covers four regions of the country (*Tigray, Amhara, Oromiya, and SNNPR*) and in-depth interviews with a selection of the households who were also included in the survey. From each of these regions, which together account for about 86 percent of the country's population (Population Census Commission, 2008) four districts were

purposively selected (3 treatment and one control) and within each district a household survey was canvassed in 6 randomly chosen *kebeles* (peasant associations). In each of the 96 *kebeles*, 17 households were randomly surveyed yielding a total of 1,632 households comprising 9,455 individuals.

The survey was canvassed between March and April 2011 and contains information on a variety of individual and household socio-economic attributes such as consumption expenditure, assets, household demographics, employment and household health conditions. The survey includes an extensive module to explore the comparative effect of shocks. The shock module asks households about their experience of unexpected events in the year before the survey. These include health related events (illness, death or disability), natural events (flood, storm, drought, untimely rain, insect damage, fire, frost), economic events (death of livestock, loss of equipment, unemployment, a decline in output price<sup>3</sup>) and crime/conflict related events (conflict over land or water, divorce, theft of crops and theft of livestock). In addition, the survey enquires i) how strongly households are affected by these events ii) how many households in the village are affected by the events and iii) which are the three most important coping responses used (if any).<sup>4</sup> We also asked households if they have someone to rely on at times of shock to take as a proxy for social capital.

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<sup>3</sup> An increase in the price of goods and price of inputs was omitted as inflationary pressure has been the norm in Ethiopia for the last few years.

<sup>4</sup> The survey asked the following questions 1) How strongly is the household affected by these shocks? a) slightly b) somewhat c) strongly. 2) How many households were affected by this shock? a) only my household b) some households in the *Kebele* c) all households in the *Kebele* d) this *Kebele* and other *Kebeles* nearby e) affected areas beyond this *Kebele*. 3) Mention three most important coping responses used by the household. The code for the coping response employed includes: reduce savings, reduce household food consumption, sell assets, sell food stocks, borrow from -relatives, -neighbours, -money lenders, -formal sources, -*iddir* (funeral societies), -*iqqub* (credit associations), cash transfers from family/friends/neighbors, increase in labor supply, increase hired labor input, send out family member to find work outside *Kebele*, new marriage, help from informal group in kind/ labor, help from neighbors in kind/labor, other (specify) and no coping.



In order to acquire a deeper understanding of why particular coping responses were chosen or not chosen in response to a certain shock, in January-February 2013, after analysing the household survey data, event history interviews were conducted with purposively selected households who had also been canvassed in the household survey.<sup>5</sup> Per region, a district with a relatively high burden of shocks was selected and within each of these four districts, households were sampled based on the reported incidence and the severity of shocks they had experienced in 2011.<sup>6</sup> The initial idea was to sample about 16 households per region. However, in each of the regions after about 7 to 8 interviews there did not seem to be too much variation in the responses and hence the final sample was reduced and the analysis presented here is based on 42 households.

### **3. Methodological approach**

#### ***3.1 Incidence, scope and distribution of shocks***

We commence our analysis by providing an assessment of the incidence, scope (covariate or idiosyncratic) and distribution of shocks (who experiences shocks). To deal with these issues and to enhance tractability we categorize information on the 21 different events (sub-types) from the multi-shock survey module into four major shock types, namely, health shocks, natural shocks, economic shocks and crime/conflict related shocks. A household is defined as having experienced a particular shock type if it reports experiencing at least one of the components within a particular shock type.

Coping, defined as actions undertaken by a household to accommodate the effect of a shock, is divided into six categories plus the option that the household did not adopt any active coping response. These six categories include the use of savings, reducing food

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<sup>5</sup> Interviews were conducted with the household head or the spouse when the head was not available.

<sup>6</sup> We included 12 households who had been slightly affected by a health shock and 30 households who had been moderately or strongly affected by a health shock in 2012.

consumption, selling assets (including food stocks), borrowing (from relatives, formal sources, neighbours, money lenders, *Iddir* (funeral societies) and *Iqqub* (credit associations), receiving gifts (in cash or in kind from informal groups, neighbours or the government) and labour supply based strategies (increasing own labour input, hiring in, sending out family members outside the *Kebele*, working off-farm). Two of these categories, that is, borrowing and receiving gifts may be considered as external coping strategies while the remainder may be considered as internal (to the household) coping approaches.

To examine whether a particular shock is idiosyncratic or covariate we follow Dercon et al. (2005) and assess responses to the question whether an event affected only the respondent household or other households as well.<sup>7</sup> Even though, it is hard to label a shock as purely idiosyncratic or purely covariate (see Dercon 2002), as many shocks lie in between, we consider a shock as idiosyncratic if it is reported to have affected only that household and covariate if it affects at least some other households in the *Kebele*.

After discussing the incidence and scope of shocks, we characterize which households are likely to face which shocks. To examine this we estimate a probit model for each of the shock types on a vector of covariates which includes measures of economic status, human capital, demographics, religion and regional dummies. The measure of economic status is based on an asset index constructed on the basis of a principal component analysis using 68 items that include housing features, land size, various consumption assets, farm equipment and livestock.<sup>8</sup> Human capital is measured by

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<sup>7</sup> The exact question in our survey is - How many households were affected by this shock? a) only my household b) some households in the Kebele c) all households in the Kebele d) this Kebele and other Kebeles nearby e) affected areas beyond this Kebele.

<sup>8</sup> A Spearman rank correlation of the quintiles of asset and consumption expenditure is 0.52. More than 34% of the observations are classified in the same quintile by both measures while 27.7% of observations are classified differently by more than one quintile. This is very similar to the "DHS Comparative Report No.6 'The DHS Wealth Index'" which undertakes a similar rank correlation analysis.

education of the household head, the demographic variables include household size, age and sex of head and share of males and females in the household.

### ***3.2 Shocks and coping***

We combine descriptive statistics, regression methods and the information from the in-depth interviews to examine which shocks trigger which coping responses and why. For each coping response, we constructed a dummy variable at the level of the four shock types that takes the value 1 if the coping response was adopted for any of the sub-types and zero otherwise. We use this to tabulate coping strategies employed for the various types of shocks. In addition to the overall shock-coping link we also examine the severity of the specific shock and the coping response. While we are able to examine the link between shocks and a range of coping responses we do not have information on the intensity of the coping response, for instance, the extent of the reduction in consumption or the amount of borrowing.

Following bivariate analyses of shock types and coping responses we turn to a multivariate regression approach. To identify the link between a coping response and a particular shock type it is important to control for other shocks as well as for household and/or village characteristics that may also be correlated with a shock. For example, a bivariate analysis of a health shock and a coping strategy may be misleading if non-health shocks are correlated with both the health shock the household faces and the coping strategy it adopts. For example, a natural shock (say a flood) that may have occurred earlier in the year may in turn trigger a health shock either directly or indirectly through poor nutrition. Additionally, experience of multiple shocks is likely to narrow the portfolio of coping response which may be used to cope with health shocks.

Furthermore, household characteristics such as economic status, human capital, social capital and demographic features may affect the occurrence of a shock and may also be correlated with the type of coping response triggered. For instance, the demographic composition of a household may be correlated with certain health shocks/economic shocks (e.g., children and the elderly are more likely to fall sick). At the same time, labor supply based strategies depend on the demographic composition of the household. Similarly, better-off households may be more likely to face economic shocks or less likely to face health shocks. Since an obvious determinant of the adoption of certain coping responses is related to economic status, one needs to control for economic status. A similar reasoning applies for human and social capital measures. Hence, understanding which shocks trigger which coping responses calls for a multivariate approach and controls for a vector of shocks, household and village characteristics. Accordingly, as in (1), we treat the probability of adopting a coping response as a function of the four shock types and a range of household and village characteristics,

$$prob(CS_i^m) = \beta_0 + \sum_{j=1}^4 \delta_j Shock_{ij} + \sum_{q=1}^r \varphi_q X_{iq} + \varepsilon_i. \quad (1)$$

We estimate a series of probit models for each coping response  $m$  that household  $i$  adopts. The dependent variable (coping strategy – CS) is a dummy variable that takes the value 1 if coping response  $m$  is adopted by household  $i$  in the past one year to at least one of the shocks and zero otherwise. We regress this on a vector of four shock variables  $j$  that household  $i$  may have faced in the past one year. The specification controls for a vector of  $r$  household and community characteristics ( $X$ ). This includes measures of i) economic status, ii) human capital iii) social capital iv) demographic features v) religion of the head and vi) regional dummies (see Table A1 and A2 for details). The last terms ( $\varepsilon_i$ ) is an error

term. Our main interest centres on an examination of the coefficients ( $\delta_j$ ) on the shock variables

#### **4. Estimates**

##### **4.1 Frequency and scope of shocks**

Not unexpectedly, we find that shocks are an important part of the life of rural households. Almost three-fourth of our sample households have faced at least one type of shock in the past 12 months (see Figure 1), which seems rather high.<sup>9</sup> Many of these households have experienced multiple shocks. In Figure 2, we graph the number of shocks faced by households against the percentage of households who have faced the corresponding number of shocks. We find a negative gradient, with a small percentage of households having faced at least five shocks (3.6%) while 11.5% of households have faced three shocks and about 21% of households have experienced two shocks in the 12 months prior to the survey.

Turning to the concentration of the four shock types, unlike Heltberg and Lund (2009) and Wagstaff and Lindelow (2010), we find that health shocks do not dominate in terms of frequency (see Figure 1).<sup>10</sup> The most frequent (47%) are natural shocks, health shocks and economic shocks are equally frequent, each affecting close to one-third of the sample households. Shocks related to crime/conflict are not as frequent and are experienced by 7% of the sample households.

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<sup>9</sup> Based on a three year recall period, Heltberg and Lund (2009) find that in Pakistan about two-thirds of the households have faced at least one type of shock. Based on a five year recall period, Dercon et al. (2005) find that in rural Ethiopia almost all households have suffered from at least one type of shock.

<sup>10</sup> Although comparisons are difficult due to differences in categorization, Dercon et al. (2005) also find a broadly similar pattern. In their paper, drought (52%) is the most common shock followed by illness (39%).

In terms of the scope of shocks (see Table 1), we find that health shocks are the most idiosyncratic of all shock types as about 84% of such shocks are reported to have affected only the household itself.<sup>11</sup> This is expected in cases where the health shock is not an epidemic. A substantial proportion of natural shocks, more than 92%, have effects beyond the household and hence may be termed as a covariate shock. Economic shocks may also be characterised as covariate as the majority of such shocks (66%) tend to affect more than the household in question. Crime/conflict shocks are idiosyncratic as 74% of such shocks are reported to have affected only the household in question. The distinction between covariate and idiosyncratic shocks has implications for the portfolio of coping strategies available for the household which in turn determines the relative adversity of the shocks. The most idiosyncratic shocks may trigger borrowing, social support and use of labour supply based strategies. While in the case of covariate shocks, the potential to access informal credit or enhance labour supply may be reduced.<sup>12</sup> The link between shock type, the available coping responses and the apparent ability to cope with some shocks versus others is a theme that will be explored in more detail in the next section.

#### **4.2 Distribution of shocks**

Probit estimates of the probability of experiencing each of the four shock types as a function of various traits are provided in Table 2.<sup>13</sup> With regard to household wealth status as reflected in the asset index, we find that there is no systematic and significant wealth

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<sup>11</sup> This is calculated by dividing the total number of idiosyncratic health shocks (i.e idiosyncratic illness + idiosyncratic disability + idiosyncratic death) in our sample by the total number of health shocks in our sample.

<sup>12</sup> Sen (1981) has documented that covariate shocks like drought lead to a collapse in demand for local services/crafts such that non-farm income activities cannot compensate for lost crop income. Based on an empirical study in West Africa, Fafchamps et al. (1998), shows that non-farm income is positively correlated with covariate shocks affecting crop income.

<sup>13</sup> We do not control for occupation as the main occupation of the household head for 90 percent of the households in the sample is agriculture.

gradient in terms of reporting a health shock. Households in the second and third quintiles are 7 to 9 percentage points less likely to report a health shock as compared to the poorest quintile while the difference is not statistically significant for the other quintiles. In contrast, households that face economic shocks are more likely to be rich. The second, third and fourth quintiles have a higher chance of reporting an economic shock as compared to the poorest quintile. The case of a natural shock is mixed. While households in the second and third quintile have a higher probability of reporting natural shocks, those in the richest quintile are less likely to report natural shocks. The latter could reflect the fact that the richest households live in areas less prone to natural disasters such as floods. We do not find any statistically significant wealth gradient for the case of crime/conflict shock.

Turning to measures of human capital, consistent with the positive association between education and health, households where heads have informal education are about 13 percentage points less likely to report health shocks as compared to households where heads have no education. For higher education levels this difference is both statistically and economically insignificant perhaps reflecting a non-linear link between awareness of health conditions and the reporting of health shocks. Similar to the economic status measures, the association between economic shocks and educational level of the household head appears to have a positive gradient. However, the only statistically significant difference is between households whose heads have primary education as compared to those with no education (about 7 percentage points). There is no particular pattern between human capital measures and natural and crime/conflict shocks. With regard to the demographic variables, the size of a household is significantly related to all shocks. Larger families are more likely to report having experienced a health, economic and natural shock. Perhaps this is not surprising as larger families, simply due to their size, may be more likely to experience

shocks. For the most part, the gender of the household head and gender composition of the household does not have a bearing on the probability of experiencing shocks.

There is a clear link between geographical location and the prevalence of shocks. For instance, households in the Amhara region seem to be far more vulnerable to health, natural and crime/conflict shocks as compared to households in Tigray. Households in SNNPR also appear to be more likely to report health and economic shocks as compared to their counterparts in Tigray. Households residing in Oromiya are also more likely to experience health and crime shocks as compared to their counterparts in Tigray although the differences are not as pronounced.

Overall, health shocks are more likely to have been experienced by households with lower educational endowments, larger households and households living in the Amhara and SNNPR regions. Economic shocks are more likely to affect richer households and households living in SNNPR. Natural shocks are also more likely to occur in the Amhara region and more likely to affect some of the richer quintiles, although the link between economic status and natural shocks is not linear. There is not much evidence of a systematic link between household traits and crime/conflict shocks. While the link between the various traits and the shock variables is not always straight forward, it seems clear that shocks are not uniformly distributed across different geographical locations and levels of economic status and human capital measures, which highlights the need to control for such traits while examining the link between coping strategies and shocks in equation (1).

#### **4.3 Shocks and coping responses: a bivariate analysis**

Coping responses generated by each of the four shock types displays several noteworthy features (see Table 3). As displayed in the table, households use multiple responses to deal with the effects of shocks while at the same time a substantial proportion



of households (between 13 and 37 percent) do not resort to an active response when faced by a shock. This may be due to an inability to undertake an active response or perhaps that a shock is not particularly severe and does not require a response. For instance, in the case of health shocks the lack of a response may be due to lack of financial resources or because the condition is minor. We return to an exploration of the link between no active response and severity of shocks in the following sub-section.

In terms of the set of active responses we see that across all shock types, there are two responses that are rarely used. Contrary to conventional wisdom (see Dekker 2004; de Weerd and Dercon 2006), gifts, either in cash or kind from family, friends, neighbours and other informal groups is not a common response and reliance on this source ranges from a low of about 2% in the case of economic shocks to 5% in the case of health shocks.<sup>14</sup> The qualitative interviews confirm the low reliance on family and friends. Not only is such support almost non-existent but almost all the households that were interviewed mentioned that they did not like to ask for help as it would hurt their pride/self-esteem and expose their inability to cope with a shock.<sup>15</sup> Similarly, perhaps due to thin labour markets in rural Ethiopia, increasing household labour supply in response to a shock is not very common and is exercised by about 4 to 5 percent of households.

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<sup>14</sup> In Tanzania, de Weerd and Dercon (2006) show that in the case of 60 percent of shocks a private gift is one of the coping strategies although it is considered very important in 29 percent of shocks. Although not directly comparable as the paper combines gifts and informal loans, in Zimbabwe, Dekker (2004) reports that assistance from family and friends is the most frequently used manner of dealing with a shock. As mentioned earlier in the text we make a distinction between gifts, which do not need to be repaid and interest free loans which do need to be repaid. Our survey data show that most households borrow from friends and relatives (see Table 4) but loans have to be repaid and our qualitative analysis reveals that if a loan is for longer than a month interest is charged regardless of the source of the loan.

<sup>15</sup> For instance, a male respondent of Kebabi Kebele in Tigray region stated, "I really don't like to ask people to give me something or to help me. I prefer to sell what I have and if need be to collect and sell fire wood". A female respondent from the same area said, "I prefer selling what I have. I have never borrowed but people may give you if you ask for it when you face such problem. If I face a strong problem of that kind, I prefer borrowing [as opposed to asking for a gift] and then repay the money by selling some stuff" [Both interviews were conducted on March 21, 2013].

With regard to responses that are more likely to be used, there is substantial variation according to the type of shock experienced. We see that households tend to rely quite heavily on their own savings to cope with natural and economic shocks, 41% and 37%, respectively while drawing on savings is less likely in the case of health and crime/conflict shocks (about 16 percent of households). Similarly, we find that households are more likely to reduce their food consumption in the case of natural and economic shocks (58 and 38 percent respectively) as compared to health and crime/conflict shocks (about 19 percent). A third internal household response is the sale of assets to cope with shocks. Such a response may protect households in the short-run but may have adverse long-term consequences. While this may be the case, we find that household reliance on this coping measure is quite uniform across shocks and between 22 (for economic shocks) to 30 (for health shocks) percent of households resort to sale of assets.

A key external coping response and a second channel, in addition to the sale of assets, that may postpone the adverse effect of shocks is borrowing. About 18% of households who face health shocks borrow to cope with the costs of illness while the corresponding figures in the case of other shocks types is lower – 12% in the case of economic shocks, 8% for natural shocks and 2% for crime/conflict shocks. In terms of the source of borrowing, the bulk of the loans, across all shock types but especially in the case of health shocks, are provided by relatives and neighbours (Table 4). Reliance on money lenders, arguably the worst form of credit (in terms of interest rate and repayment conditions) is not very common. The qualitative interviews revealed that the bulk of households consider borrowing as a last resort (93%). Respondents provided four reasons for avoiding this coping response. First, they dislike borrowing from money lenders as the repayment period is short and the pressure involved may ruin relationships with the lender.

Second, even though households tend to borrow from relatives and neighbours they have to pay interest if the loan is for longer than a short time-period, usually about a month.<sup>16</sup> Third, households with no livestock and land are required to provide a guarantor and this may not always be possible. Fourth, households are reluctant to borrow as it is considered a loss of face/pride and psychologically discomfoting.<sup>17</sup>

While we cannot comment on the magnitude of the reliance on different coping responses (for instance, the amount of money borrowed or value of assets sold) it is clear that households are more likely to rely on internal coping response in the face of natural and economic shocks as compared to health and crime/conflict shocks and on external coping responses, that is, borrowing when faced with health shocks.<sup>18</sup> These differences may be due to a number of factors. First, the greater reliance on internal household coping responses in the face of natural and economic shocks may be attributed to the nature of the shocks in the sense that both natural and economic shocks are relatively covariate and it may be difficult to rely on external coping responses, especially borrowing from friends and relatives, the dominant sources of credit, when a shock affects an entire community. On the other hand health and crime/conflict shocks are characterized as relatively idiosyncratic and households may indeed be able to resort to external coping responses under such circumstances. Second, by their very nature, coping with an episode of ill-health may

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<sup>16</sup> Respondents indicated that, if needed, they can and have borrowed from family and friends and do not need to pay any interest as long as they repay in a short time-period. In Amharic they used the term '*ye élet bidir*'. The literal translation is 'a loan for days'. On further probing it seemed that as long as the loan is repaid in about less than a month then there are no interest payments.

<sup>17</sup> For instance, a male respondent of Abua Kokit Kebele in Amhara Regional State mentioned "... borrowing from people is like syphilis. I cannot sleep and want the earth to swallow me every moment I see the lender" [Interview conducted on 4-01-2013].

<sup>18</sup> Regardless of the type of shock, the qualitative interviews revealed a clear preference for internal coping responses as opposed to external coping responses. Selling assets, mainly livestock but also crop output is the preferred coping response if a household has no savings.

require immediate access to liquid resources (cash) as compared to the non-health shocks to finance lump-sum out-of-pocket health expenditure and hence the greater reliance on borrowing as opposed to responses such as a reduction in food consumption. Consistent with this argument, analysis of the qualitative information shows that 26 of 42 interviewees borrowed to cope with health care and of these 65% borrowed because they needed urgent health care either on a non-market day or at a time when they judged that the market price of the food stocks and the assets they owned was unfavourable.<sup>19</sup> However, shortly after, almost all of them repaid their loans by selling assets (mainly livestock but also food stocks).<sup>20</sup> Third, even amongst the more idiosyncratic shocks (health and crime/conflict) the availability of credit might be greater for health shocks as compared to non-health shocks if informal networks sympathize more at times of health shocks.

#### **4.4 Coping, shock severity and multiple shocks**

Table 5 displays the link between the reported severity of a shock, a three-category response, that is, household was slightly affected, moderately affected or strongly affected, and the associated coping responses. The discussion below focuses on comparing the two extremes (slight versus strong).

Across all four shock types we find that the lack of an active response declines as the severity of shock increases. This is particularly pronounced in the case of health and economic shocks. In the case of the former the lack of an active response declines from 31 to 17 percent while in the case of the latter the decline is from about 66 to 35 percent.

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<sup>19</sup> The other main reason, expressed by 27 percent of the respondents, to resort to borrowing was lack of livestock or shortage of crop output when they need urgent health care.

<sup>20</sup> This is notable as it displays the links between the different coping strategies, it underlines the importance of probing into the channels through which households achieve “insurability of consumption” - the aim of this paper, and the long and short-term effects of different coping strategies.

These patterns support the idea that the lack of an active response, as displayed in Table 4, may in part be construed as evidence of a minor shock. Reliance on friends and family especially in the case of the more idiosyncratic shocks (health and crime/conflict shocks) is linked to the severity of the shocks. In the case of health (crime/conflict) shocks only 2 (3.7) percent of households rely on such support when faced by a minor shock while the figures is 9 (7.7) percent in the case of strong shock. This is consistent with the argument that a more severe shock especially in the case of health is more likely to trigger family support. Enhancing labour supply is not receptive to the severity of the shock as it is probably dependent on labour market opportunities rather than household willingness to supply labour.

In the case of the four main coping responses there is a clear link between severity and the use of a particular approach. In almost all cases (all shocks and all coping responses) the proportion of households who reduce savings and consumption, sell assets or borrow is an increasing function of the perceived severity of shocks. For example, the percentage of households who borrow more than doubles for almost all shocks as we go from the least to the most severe category. Asset sales also show the same pattern except in the case of natural shocks. Health shocks tend to stand out in the sense that household reliance on asset sales and borrowing is strongly associated with shock severity and as severity increases a greater proportion of households are forced to rely on asset sales and borrowing. For example, to cope with the most severe health shocks 38 percent of households resort to sale of assets while the corresponding figure is 31 percent in the case of crime/conflict shocks and lower for other shock types (27 and 24 percent for natural and economic shocks). Differences across shocks is even more pronounced in the case of borrowing with 25 percent of households resorting to it in the case of the most severe

health shock while the figures range between about 3 percent for the most severe crime/conflict shock to 14 percent for a strong economic shock.

#### **4.5 Shocks and coping: multivariate analysis**

A complete set of equation (1) estimates is provided in Appendix A, while estimates of the key variables of interest, that is the link between the shocks and coping responses adopted after controlling for household and regional fixed-effects are displayed in Table 6.<sup>21</sup> The discussion below focuses on these key variables.

Economic and natural shocks, that is, shocks that are relatively covariate in nature are more likely to trigger dissaving and a reduction in food consumption. For instance, households experiencing economic and natural shocks are 27 (24) and 30 (41) percentage points, respectively, more likely to dissave (reduce food consumption) as compared to households that do not experience such shocks. They also engage in asset sales (10 to 16 percentage points) but this coping response is far less likely as compared to coping by reducing savings and food consumption. Coping by relying on support from friends and family is not a viable response.

Coping with health shocks, which are relatively idiosyncratic and trigger a need for cash, are met mainly by a reduction in savings, asset sales and borrowing. Comparisons across shock types reveal several clear differences. First, while households experiencing a health shock are 15 percentage points more likely to borrow as compared to those who don't, the corresponding figures for economic and natural shocks is 7 and 3 percentage points. Given the nature of shocks (covariate) and the main source of borrowing (relatives and neighbours) it is likely that borrowing as a viable coping response is constrained when

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<sup>21</sup> As a robustness check we used a linear probability model and estimated seemingly unrelated regressions which allow error terms of the various coping response regressions to be correlated. The estimates were very similar.

households experience natural and economic shocks. Second, a reduction in food consumption is not associated with a health shock. This is consistent with the argument that given the immediate need for cash, a reduction in food consumption is perhaps not always a viable response when households face a health shock. Based on the qualitative interviews we found that although the sale of food stocks and a reduction in food consumption are two different coping responses in the household survey, for several households selling food stocks was synonymous with a reduction in food consumption.<sup>22</sup> Hence, while health shocks may also tend to lead to a reduction in food consumption through sales of food stocks the effect may be postponed due to the immediate reliance on borrowing. Third, although not overwhelming there is some support from family and friends and households that experience health shocks are 3 percentage points more likely to receive support as compared to households who do not experience such shocks. Fourth, in the case of health shocks it seems that all household experiencing such events adopt an active coping response. This is in stark contrast to the other shocks where there is evidence that a substantial proportion of households do not respond actively. In addition to the possibility that the shocks are minor and do not require a response, it is possible that in the case of covariate shocks coping responses may be limited and households may 'do nothing' as a last resort.

## **5. Concluding remarks**

Motivated by the idea that the apparent insurability of consumption may be driven by different coping responses to different types of shocks, this paper used data from a highly shock prone country, Ethiopia, to investigate a neglected question, that is, which shocks

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<sup>22</sup> 16 of the 17 households which resorted to selling food stocks equated it with a reduction in consumption.

trigger which coping responses and why. We also inspected the frequency, scope and distribution of a range of shocks.

We found that natural shocks dominate in term of frequency and have affected almost half of all households in the past 12 months while economic and health shocks have affected a third. Crime/conflict related shocks are rare and have been experienced only by 7 percent of sampled households. In terms of scope, natural and economic shocks may be characterized as covariate as their effects tend to be widespread and affect a larger number of households as opposed to health and crime/conflict shocks which are relatively idiosyncratic. Shocks are not evenly distributed across households and we found that health shocks are more likely to have been experienced by households with lower educational endowments, larger households and households living in the Amhara and SNNPR regions while natural shocks are also more likely to occur in the Amhara region and more likely to affect some of the richer quintiles, although the link between economic status and natural shocks was not linear.

We found clear differences in terms of coping strategies across shock types. The two covariate shocks, that is, economic and natural shocks were more likely to trigger dissaving and a reduction in food consumption while the sale of assets and borrowing was relatively less likely. Coping with idiosyncratic health shocks which typically trigger a need for cash was met by reductions in savings, asset sales and especially a far greater reliance on borrowing as compared to other shocks. Reducing food consumption, a prominent response in the case of covariate shocks was notable due to its absence in the case of health shocks. The lack of reliance on such an approach is consistent with the need for cash to deal with the consequences of health shocks which cannot be readily met by reducing food



consumption. Across all shock types, households do not tend to rely much on support from family and friends or on enhancing their labour supply as coping approaches.

The links between the coping response and the shocks reported in this paper are consistent with the results in Asfaw and von Braun (2004) and Dercon et al. (2005) but suggest a different interpretation. According to Asfaw and von Braun (2004), total (purchased and own) food consumption is insured against illnesses experienced by the household head while non-food consumption is not. As they state in their paper “the hypothesis of food consumption insurance cannot be rejected in the case of total food consumption, implying that basic items that come from own production and from external sources (gifts) are better insured and insensitive to the illness of the head”. Perhaps a more insightful interpretation of this finding, given the minor role played by gifts from family and friends, is that a reduction in food consumption is not sensitive to health shocks as such reductions are not a viable coping response to a health shock. Instead consistent with the reduction in non-food consumption, households resort to measures such as reductions in saving, borrowing and sales of assets in order to generate financial resources needed to deal with the health shocks. Dercon et al. (2005) find a larger reduction in current consumption due to droughts as compared to health shocks. This finding is consistent with the coping response generated by natural shocks as compared to health shocks. A larger proportion of households respond to the former by reducing current food consumption while for the latter a reduction in food consumption may not be a viable response and the adverse effects may be postponed due to the reliance on asset sales and borrowing. Flores et al. (2008) argue along similar lines and point out that ignoring the possibility that health care may have been financed through borrowing and asset sales contributes to hidden poverty.

The analysis presented in the paper clearly shows that informal safety nets and reliance on friends and family for support, at least in the form of gifts, even in the case of idiosyncratic shocks is virtually non-existent. This suggests a potentially important role for formal protection systems. Since 2005, to deal with covariate shocks, the Ethiopian government has been operating the Productive Safety Net Programme (PSNP). However, there is as yet no nationwide programme to provide financial protection against out-of-pocket expenditures needed to deal with health shocks. As shown in the paper, given the frequency of such events, the sale of assets and the indebtedness generated by such shocks there is a clear need for health insurance schemes which work towards mitigating the financial consequences of health shocks.<sup>23</sup> Whether the recently launched community based health insurance scheme can play such a role is a question that requires further scrutiny.

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<sup>23</sup> In Uganda, Dekker and Wilms (2010) have shown that health insurance protects households by reducing the amount that they borrow and by reducing asset sales when they face health shocks.

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**Table 1: Scope of shocks**

	Affected only my household	Affected some households in this <i>Kebele</i>	Affected all households in this <i>Kebele</i>	Affected this and nearby <i>Kebeles</i>	Affected areas beyond this <i>Kebele</i>
Health	83.89	14.04	1.69	0.00	0.00
Natural	7.37	29.65	38.63	20.93	3.32
Economic	34.26	12.89	30.67	17.46	4.40
Crime/ conflict	73.95	23.53	2.52	0.00	0.00
<b>Notes:</b> - All figures are in percentages					

**Table 2: Probability of experiencing a shock**

		Health	Economic	Natural	Crime/conflict
<b>Economic status</b>	Asset quintile 2	-0.0699* (0.0359)	0.0846** (0.0416)	0.0957** (0.0412)	-0.00228 (0.0178)
	Asset quintile 3	-0.0908** (0.0358)	0.0758* (0.0427)	0.105** (0.0425)	-0.0108 (0.0172)
	Asset quintile 4	-0.0592 (0.0383)	0.0762* (0.0443)	0.0550 (0.0446)	0.00622 (0.0200)
	Asset quintile 5	-0.0574 (0.0419)	0.0467 (0.0476)	-0.0538 (0.0486)	0.00337 (0.0215)
<b>Human capital (Head's education)</b>	Informal educ.	-0.124*** (0.0320)	0.0275 (0.0405)	0.00891 (0.0419)	-0.0160 (0.0146)
	Primary educ.	-0.0165 (0.0292)	0.0699** (0.0302)	0.0435 (0.0317)	-0.0134 (0.0127)
	Secondary (+) educ.	0.0244 (0.0642)	0.0994 (0.0683)	-0.0786 (0.0667)	-0.00296 (0.0273)
<b>Demographics</b>	Household size	0.0236*** (0.00637)	0.0207*** (0.00640)	0.0180*** (0.00686)	-0.00495 (0.00313)
	Age of head	0.000548 (0.000938)	0.000479 (0.000947)	-0.000532 (0.000995)	-0.00137*** (0.000433)
	Head sex (male=1)	0.0353 (0.0401)	-0.00234 (0.0414)	0.0524 (0.0432)	-0.0132 (0.0210)
	Male share	0.00496 (0.0685)	-0.0933 (0.0679)	-0.120* (0.0725)	0.00987 (0.0308)
	Adult share	0.156** (0.0614)	0.128** (0.0611)	0.00389 (0.0648)	-0.0339 (0.0284)
<b>Head's religion</b>	Orthodox	0.202*** (0.0323)	0.109*** (0.0345)	-0.0648* (0.0367)	0.0488*** (0.0147)
	Protestant	0.168** (0.0705)	-0.0296 (0.0658)	0.0736 (0.0740)	0.00128 (0.0315)
	Other religion	0.0232 (0.0920)	-0.134* (0.0728)	0.0518 (0.106)	0.00568 (0.0499)
<b>Region dummy</b>	Amhara	0.508*** (0.0402)	0.0589 (0.0401)	0.295*** (0.0391)	0.200*** (0.0407)
	Oromiya	0.116** (0.0459)	-0.0889** (0.0374)	0.0182 (0.0422)	0.106*** (0.0340)
	SNNPR	0.526*** (0.0601)	0.349*** (0.0674)	-0.0896 (0.0698)	0.123** (0.0558)
	Observations	1630	1630	1630	1630
	Pseudo R2	0.1937	0.0871	0.0679	0.0925

**Notes:**

- The reference category for the asset quintiles is the poorest quintile; the reference category for the measure of human capital is the head of the household has no education; the reference category for religion is Muslim and for the regional dummies is Tigray;
- Standard errors are in parentheses; \*\*\*, \*\*, \* refer to 1%, 5% and 10% level of significance respectively

**Table 3: Coping responses and shocks: Descriptive statistics**

Coping response	% of households who used a specific coping response conditional on experiencing a shock				Differences in proportions (p-values)		
	Health (N=509)	Natural (n=771)	Crime/conflict (n=113)	Economic (n=534)	Health vs. Natural	Health vs. Crime/conflict	Health vs. Economic
Dissaved	15.72	40.86	16.81	37.08	0.000	0.773	0.000
Reduced food consumption	19.06	58.24	18.58	38.20	0.000	0.908	0.000
Sold assets (incl. food stocks)	29.86	28.66	27.43	21.72	0.644	0.608	0.003
Borrowed	18.47	8.17	1.77	11.61	0.000	0.000	0.002
Received support	4.72	2.46	3.54	2.25	0.029	0.586	0.029
Labor supply based strategy	4.72	5.19	4.42	3.93	0.704	0.895	0.534
No coping response	21.41	13.36	30.09	37.08	0.000	0.047	0.000

**Notes:** The last 3 columns report p-values from a test of equality of proportions.

**Table 4: Sources of borrowing**

Source of borrowing	% of households who borrowed from [source] given shocks			
	Health (n=509)	Natural (n=771)	Crime/conflict (n=113)	Economic (n=534)
Relatives	10.41	4.54	1.77	3.93
Neighbours	6.29	1.17	-	2.81
Money lenders	1.18	0.39	-	-
Formal sources	1.18	2.20	-	5.24
Iddir	0.98	-	-	-
Iqqub	-	-	-	0.37



**Table 5: Coping response by reported severity of shocks (% of households)**

Coping response	Health				Natural			
	Slight (n=202)	Moderate (n=123)	Strong (n=162)	Differences in proportions- Slight vs. Strong (p-values)	Slight (n=49)	Moderate (n=250)	Strong (n=470)	Differences in proportions- Slight vs. Strong (p-values)
Disaved	11.39	16.26	22.84	0.003	30.61	45.60	39.36	0.231
Reduced food consumption	8.42	29.27	27.16	0.000	42.86	72.00	52.77	0.187
Sold assets (incl. food stocks)	25.74	30.89	38.27	0.010	32.65	32.00	26.60	0.364
Borrowed	11.88	24.39	24.69	0.001	6.12	5.20	10.00	0.381
Received support	1.98	3.25	9.26	0.002	0.00	2.00	2.98	0.221
Labor supply based strategy	6.44	4.07	3.70	0.244	6.12	6.40	4.47	0.599
No coping response	30.69	15.45	17.28	0.003	16.33	9.20	15.11	0.821
Coping response	Crime/Conflict				Economic			
	Slight (n=27)	Moderate (n=43)	strong (n=39)	Differences in proportions- Slight vs. Strong (p-values)	Slight (n=61)	Moderate (n=150)	Strong (n=315)	Differences in proportions- Slight vs. Strong (p-values)
Disaved	14.81	11.63	25.64	0.290	26.23	40.67	36.83	0.113
Reduced food consumption	14.81	25.58	15.38	0.949	24.59	48.00	36.51	0.073
Sold assets (incl. food stocks)	14.81	34.88	30.77	0.137	9.84	22.00	24.13	0.013
Borrowed	0.00	2.33	2.56	0.402	6.56	8.67	13.97	0.112
Received support	3.70	0.00	7.69	0.504	1.64	0.67	2.86	0.589
Labor supply based strategy	3.70	2.33	7.69	0.504	8.20	6.00	1.90	0.008
No coping response	33.33	32.56	28.21	0.656	65.57	30.67	35.24	0.000

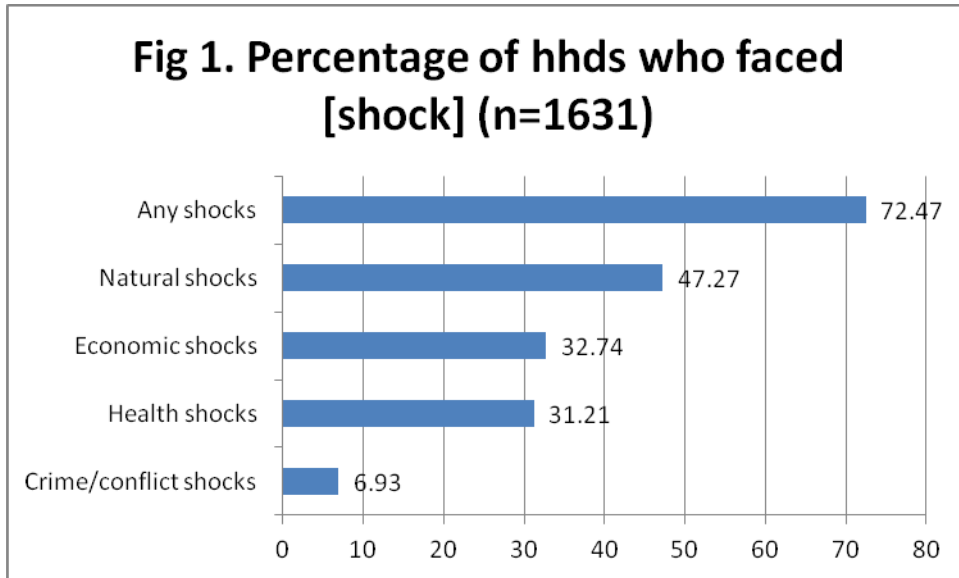
**Table 6: Probability of relying on a specific coping response**

VARIABLES	(1) Dissaved	(2) Reduce food consumption	(3) Sold asset	(4) Borrowed	(5) Received Support	(6) Adjusted labour supply	(7) No coping response
<b>Shocks</b>							
Crime conflict	0.0861 (0.0558)	0.0320 (0.0607)	0.142*** (0.0532)	-0.0240 (0.0355)	0.0117 (0.0176)	-0.00464 (0.0180)	0.173*** (0.0549)
Health shock	0.174*** (0.0362)	0.0201 (0.0409)	0.170*** (0.0350)	0.152*** (0.0264)	0.0336*** (0.0113)	0.0137 (0.0137)	0.0314 (0.0327)
Economic shock	0.267*** (0.0315)	0.241*** (0.0359)	0.0979*** (0.0310)	0.0678*** (0.0216)	0.00403 (0.00691)	-0.00512 (0.0109)	0.227*** (0.0293)
Natural shock	0.301***	0.406***	0.162***	0.0348*	0.00232	-0.00218	0.0693**
Observations	1,175	1,175	1,175	1,175	1,175	1,175	1,175
Pseudo R <sup>2</sup>	0.1385	0.3106	0.1074	0.1003	0.2355	0.1870	0.2463

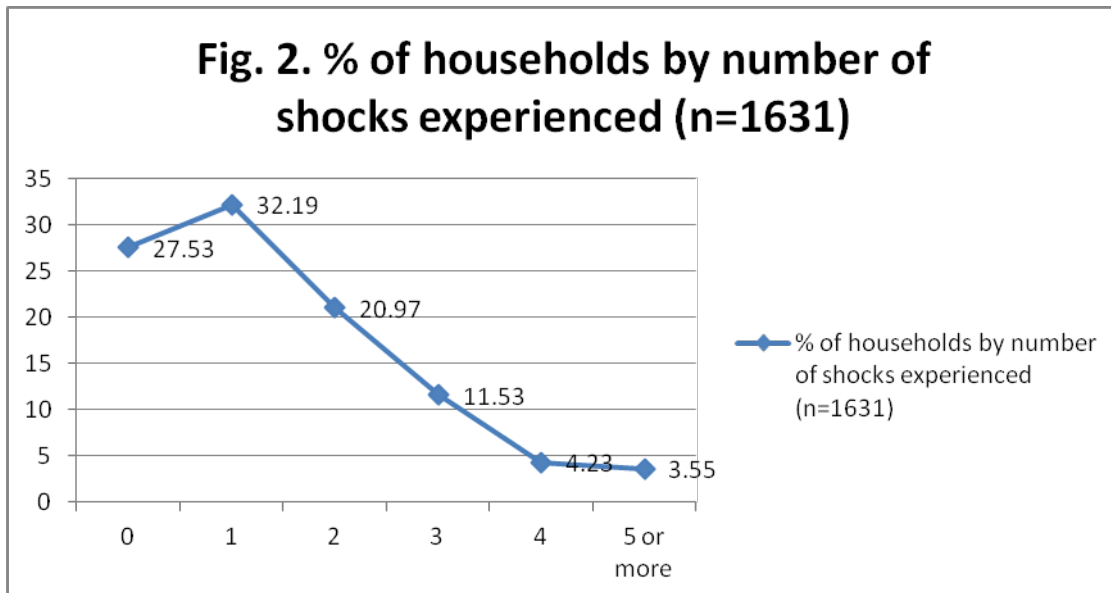
**Notes:**

- Selected marginal effects from a probit model are reported (see Appendix A for the full specification); standard errors are in parentheses; \*\*\*, \*\*, \* refer to 1%, 5% and 10% level of significance, respectively

**Figure 1: Incidence of shocks**



**Figure 2: Number of shocks experienced**



**Table A1: Probability of relying on a specific coping response**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
VARIABLES	Dissaved	Reduced Consumption	Sold asset	Borrowed	Received Support	Adjusted labor supply	No response
<b>Shocks</b>							
Crime conflict	0.0861 (0.0558)	0.0320 (0.0607)	0.142*** (0.0532)	-0.0240 (0.0355)	0.0117 (0.0176)	-0.00464 (0.0180)	0.173*** (0.0549)
Health shock	0.174*** (0.0362)	0.0201 (0.0409)	0.170*** (0.0350)	0.152*** (0.0264)	0.0336*** (0.0113)	0.0137 (0.0137)	0.0314 (0.0327)
Economic shock	0.267*** (0.0315)	0.241*** (0.0359)	0.0979*** (0.0310)	0.0678*** (0.0216)	0.00403 (0.00691)	-0.00512 (0.0109)	0.227*** (0.0293)
Natural shock	0.301*** (0.0304)	0.406*** (0.0338)	0.162*** (0.0312)	0.0348* (0.0211)	0.00232 (0.00657)	-0.00218 (0.0122)	0.0693** (0.0303)
<b>Demographics</b>							
Household size	-0.00108 (0.00961)	0.0180* (0.0109)	-0.0157* (0.00913)	-0.00774 (0.00632)	-0.00175 (0.00195)	0.00298 (0.00334)	0.0240*** (0.00870)
Adult share	-0.0191 (0.0980)	0.00655 (0.112)	-0.172* (0.0929)	0.0426 (0.0632)	0.00778 (0.0179)	0.0227 (0.0342)	0.0838 (0.0903)
Elderly share	0.330* (0.193)	0.516** (0.232)	-0.337* (0.180)	-0.0898 (0.128)	0.0466 (0.0324)	0.0143 (0.0650)	0.00144 (0.194)
Under 5 share	0.241* (0.124)	-0.410*** (0.146)	-0.147 (0.120)	-0.0292 (0.0839)	-0.0197 (0.0275)	-0.0486 (0.0417)	0.0567 (0.117)
Male share	0.107 (0.0883)	0.0938 (0.102)	0.128 (0.0829)	-0.00954 (0.0571)	-0.0304* (0.0176)	-0.0216 (0.0294)	0.0403 (0.0826)
Head sex	-0.0145 (0.0543)	-0.0189 (0.0617)	0.00239 (0.0506)	0.0279 (0.0312)	-0.000156 (0.00960)	-0.00790 (0.0193)	-0.00116 (0.0515)
Head age	-0.00226 (0.00169)	-0.00223 (0.00193)	0.000879 (0.00158)	0.000451 (0.00110)	0.000124 (0.000304)	-0.000920 (0.000565)	0.00161 (0.00158)
<b>Measures of economic status</b>							
Asset quintile 2	0.0345 (0.0508)	-0.0305 (0.0553)	0.000619 (0.0479)	-0.0304 (0.0281)	-0.00548 (0.00807)	-0.0109 (0.0154)	-0.0224 (0.0432)
Asset quintile 3	0.0560 (0.0528)	-0.0848 (0.0577)	-0.0429 (0.0480)	-0.0295 (0.0295)	-0.00959 (0.00756)	-0.000674 (0.0180)	-0.0775* (0.0418)
Asset quintile 4	0.0761 (0.0559)	-0.0636 (0.0604)	0.0739 (0.0531)	-0.0292 (0.0311)	-0.00676 (0.00873)	0.00880 (0.0207)	-0.0959** (0.0417)
Asset quintile 5	0.0821	-0.137**	0.0950	-0.0447	0.000407	-0.00212	-0.129***

	(0.0628)	(0.0670)	(0.0606)	(0.0336)	(0.0121)	(0.0206)	(0.0430)
PSNP beneficiary	-0.0462	0.0163	0.120***	0.0732**	0.00501	0.0143	-0.0718*
	(0.0428)	(0.0489)	(0.0433)	(0.0316)	(0.00914)	(0.0162)	(0.0371)
<b>Measures of human capital</b>							
Informal education	-0.112**	-0.0222	0.0530	-0.0352	-0.0132*	-0.00942	-0.0814*
	(0.0475)	(0.0579)	(0.0484)	(0.0329)	(0.00732)	(0.0161)	(0.0424)
Primary education	0.000395	0.0279	0.00527	0.0345	-0.0115	0.00266	0.00511
	(0.0374)	(0.0432)	(0.0361)	(0.0256)	(0.00749)	(0.0127)	(0.0344)
Secondary (+) education	0.0640	0.172**	0.0492	-0.00663	-0.00712	-0.0163	0.0596
	(0.0812)	(0.0810)	(0.0783)	(0.0488)	(0.0107)	(0.0219)	(0.0761)
<b>Measures of social capital</b>							
Social capital	-0.132***	0.00948	0.0275	0.0322	0.0312***	0.0209*	0.0388
	(0.0319)	(0.0374)	(0.0311)	(0.0224)	(0.0102)	(0.0121)	(0.0311)
Iddir member	0.119*	-0.0749	0.0456	-0.0122	-0.0201	0.0268*	-0.220***
	(0.0626)	(0.0750)	(0.0613)	(0.0428)	(0.0182)	(0.0154)	(0.0683)
<b>Religion of the head</b>							
Orthodox	0.0817*	-0.254***	-0.0532	-0.0472	-0.00917	0.0619***	0.150***
	(0.0464)	(0.0553)	(0.0428)	(0.0333)	(0.0119)	(0.0230)	(0.0453)
Protestant	0.0308	-0.233***	0.102	0.00668	0.00220	0.310	0.0185
	(0.0864)	(0.0880)	(0.102)	(0.0549)	(0.0172)	(0.210)	(0.0739)
Other religion	-0.0655	-0.287***	0.111	0.0474	-0.000194	0.444	-0.0533
	(0.118)	(0.103)	(0.144)	(0.0881)	(0.0221)	(0.349)	(0.0874)
<b>Region dummies</b>							
Amhara	-0.110	0.0970	-0.0651	-0.104**	-0.0240**	-0.0758***	0.447***
	(0.0828)	(0.0975)	(0.0782)	(0.0427)	(0.0119)	(0.0189)	(0.0888)
Oromiya	0.0344	-0.564***	-0.0948	-0.0582	-0.0167*	-0.0283	0.504***
	(0.0868)	(0.0478)	(0.0729)	(0.0448)	(0.00931)	(0.0174)	(0.0865)
SNNPR	-0.166*	-0.367***	-0.378***	-0.0399	-0.00173	-0.152***	0.773***
	(0.0967)	(0.0984)	(0.0756)	(0.0603)	(0.0179)	(0.0552)	(0.0633)
Observations	1,175	1,175	1,175	1,175	1,175	1,175	1,175
Pseudo R2	0.1385	0.3106	0.1074	0.1003	0.2355	0.1870	0.2463

Notes: The reference category for the asset quintile dummy is the poorest quintile; the reference category for the measure of human capital is the head of the household has no education at all; the reference category for the religion of the head is Muslim; the reference category for the region dummy is Tigray; the variable "social capital" refers to a dummy variable if the household has someone to rely on at times of shock. Marginal effects from a probit model are reported; standard errors are in parentheses; \*\*\*, \*\*, \* 1%, 5% and 10% significance, respectively

**Table A2: Summary statistics of variables in the regressions**

Variable name	Variable definition	Mean	Std. Dev.
Crime/conflict shock	=1 if shock occurred	0.069	0.254
Health shock	=1 if shock occurred	0.312	0.463
Economic shock	=1 if shock occurred	0.327	0.469
Natural shock	=1 if shock occurred	0.473	0.499
Asset quintile 1	Asset poorest	0.200	0.400
Asset quintile 2	Asset second poorest	0.200	0.400
Asset quintile 3	Asset third poorest	0.200	0.400
Asset quintile 4	Asset second richest	0.200	0.400
Asset quintile 5	Asset richest	0.200	0.400
PSNP beneficiary	Household is currently a beneficiary of productive safety net program	0.229	0.420
No education	Head has no education	0.466	0.499
Informal education	Head has an informal education	0.131	0.337
Primary education	Head has a primary education	0.361	0.480
Secondary (+) education	Head has a secondary education	0.042	0.201
Household size		5.794	2.228
Head age		46.227	14.036
Head sex	Male=1	0.860	0.347
Male share	Share of male members	0.502	0.191
Adult share	Share of adults aged [15-65]	0.498	0.209
Elderly share	Share of adults aged >65	0.049	0.149
Under 5 share	Share of adults <=5	0.149	0.157
Muslim	Head is Muslim	0.265	0.441
Orthodox	Head is Orthodox Christian	0.517	0.500
Protestant	Head is Protestant	0.194	0.395
Other religion	Other head's religion	0.025	0.157
Social capital	Household has someone to rely on if shock happens	0.381	0.486
Iddir member	Member of a traditional association for financial assistance at times of difficulty	0.717	0.451
Tigray	Lives in Tigray region	0.250	0.433
Amhara	Lives in Amhara region	0.250	0.433
Oromiya	Lives in Oromiya region	0.250	0.433
SNNPR	Lives in SNNPR region	0.250	0.433