Reducing Child Labor through Risk Management: Short-Term Behavioral Effects of Index Insurance in East Africa

Hyuk Harry Son *

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Abstract

This paper examines whether formal insurance can reduce child labor and improve time-use outcomes in the short term among drought-prone pastoralist households in East Africa. I use data from a randomized encouragement design, in which discount coupons for index-based livestock insurance (IBLI) were randomly assigned. Insurance uptake is instrumented with the value of the premium discount. One additional season of insurance uptake reduces the likelihood of child labor by 8.9 percentage points and overall work by 12.1 points. These changes are not driven by increased school enrollment or attendance, but by a reallocation of time: the share of children combining work and school declines by 9.2 points, while full-time schooling increases by 8.7 points. Effects are concentrated in non-drought periods and are robust across specifications. I find no evidence of increased income or adult-child labor substitution. Instead, results point to production-side adjustments—smaller herd sizes and greater herd mobility—as plausible mechanisms. Effects are stronger among households with lower baseline reliance on child labor, no savings, or small to mid-sized herds, and among children more involved in herding. These findings suggest that index insurance can promote short-run improvements in children's schooling by enabling production strategies that reduce or reconfigure the need for child labor, offering a novel channel for policy to support human capital investment under risk.

JEL Classifications: G52, I20, J22, O15

Keywords: microinsurance, child labor, education, risk coping strategies

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1 Introduction

Human capital is a key determinant of long-run economic development, yet many households in low- and middle-income countries struggle to invest in their children's education (Basu and Van, 1998; Todd and Wolpin, 2006; Edmonds and Schady, 2012). Exposure to aggregate shocks – such as droughts, commodity price collapses, or unusually productive seasons – during childhood can further hinder human capital accumulation by reducing household income and increasing the opportunity cost of school attendance. A large body of evidence shows that such shocks often lead to early school withdrawal and increased child labor, either as a coping response to income losses or to take advantage of emerging labor opportunities during positive shocks (Beegle, Dehejia, and Gatti, 2006; Björkman-Nyqvist, 2013; Shah and Steinberg, 2017; Bai and Wang, 2020; Dumas, 2020; Nordman, Sharma, and Sunder, 2021). These changes can have long-term implications, as children who leave school rarely return (Edmonds, 2022), and early exposure to work is associated with lower earnings, poorer health, and reduced educational attainment in adulthood (Edmonds, 2008; Emerson and Souza, 2011; DeGraff, Ferro, and Levison, 2016; Emerson, Ponczek, and Souza, 2017).

In the absence of formal insurance, households facing climate risk often rely on costly coping strategies such as withdrawing children from school, selling productive assets, or reducing consumption (Karlan et al., 2014; Cole, Giné, and Vickery, 2017; Janzen and Carter, 2019). Informal risk-sharing arrangements are typically inadequate for managing covariate shocks, and while credit access has been shown to mitigate some effects on children's schooling, results are often context-dependent and sensitive to household characteristics (Dehejia and Gatti, 2005; Beegle, Dehejia, and Gatti, 2006; Edmonds, 2006; Alvi and Dendir, 2011; Bandara, Dehejia, and Lavie-Rouse, 2015). Index-based insurance – particularly for climate-related risks – has been shown to reduce asset loss, improve food security, and encourage productive investment (Jensen, Barrett, and Mude, 2017; Cole, Giné, and Vickery, 2017; Janzen and Carter, 2019; Matsuda, Takahashi, and Ikegami, 2019). While recent work has begun to document its long-run impacts on educational attainment (Barrett et al., 2024), short-run effects on intra-household labor allocation and human capital investment decisions remain largely unexplored. While health insurance has been shown to reduce child labor by stabilizing income and mitigating adult health shocks (Landmann and Frölich, 2015; Frölich and Landmann, 2018), we know little about to what extent insurance against climate-related production shocks can play a similar role.

This paper examines how formal insurance product affects children's labor and schooling outcomes in drought-prone pastoralist households in northern Kenya and southern Ethiopia, focusing on behavioral responses within the one-year coverage period of the insurance policy. I use data from a randomized encouragement design in which eligible households were offered discount coupons for index-based livestock insurance (IBLI), and instrument insurance uptake with the randomized value of the premium discount. The insurance contract covers forage scarcity measured via satellite-based vegetation indices and is designed to buffer households against drought-induced livestock losses. I combine this experimental variation with panel data covering multiple seasons to estimate the short-term effects of insurance uptake on children's time allocation and to investigate the underlying household-level mechanisms.

The results show that insurance significantly reduces child labor and increases the share of children reporting full-time schooling as their activity. One additional season of insurance uptake lowers the probability of child labor by 8.9 percentage points and overall work by 12.1 percentage points. However, there is no significant change in overall school enrollment or attendance, suggesting that insurance does not expand access to schooling. Instead, these reductions in labor are concentrated among children who would otherwise combine school and work: the share reporting part-time combinations declines by 9.2 percentage points, while the share reporting full-time schooling—defined as identifying "student" as their sole activity—increases by 8.7 percentage points. The effects are consistent across alternative specifications and remain robust when examining intent-to-treat estimates based on coupon exposure. These changes are concentrated in non-drought periods, consistent with insurance enabling production reorganization beyond immediate shock buffering. Together, these results suggest that insurance uptake leads to meaningful shifts in children's time use—primarily by reducing part-time combinations of work and schooling and increasing full-time school participation—rather than expanding overall school enrollment.

The evidence supports a mechanism in which insurance enables shifts in household production strategy—such as herd downsizing and increased mobility—that reduce the need for child labor or make it less feasible to combine with schooling. Insurance uptake is associated with smaller herd sizes and greater herd mobility – adjustments that reduce the household's reliance on child labor for herding. I find no significant effects on household income or adult labor supply, providing little support for liquidity constraints or intra-household labor substitution as operative channels. Heterogeneous effects further reinforce this interpretation by pointing to reductions in child labor where insurance relaxes labor constraints or shifts production in ways that make child work harder to sustain alongside schooling. Insurance effects are larger among households with lower baseline reliance on child labor, suggesting that those with some room to maneuver in their labor allocation were more responsive to risk reduction. Households without savings, and those with small to mid-sized herds—both of which are more likely to turn to child labor during shocks—also experience larger effects, consistent with a stronger behavioral response to improved risk protection. Finally, insurance effects are larger among households with a higher share of shoats, a more labor-intensive livestock system, indicating that insurance facilitates reductions in child labor where production systems are especially demanding. At the child level, effects are strongest for boys, older children, and first-borns – those most engaged in herding and core labor roles—reinforcing the interpretation that insurance-induced production shifts reduce the need for essential child labor rather than just marginal contributions. Together, these patterns support a mechanism in which insurance facilitates production adjustments that reduce households' reliance on children's labor – either by lowering total labor demand or by increasing the logistical difficulty of combining child work and school.

This paper contributes to a growing literature on the impacts of economic shocks and financial instruments on children's human capital. Prior studies show that adverse income shocks—such as crop failure or drought—can increase child labor and reduce school participation, often with persistent long-term consequences (Beegle, Dehejia, and Gatti, 2006; Björkman-Nyqvist, 2013). More recent studies emphasize that both adverse and positive productivity shocks can lead to increases in child labor, often through household-level production adjustments or shifts in labor demand (Shah and Steinberg, 2017; Bai and Wang, 2020; Dumas, 2020; Bau et al., 2020; Nordman, Sharma, and Sunder, 2021). These findings highlight how child labor demand shapes children's responses to shocks and can constrain the returns to human capital investments, even when conditions improve. Some studies suggest that access to credit may help buffer these effects in certain settings (Dehejia and Gatti, 2005; Bandara, Dehejia, and Lavie-Rouse, 2015), while others find limited or even adverse impacts, particularly when credit expands household production and demand for child labor (Maldonado and González-Vega, 2008; Augsburg et al., 2015). This paper shows that microinsurance – unlike credit – can facilitate production adjustments that reduce households' reliance on child labor, either by lowering overall labor demand or by shifting production in ways that make children's work less compatible with continued school participation.

Second, this paper expands the literature on the mechanisms through which insurance affects child outcomes by documenting how production-side adjustments influence children's time use. While health insurance studies emphasize income stabilization and adult-child labor substitution as key channels (Landmann and Frölich, 2015; Frölich and Landmann, 2018), I identify a distinct production-side mechanism. Insurance uptake enables households to shift toward smaller and more mobile herds, reducing the need for flexible labor and loosening constraints traditionally filled by children. Related evidence shows that when productive capacity expands without relaxing labor constraints, child labor may increase: for instance, Maldonado and González-Vega (2008) document that access to microcredit increased child labor by enabling household enterprise expansion, and Edmonds and Theoharides (2020) find that productive asset transfers in a poverty graduation program increased children's work effort in the Philippines. While these studies suggest that financial or productive interventions can increase child labor by raising household labor demand, I show that insurance – by reducing risk – enables production adjustments that lower labor demand or make children's work less compatible with school. By documenting these shifts and their implications for time use, the paper identifies a production-side channel through which financial protection affects children's outcomes in high-risk rural settings.

Finally, this paper adds to the literature on index-based insurance by documenting its effects on intra-household labor allocation and time use – outcomes that have received little attention in prior studies. Existing work has primarily focused on consumption smoothing, asset protection, and investment responses to index insurance (Dercon and Christiaensen, 2011; Karlan et al., 2014; Jensen, Barrett, and Mude, 2017; Janzen and Carter, 2019; Tafere, Barrett, and Lentz, 2019; Gehring and Schaudt, 2024). To date, child outcomes have received limited empirical attention in this literature. Jensen, Barrett, and Mude (2017) is the only published study to examine child outcomes, analyzing school absenteeism as a secondary measure and finding no statistically or economically significant effects. In contrast, this paper places children at the center of the analysis, using individual-level panel data to examine detailed time-use outcomes – distinguishing between full-time schooling, part-time work and school, and total work. It also investigates the underlying mechanism: changes in household production strategy – specifically herd downsizing and increased mobility – that reduce the demand for child labor or make children's work less compatible with school attendance. These contributions distinguish this paper from earlier work and show that index insurance can shape intra-household allocation decisions in ways not previously documented. A related study (Barrett et al., 2024) uses the same experimental variation to estimate the long-run effects of IBLI on completed educational attainment. The present paper complements that work by focusing on short-run behavioral responses – particularly at the intensive margin – that help explain how insurance exposure can translate into higher human capital over time.

2 Study Settings

2.1 Marsabit and Borena

Marsabit County in Kenya and the Borena Zone in Ethiopia are adjacent arid and semi-arid lands (ASALs), as depicted in Figure 2. These regions rely predominantly on pastoral livelihoods, with 74 percent of sampled households citing livestock herding as one of their income sources. Additionally, 87 percent of households have at least one member engaged in livestock-related activities as their primary or secondary economic activities as both adult and child labor is an essential input to livestock production along with other inputs such as fodder and livestock.

These areas are characterized by remote locations, low population density, and widespread poverty. Moreover, a significant portion of the population faces the risk of poverty traps, exacerbated by the frequent occurrence of droughts induced by climate change. These droughts can lead to substantial livestock losses, potentially pushing households below a critical threshold of herd size, typically ranging from 10 to 20 tropical livestock units (TLU)[1]. Below this threshold, households may become trapped in a low-level equilibrium poverty trap (Lybbert et al., 2004).[2]

In pastoral economies, the high demand for family labor results in significant children's involvement in work, primarily within the household [3], often focusing on tasks related to livestock herding and animal care. For instance, 70 percent of children aged 5 to 17 in the study sample engage in work, with 61 percent involved in livestock-related activities such as herding and animal care.[4]

These children work longer hours, particularly if they're involved in trekking animals. Data from the Kenya Integrated Household Budget Survey 2015-2016 reveals that children in the Marsabit district work substantially more than those in other parts of Kenya, averaging 68 hours per week compared to 20 hours.[5] Similarly, in the Borena zone of Ethiopia, where 56 percent of children work compared to the national average of 27 percent, children work an average of 31 hours per week, significantly higher than the 23 hours reported in other areas (Data from Socioeconomic Survey 2015-2016). Despite variations in measurement methods, these figures underscore the notably intense child labor in these study regions compared to the rest of their respective countries. Moreover, the activities they are engaged in expose children to risks such as livestock raids, and dangers from wildlife and diseases.

Male children, in particular, are commonly involved in herding as they grow older (Kenea, 2019). However, the decision to engage children in work is influenced by factors such as household wealth, access to hired herders, and mobility strategies, such as herd mobility for grazing

[1]The Tropical Livestock Unit (TLU) is a standardized measure used to compare different types of livestock in a single unit. The conversion factors for different livestock species are as follows: 1 TLU = 0.7 Camel = 1 Cattle = 10 Sheep/goats.

[2]Figure 1 shows that the average herd size of the household is small, while the maximum herd size reaches up to 457 TLUs. The mean herd size is 16.5 TLU, the median is 9.6, the 75th percentile is 19.9, and the 90th percentile is 36.3. More than three-quarters of the sample households own less than 20 TLUs of animals.

[3]The labor market for children is nearly nonexistent. For example, in Ethiopia, the labor market is generally sparser in southern Oromia where Borena zone is part of it, than the other regions. Job opportunities and job-skill training institutions are also insufficient in these areas (USAID, 2014).

[4]Herding includes the activity of keeping animals together as a group during the search for pasture or water, watching over animals' safety. On the other hand, animal care includes activities such as feeding, cleaning or caring for sick animals, collecting water or fodder for animals (FAO, 2013).

[5]Working hours are measured by the usual hours of work for any economic activities that children are engaged in. However, the numbers are similar when the working hours are measured by the sum of actual working hours in the last seven days for a child's primary and secondary activities.

purposes.[6]

Particularly, herd mobility is a beneficial strategy for both the long-term and the short-term because it increases the quantity of animal feeding in the short-term and maintains the grazing land condition at a sustainable level in the long term (Hurst et al., 2012). It often takes up to 3 months per trip, and it is not uncommon for children to accompany the herders on this trip (Kenea, 2019). When they do, the cost of maintaining schooling and working increases as they move to a different area.

High work participation rates and longer work hours would leave little room for educational investment in pastoral households. In the Marsabit district of Kenya, 54 percent of the population did not receive any education, compared to 10 percent in other regions of Kenya. Similarly, in Ethiopia's Borena zone, 70 percent of the population lacks education, while it's 39 percent in other regions.

Several factors contribute to low educational attainment in these regions. Seasonal migration, critical for sustaining herd size, makes delivering quality education challenging due to the remoteness of villages and the seasonal movements of pastoral communities. In the Borena zone, for instance, the school catchment area is 8 to 10 km, far exceeding the standard target of 2.5 to 3 km (Kenea, 2019). In response, governments have introduced measures such as mobile schools and Alternative Basic Education (ABE) programs.

Demand-side constraints also hinder educational attainment. The opportunity cost of schooling, including educational expenses and loss of potential income from children's work, is substantial (Mburu, 2017). Moreover, irrelevant curriculum and language of instruction, along with the inflexibility of the formal school system, pose challenges for pastoral populations where mobility is crucial and animal production skills are considered important (Ruto, Ongwenyi, and Mugo, 2009; FAO, 2013). Figure A1 illustrates that parents' refusal to send children to school and household workloads are major reasons for non-enrollment in the Marsabit district, while age restrictions are significant in other areas. In Ethiopia, children's work responsibilities, parental attitudes toward education, and age restrictions are primary reasons for non-enrollment.

Supply-side constraints are unaffected by household insurance uptake, but demand-side constraints, driven by households' perceptions of schooling's benefits relative to work, may change with insurance uptake decisions. Thus, changes in children's activities can be expected due to insurance purchases.

[6]The wealthiest households who could afford to hire herders may choose to employ herders instead of sending children to work (Dillon, 2013).

2.2 Index-Based Livestock Insurance

Index-based livestock insurance (IBLI) is designed to protect households from drought-induced losses, foster recovery from shocks, and prevent collapses into poverty traps (Chantarat et al., 2013). The description of IBLI products in this section is primarily drawn from studies on products sold in Marsabit by Jensen, Barrett, and Mude (2017) and Janzen and Carter (2019), and in Borena by Takahashi et al. (2016).

IBLI triggers indemnity payouts based on specific criteria met by an index of the insurance area. Predicted livestock mortality rates (in Kenya) and Normalized Difference Vegetation Index (NDVI) values (in Ethiopia) inform payout decisions. For instance, in Kenya, a predicted livestock mortality rate exceeding 15 percent triggers payouts, while in Ethiopia, the forage condition index ranking at the 15th percentile or higher on the Woreda-level historical distribution serves as the trigger criterion. The index is computed at an area-aggregate level referred to as index units, such as dividing Kenya's Marsabit district into five insurance divisions and Ethiopia's Borena Zone into eight Woredas.[7] Utilizing NDVI, collected at an area-aggregate level by external organizations, minimizes the need for verifying individual loss claims and mitigates adverse selection and moral hazard issues.

Sales windows precede the long-rain, long-dry (LRLD) and short-rain, short-dry (SRSD) seasons by two months (e.g., LRLD sales window typically occurs in January-February, and SRSD in August-September), with coverage lasting one year, as depicted in Figure 3. Due to a year of coverage period, there will be a period with overlapping insurance coverage if a household purchases insurance in two consecutive sales windows.[8] Between 2010 and 2015, the period that this study covers, there were two payouts triggered in Kenya, in 2011 and 2012, and one triggered in 2014 in Borena, Ethiopia (marked in yellow bar in Figure 3).

The International Livestock Research Institute (ILRI) and the research team implemented evaluation pilot programs to raise awareness of and demand for the product in the study areas. Implemented between 2009 and 2015 in Kenya and 2012 to 2015 in Ethiopia, interventions included informational recordings, games, and discount coupons. Coupons, distributed randomly to households in each insurance area, offered discounts ranging from 10 to 80 percent on premiums for the first 15 insured TLUs.[9] The randomization for the coupon-receiving households was administered

[7] Chantarat et al. (2013) provides analytical detail about the modeling process.

[8] In Kenya, policies are sold in Tropical Livestock Units (TLUs). The premiums were calculated by the product of premium rate, insured livestock in TLU, and the price per TLU. In Ethiopia, the premiums were calculated by the product of the Woreda-specific insurance premium rate and the total insured herd value (TIHV), a weighted sum of insured animals with species-specific animal price as a weight for each animal species.

[9] The discount rate ranged from 10 to 60 percent in Kenya and 10 to 100 percent in Ethiopia at 10 percent intervals. In rounds 5 and 6, some Kenyan participants also received a 70 to 80 percent discount.

every round. Despite discounts, most households insured less than 15 TLUs (Panel B of Figure A2), highlighting the magnitude of the potential discounts.[10]

3 Data and Empirical Strategy

3.1 Dataset

To investigate the impact of index-based livestock insurance (IBLI) on children's work and schooling decisions, data on households' insurance purchases, premium discounts, and children's activity choices are essential. The primary data source of this paper is household panel surveys conducted by the International Livestock Research Institute (ILRI) and academic researchers as part of continuous impact evaluations of the IBLI product (Alulu, Jensen, and Ikegami, 2023; International Livestock Research Institute, 2018). Baseline surveys were conducted in 2009 and 2012, respectively, gathering detailed information on living standards, herding practices, children's participation, and schooling and working hours. Administrative data from insurance companies provided information on households' insurance purchases and the premium discount rates they received.

The primary variable of interest is the activity status of children, categorized into four groups to capture their work and schooling status: full-time work, part-time work and schooling, full-time schooling, and no activities. This disaggregation is crucial as children in these contexts often bear multiple burdens, including education, economic work, and domestic tasks (FAO, 2013). Primary and secondary activities over the preceding 12 months prior to the survey were considered, with a range of activities classified as work, such as herding livestock, petty trading, and domestic work.

The classification of children's activity status is as follows: i) Working full-time: When a child's only reported activity, either primary or secondary, is work, ii) Part-time work and schooling: If a child reports one primary or secondary activity as work and the other as attending school, iii) Full-time schooling: When the child's sole activity, either primary or secondary, is attending school, iv) No activity: If the child does not fit into any of the above categories. These four categories provide a comprehensive and mutually exclusive framework for categorizing children's activities.

Furthermore, a measure of child labor, aligned with UNICEF criteria, is employed. Children aged 5 to 11 are classified as engaging in child labor if they devote at least 1 hour per week to economic work or 21 hours to unpaid household services. Similarly, children aged 12 to 14 are considered engaged in child labor with at least 14 hours of economic work or 21 hours of unpaid

[10]The amount of discount could be significant: The premium for 15 TLUs could range from 8,285 to 16,575 ETB (equivalent to USD 466 to 932) in Ethiopia and 5,850 to 24,600 KSh (equivalent to 74 to 280 USD) in Kenya.

household services per week, while those aged 15 to 17 qualify if they commit at least 43 hours per week to economic work.

I focus on children aged 5 to 17 years old for several reasons. Firstly, this age group aligns with common practices in the child labor literature, facilitating comparability with existing research. Secondly, it reflects the minimum legal working and school age in both countries. In Kenya, formal schooling begins at age five, while it begins at age six in Ethiopia. Therefore, the lower bound is set at age five. The minimum legal working age is 17 in Kenya and 15 in Ethiopia, with hazardous work prohibited until age 18 in both countries. Thus, the upper age limit for the sample is set at 17 to adhere to legal restrictions.

Table 1 presents the summary statistics of the study sample categorized by coupon receipt status, along with the balance between the groups. The average age of household heads is 49 years old, with 62 to 65 percent being male. Household size, measured in adult equivalent, ranges from 4.6 to 4.9 on average. Additionally, the average household owns 13.6 to 14.1 Tropical Livestock Units (TLU) of animals (Panel A of Table 1).

In terms of children's demographics, the average age of children in the study sample is 11 years old, with 46 percent being female across both coupon and no-coupon households (Panel B of Table 1). Among these children, 41 to 42 percent are engaged in full-time work, while 28 to 29 percent work while attending school, and 19 to 20 percent solely attend school. Approximately 10 percent of children are not involved in any of these activities, with the majority being younger than seven years old.

3.2 Empirical Strategy

3.2.1 The Average Effects of Insurance

The most straightforward approach to study the impacts of microinsurance on child outcomes and its underlying mechanisms is to compare the outcome of households with and without insurance coverage, leveraging exogenous variations in insurance uptake.

However, the decision to purchase insurance is not independent and may be influenced by various factors, leading to endogenous selection. For instance, factors such as basis risk, participation in social groups, insurance price, financial liquidity, and spatio-temporal adverse selection can drive pastoralists' decisions to purchase insurance (Jensen, Mude, and Barrett, 2018), and some of these factors may be correlated with children's activities. For example, low financial liquidity may increase children's involvement in work and reduce school attendance.

To address this potential endogeneity issue, I exploit exogenous variations in the probability of purchasing insurance created by randomly distributed coupons with varying premium discount rates. These discount rates serve as instruments for actual insurance coverage, allowing for a more robust estimation of the insurance's impact on child outcomes, following the approach of Jensen, Barrett, and Mude (2017).

As the first stage, I estimate:

$$CIBLI_{hrt} = \gamma_0 + \gamma_1 DC_{hrt} + X'_{iht} \cdot \gamma_2 + \nu_h + \theta_t + \psi_r + \eta_{hrt} \tag{1}$$

where $CIBLI_{hrt}$ represents the total number of times the household h in region r purchased insurance covering that year preceding the survey round t. This accumulation spans three sales seasons because up to three recent IBLI sales periods may influence a household's decision regarding child labor. Child outcomes are determined based on a child's primary activity during the 12-month period prior to the interview. Since the survey was conducted annually, there are two sales periods between each survey round. Insurance coverage lasts for one year. Therefore, as illustrated in Figure 3, the three recent IBLI sales periods constitute the relevant time frame for assessing the insurance effect on child outcomes.[11] DC_{hrt} denotes the cumulative discount rate over the three consecutive sales seasons preceding the survey.[12]

The model incorporates time-varying household-level characteristics denoted by X'_{hrt} along with household-, year-, and region-fixed effects, denoted by ν_h, θ_t, and ψ_r, respectively. These fixed effects control for common time trends across regions and region-specific characteristics. η_{hrt} represents the error term clustered at the household level, allowing for intra-household correlations across children and across years.

Using the predicted value of cumulative insurance uptake from the Equation (1), I estimate the following second-stage regression equation:

$$y_{(i)hrt} = \beta_0 + \beta_1 CIB\hat{L}I_{hrt} + X'_{(i)hrt} \cdot \beta_2 + \nu_h + \theta_t + \psi_r + \varepsilon_{(i)hrt} \tag{2}$$

where y_{ihrt} denotes the outcome of child i in household h living in region r at survey round t, and $CIB\hat{L}I_{hrt}$ represents the predicted value of cumulative insurance uptake. The other notations are consistent with those used in Equation 1. As the unit of randomization was at the household

[11] For example, in round 3 of Ethiopia, the August-September 2012, January-February 2013, and August-September 2013 sales seasons are relevant.

[12] Figure 4 presents the distribution of cumulative discount rates and insurance uptake over one year. On average, the coupon recipients were provided with 63 percent discount rates, and 26 percent of the households purchased at least once a year.

level, but the focus is on individual-level outcomes, adjustments were made using the inverse of the number of children in the household. For certain outcome variables measured at the household level, the dataset is aggregated at the household level.[13] The coefficient β_1 is the coefficient of interest as it captures the average impact of insurance.

3.2.2 Disaggregating the Effects of Insurance upon Shock

During the study period, droughts occurred in two sales seasons in Marsabit and one in Borena. Using this information, I further estimate the effect of insurance when the region experiences a drought shock. The estimating equation for the first stage would be:

$$\begin{aligned} CIBLI_{hrt} =& \gamma_3 + \gamma_4 Shock_{rt} + \gamma_5 DC_{hrt} + \gamma_6 Shock \cdot DC_{hrt} + X'_{iht} \cdot \gamma_7 \\ & + \nu_h + \theta_t + \psi_r + \eta_{hrt} \end{aligned} \tag{3}$$

where all notations remain consistent with those used in Equation 1 except for $Shock_{rt}$, which is an indicator that equals one if the region r experienced drought shock in round t. Region is considered to have experienced drought shock during round t if the insurance payout was triggered in one of the two sales seasons covered by round t. It is important to note that the recall period for the child outcome is also 12 months before the survey, and payouts were triggered after each agricultural season. Therefore, the estimates in this regression capture a blend of ex-ante risk mitigation effect and ex-post payout effect of insurance on outcome variables.[14]

Since the focus is on the differential response across insured and uninsured households upon shock, two endogenous variables were used: The insurance uptake indicator (DC) and the interaction of the insurance uptake and the drought shock indicator ($Shock \cdot DC$).

Using the predicted values from the Equation (3), I estimate the following second-stage regression equation:

$$\begin{aligned} y_{(i)hrt} =& \beta_3 + \beta_4 Shock_{rt} + \beta_5 \widehat{CIBLI}_{hrt} + \beta_6 Shock_{rt} \cdot \widehat{CIBLI}_{hrt} + X'_{(i)hrt} \beta_7 \\ & + \theta_t + \psi_r + \varepsilon_{(i)hrt} \end{aligned} \tag{4}$$

[13] Household-level outcomes include the size of the livestock that the households own, herd, that are adults, at home, and lactating at the time of the survey.

[14] For example, consider survey round 4 in the Borena zone, which collects information on child outcomes from March 2014 to February 2015. Some regions experienced drought shock in the Long-Rain, Long-Dry season of 2014, and payout was triggered in November 2014. Consequently, the estimates of the insurance effect on child outcomes encapsulate the average of the adverse impact of the shock and the recovery from it due to payouts.

where $CI\hat{BLI}_{hrt}$ is the predicted value of cumulative insurance uptake from Equation 3. Here, β_4 captures the effect of drought shock on households without insurance coverage, while β_5 represents the effect of insurance uptake on children's activities during non-drought periods. Furthermore, β_6 captures the difference in the outcome of children from insured and uninsured households when a drought shock occurs. Therefore, to assess whether insurance protects households from drought shock, we estimate the sum of β_4 and β_6, which is presented separately at the bottom of each table.

4 Results

4.1 Validity of the Instruments and the First Stage Results

Instruments are valid under two essential conditions: i) independence of the instrument and ii) exclusion restriction. In principle, instruments from a randomized encouragement design should not correlate with any observed or unobserved heterogeneity. To ensure the random distribution of coupons, I tested the balance of demographic characteristics between households that received and did not receive coupons. Table 1 provides summary statistics and mean differences of variables between coupon recipients and non-recipients, along with the p-value of the joint orthogonality test of variables to the coupon distribution. The differences in 15 household and individual characteristics between coupon and no-coupon households are not statistically significant, except for livestock expenditure, where coupon recipients spent 0.15 USD less than the non-coupon recipient. The p-value from the joint significance test for household characteristics is 0.34, and 0.57 for individual characteristics, indicating that the coupon distribution was well-balanced.

The exclusion restriction requires that the instrument correlates with endogenous variables but not with unobserved heterogeneity (ε_{ihrt}). In this study, the concern is whether the cumulative discount rates offered to pastoralists influenced their child outcomes through channels other than insurance uptake. Premium discounts may impact the outcome only when the discounts were applied to the premium, that is, when a pastoralist purchases an insurance policy. It is reasonable to assume that randomized discount coupons influence household decisions regarding child time allocation solely through insurance uptake decisions. However, the exclusion restriction could be violated if there is a social spillover effect. Employing a framework similar to that of Barrett et al. (2024) which addresses this concern in more detail, I first examine whether a household's cumulative discount rate affects the average number of cumulative insurance uptakes among its village members, or whether the average cumulative discount rate of the village members influences the number of insurance uptakes. Table A1 demonstrates that, once the own discount rate is controlled for, no statistically significant effects are found, suggesting the absence of social spillovers over the multiple sales seasons. This cross-relationship of discount rates and insurance uptake between pastoral households and their neighbors would have served as the first stage of the estimation had there been any observable relationship. While this does not rule out all potential violations, the findings provide supportive evidence for the validity of the exclusion restriction.

Another potential concern about the instrumental variables approach, although it is not a violation of one of the two essential assumptions, is the strength of instruments. Table 2 shows the result from the first stage estimation – Equation 1 and 3. Columns (1) presents the correlation coefficients from estimating Equation 1. The estimated coefficients are positive and statistically significant at the 1 percent level, suggesting strong predictive power at the first stage. Columns (2) and (3) show the correlation between the two endogenous variables and the two instruments employed in Equation 3. The results show that the cumulative coupon discount rate in non-drought periods strongly predicts the cumulative insurance uptake in the non-drought periods. The cumulative discount rates in the drought period strongly predict the cumulative insurance uptake in the drought period.

Moreover, I present effective F-statistics under heteroskedastic error, as proposed by Olea and Pflueger (2013), as a measure of instrument strength, at the bottom of Table 2 (denoted by F_{eff}). When estimating Equation 4, two endogenous variables are present, which poses challenge in testing weak instrument, as effective F-statistics for cases with multiple endogenous variables have not yet been developed. Therefore, in these cases, I report alternative diagnostics, including the Kleibergen-Paap rk Wald F-statistic. It is also more susceptible to weak instrument problem by design: since $Shock_{rt}$ is exogenous to local economic conditions, including the interaction term $Shock_{rt} \times CIBLI_{hrt}$ is not expected to constrain predictive power at the first stage. So I report the p-values from Anderson-Rubin (AR) test which provides a joint test of instrument validity and the significance of the endogenous variables. In all cases where the second-stage estimates are statistically significant, the AR p-values are also below 0.05, supporting the reliability of the inferences even under potential weak instrument concerns.

4.2 Insurance Effects on Children's Labor and Schooling

In this section, I examine the effects of insurance uptake on children's labor and schooling outcomes. Table 3 presents the main results. Insurance uptake significantly reduces child labor and overall work participation, but does not substantially affect school enrollment. Specifically, each additional season of insurance uptake reduces child labor by 8.9 percentage points and overall work by 12.1 percentage points (Columns 1 and 2). These magnitudes are similar to those observed in other settings. Beegle, Dehejia, and Gatti (2006) find that agricultural shocks increase child labor by 9–13 percentage points in Tanzania, while Bandara, Dehejia, and Lavie-Rouse (2015) report a 6–10 percentage point increase due to credit constraints. The reductions observed here suggest that insurance can meaningfully offset the adverse labor responses typically associated with economic shocks. This corresponds to a 20.8 percent decrease in child labor and an 18.7 percent decrease in work participation relative to control group means of 42.7 percent and 64.5 percent, respectively. The direction and significance of the IV estimates are also consistent with reduced-form ITT estimates using randomized discount rates as regressors (see Table B1)

To further explore the reallocation of children's time, Table 4 disaggregates activity status into full-time work, part-time work and schooling, full-time schooling, and inactivity. Insurance uptake significantly shifts children from part-time work and schooling to full-time schooling. Each additional season of insurance reduces participation in work and schooling by 9.6 percentage points, and increases full-time schooling by 11.8 percentage points (Columns 3 and 4), statistically significant at the five and one percent levels, respectively.

Evidence from time-use data supports these findings. Table A4 shows that children from insured households reduce time spent working by 0.5 hours per day (12.8 percent decrease), statistically significant at the ten percent level. There is no significant change in time spent on schooling, conditional on attending school. As a result, leisure time increases by 0.6 hours per day. These results reinforce that insurance uptake reduces children's labor burden without affecting overall school attendance hours.

Finally, Table A5 disaggregates activities into primary and secondary roles. The shift towards full-time schooling is primarily driven by reductions in secondary work activities. Each additional season of insurance uptake reduces the likelihood of engaging in secondary work by 21 percentage points and increases full-time schooling as a secondary activity by 2.2 percentage points (Columns 5 and 8). Reductions are especially notable in secondary livestock and household tasks. Since 97.5 percent of children balancing work and schooling do so by attending school primarily and working secondarily, these changes explain the observed shift from part-time work and schooling to full-time schooling.

4.3 Robustness Check

To establish the stability of the main findings, this section presents a series of robustness checks addressing alternative specifications, estimation strategies, and sample composition.

As briefly discussed in Section 4.2, I also estimate Intent-to-Treat (ITT) effects using the cumulative discount rates directly as regressors, instead of instrumenting insurance uptake. Table B1 shows that a ten percentage point increase in cumulative discounts reduces child labor by 3.1 percentage points, overall work participation by 4.5 percentage points. While the effects on schooling activity and enrollment are negative, they are small in magnitude and not statistically significant. All effects are consistent in sign and magnitude with the main results based on instrumented insurance uptake.

Second, following standard practice in IV estimation, I repor ordinary least squares (OLS) regressions of child outcomes on cumulative insurance uptake without instrumenting for endogeneity. Table B2 shows that the estimated coefficients are generally small and statistically insignificant across all outcomes. This likely reflects a combination of measurement error and selection bias in insurance uptake, which the IV strategy is designed to address – underscoring its importance for causal inference.

We also consider the cumulative effects of current and lapsed insurance coverage. Lapsed insurance refers to policies purchased more than three sales seasons ago, outside the recall window for child outcomes. Table B3 demonstrates that the main results remain robust to the inclusion of lapsed insurance. Moreover, full-time schooling increases with past insurance coverage, suggesting potential accumulation effects over time.

We next test the robustness of the results to an alternative measure of insurance uptake: the number of Tropical Livestock Units (TLUs) insured. Table B4 shows that each additional TLU insured decreases child labor by 1.7 percentage points and overall work participation by 2.4 percentage points, while no statistically significant effects are observed for schooling outcomes, consistent with the main findings.

We further verify the robustness of the main results by aggregating child-level outcomes to the household level. Household-level outcomes are defined as the share of children aged 5–17 within the household who are engaged in each activity. This addresses concerns about intra-household correlation, changing household composition, or selective reporting. Table B5 shows that insurance uptake significantly reduces the share of children in a household engaged in child labor and overall work participation, with no statistically significant effects on schooling activity or enrollment. Panel B disaggregates these effects by drought exposure and finds that reductions in work participation are concentrated in non-drought periods, while there is suggestive but imprecise evidence of reduced child labor during droughts. These patterns are consistent with the individual-level analysis, confirming that the main findings are not driven by micro-level variation.

We further test the robustness of the results to changes in sample composition. Table B6 restricts the sample to households observed in all survey rounds, ensuring that the findings are not driven by unbalanced attrition. Table B7 limits the analysis to children who were aged 5 to 17 at baseline, removing those who enter or exit the age-eligible sample mid-panel. In both cases, the results are qualitatively similar to the main specification, reinforcing the internal consistency of the findings.

Although the Marsabit district in Kenya and the Borena zone in Ethiopia share pastoral livelihoods, children's activities differ across the two regions. To account for potential country-level differences, Table B8 includes country-by-year fixed effects. The results qualitatively align with the main findings, although coefficients are smaller and not statistically significant except for child labor. Table B9 further disaggregates effects by country, showing that effects are larger and more precisely estimated in Kenya than in Ethiopia.

Finally, we examine the robustness of our findings to alternative specifications that flexibly control for spatiotemporal trends. Specifically, we estimate the main regressions using region-by-year fixed effects, region-specific linear time trends, and area-by-year fixed effects. These specifications absorb more variation and account for unobserved region-specific shocks or trends, but also substantially reduce identifying variation. As shown in Tables B10–B12, the results remain qualitatively consistent in sign, though effect sizes are attenuated and estimates are less precisely estimated. This pattern is expected in settings with clustered treatment variation and limited within-cluster heterogeneity, and does not contradict the main findings. This is a common concern in instrumental variables settings with clustered or low-frequency variation in treatment, where overly saturated fixed effects specifications may absorb the identifying variation and attenuate estimates, even when the direction of effect remains stable.

Overall, these robustness checks confirm that the main findings are stable across a range of alternative specifications and samples. The next section presents a conceptual framework to guide the analysis of mechanisms linking insurance to children's work and schooling outcomes.

4.4 Seasonal Patterns: Protection and Planning

To further examine the timing and nature of insurance effects, we disaggregate the impacts by season, distinguishing between drought and non-drought periods. Table A2 presents these results by interacting insurance uptake with an indicator for drought periods, as defined in Equation 4. During drought seasons, we observe that child labor increases by approximately 9 percentage points among uninsured households – a magnitude similar to the 6–8 percentage point increase in school dropout among girls following income shocks in Uganda (Björkman-Nyqvist, 2013), and the 5–10 percentage point rise in child labor observed in Burkina Faso following productivity shocks (Dumas, 2020). This increase is fully mitigated by insurance uptake, suggesting that IBLI plays a protective role by shielding households from resorting to child labor as a short-run coping mechanism during climatic shocks. In contrast, the reduction in children's overall work participation is primarily driven by insurance uptake during non-drought periods, when households are less exposed to acute risk. This pattern indicates that IBLI also facilitates forward-looking adjustments, allowing households to shift labor allocation and production strategies under relatively stable conditions.

Finally, the timing of insurance payouts relative to the school calendar suggests that these behavioral changes are unlikely to be driven by direct financial effects. Most payouts occurred after the school year began—in October–November 2011, March–April 2012, and March–April 2013 in Kenya, and in November 2014 in Ethiopia—while school enrollment typically begins in January (Kenya) or September (Ethiopia). This timing misalignment makes it unlikely that payouts directly influenced enrollment decisions or immediate education expenses. Instead, these patterns are more consistent with the conceptual framework's emphasis on ex-ante effects: the anticipation of financial protection, rather than the receipt of payouts, appears to drive changes in household labor allocation. That these effects are concentrated in non-drought periods further supports the interpretation that IBLI facilitates forward-looking adjustments, rather than reactive coping, in how households manage labor and schooling trade-offs.

Nonetheless, I acknowledge an important limitation in distinguishing ex-ante from ex-post behavior. The outcome measures rely on a 12-month recall period, while the drought definition operates at the biannual level. This discrepancy makes it difficult to cleanly separate anticipatory responses from short-run adjustments. I therefore interpret the seasonal asymmetries in insurance effects as suggestive of ex-ante planning behavior, but not definitive. . A more precise disentangling of these behavioral responses is offered in Barrett et al. (2024), which leverages a complementary design and data to identify longer-run impacts and separate ex-ante from ex-post mechanisms more directly.

5 Conceptual Framework

This section outlines a stylized framework to interpret how index-based livestock insurance (IBLI) may affect children's labor and schooling decisions in pastoralist households. Drawing from existing theoretical models of household behavior under risk (e.g., Frölich and Landmann, 2018; Shah and Steinberg, 2017; Colmer, 2021), I describe the economic environment and highlight several channels through which insurance could influence household decision-making. This framework provides the conceptual foundation for the empirical mechanism analysis that follows.

Household Decision Environment Under Risk

We consider a two-period household model in which a pastoralist household derives utility from consumption and children's human capital accumulation. Children allocate time between work, schooling, and possibly leisure, but the relevant trade-off is between labor and schooling in the presence of economic constraints. As is standard in rural household models, consumption and production decisions are inseparable due to incomplete credit and insurance markets.

In the pastoralist setting we study, household income is primarily generated through livestock production. Labor—including that of children—is a key input, particularly for herding, watering, and caring for animals. These tasks are highly time-intensive, require daily attention, and often rely on child labor due to limited access to hired workers. Herd size and grazing strategy are therefore critical determinants of household labor needs.

Households face stochastic income due to weather shocks, particularly drought. These shocks increase labor demands (e.g., to find water or pasture) while simultaneously reducing livestock productivity and sales income. In this environment, children's work serves both routine and risk-coping purposes.

Plausible Channels of Insurance Effects

The introduction of IBLI modifies the household's risk environment by providing contingent payouts during drought periods. This may affect child labor and schooling decisions through multiple channels:

(i) Income effects. Insurance payouts may increase household resources during shocks, relaxing liquidity constraints and enabling parents to keep children in school. This would predict reduced child labor and potentially higher schooling.

(ii) Intra-household labor substitution. Insurance may allow adults to retain their own labor or hire external labor during bad years, thereby reducing the need for child labor. This would manifest as substitution from child to adult labor.

(iii) Changes in production strategy that reduce labor needs or shift the feasibility of child labor use. By reducing the need for precautionary herd accumulation or enabling more flexible grazing strategies, IBLI may allow households to adjust their production systems in ways that change the type, timing, or source of labor required. These adjustments may lower overall labor demand in some cases (e.g., herd downsizing), or they may reduce the feasibility of involving children in work due to increased logistical complexity (e.g., longer-range herd mobility). In both cases, IBLI can

make it easier for households to withdraw children from work and support more consistent school attendance.

The last channel is particularly relevant in pastoral systems, where household decisions about herd size and mobility are closely tied to daily labor needs. For instance, larger herds require more hands-on care, and near-camp grazing during droughts allows children to participate in herding. If insurance allows households to downsize herds or adopt longer-range migration patterns, child labor may become less necessary or harder to combine with schooling—even in non-shock years.

In the next section, we test these channels empirically by analyzing the effects of IBLI on household income, production strategies, labor allocation, and children's time use—looking both at changes in total labor needs and at how household structures and strategies affect children's participation in work.

6 Potential Mechanisms

This section explores the potential mechanisms through which IBLI influences children's labor and schooling activities within pastoral households, building on the theoretical foundations discussed in Section 5. Specifically, I seek to identify the pathways through which IBLI affects children's activity choices by analyzing the impact on household outcomes such as income, herd size, and production strategies and the heterogeneity of the effects.

6.1 No income effects nor labor reallocation

A common channel through which financial instruments affect child labor is by relaxing liquidity constraints and increasing household resources. In this setting, one might expect that IBLI uptake could lead to higher income or consumption, reducing the household's reliance on child labor. However, the evidence does not support such an income-driven mechanism.

Table 5 shows that insurance uptake has no statistically significant effect on total household income, income per capita, or household expenditures – whether on food, non-food, or livestock-related items. Across all specifications, the estimated coefficients are small in magnitude and statistically insignificant. These results indicate that IBLI does not meaningfully increase household resources in ways that would reduce child labor through an income effect.[15]

[15] Annual income encompasses earnings from all sources – sale of livestock, livestock products, crops, salaried employment, casual labor, business, petty trading, and others – over the past 12 months. Food expenditure reflects the total value of food consumed in the last 7 days, while non-food expenditure covers the value of non-food items

Another plausible channel is intra-household labor substitution: insurance may allow adults to absorb more of the household labor burden, thereby releasing children from work responsibilities. However, Table A8 provides little support for this interpretation. We find no significant change in the labor force participation of working-age adults (18–45 years old), either in aggregate or in livestock-related tasks. Among older adults (46–80), we observe some statistically significant reductions in secondary work activities and household tasks, but these shifts are modest in size and account for a relatively small share of total household labor. Taken together, the null effects on adult labor suggest that reductions in child labor are not due to substitution of effort by other household members.

6.2 Production Adjustments

In the absence of significant effects on income or adult labor supply, we next consider whether IBLI influences child labor through changes in household production strategies that either reduce overall labor demand or change the type of labor that is feasible to supply, particularly by children.

We begin with herd size, a primary determinant of daily labor needs in pastoralist settings. Table 6 presents the impact of insurance uptake on livestock holdings under three levels of winsorization. In Panel A (99th percentile threshold), we find no statistically significant effect of insurance uptake on total livestock holdings, adult animals, or lactating animals. This aligns with Jensen, Barrett, and Mude (2017), who report no robust effect of IBLI on herd size in the same experimental site, despite most point estimates being negative. However, under more restrictive winsorization at the 95th and 90th percentiles (Panels B and C), we observe statistically significant reductions in livestock holdings: insurance uptake is associated with a decline of approximately 3.6 TLU in total herd size, 2.3 TLU in adult animals, and 1.6 TLU in lactating animals, corresponding to reductions of 27 to 45 percent. These effects are consistent with Matsuda, Takahashi, and Ikegami (2019), who find similar patterns in Ethiopia, particularly among households with mid-sized herds. Taken together, these results provide suggestive evidence that IBLI may reduce herd accumulation among most households, particularly those below the top end of the herd size distribution. Nonetheless, the pattern is directionally consistent with reduced labor requirements for routine livestock care, and may contribute to the observed decline in child labor.

We also examine the effect of insurance uptake on herd mobility, another key dimension of household production strategy in pastoralist systems. Table 7 shows that IBLI uptake is associated with a 22.3 percentage point increase in the likelihood that a household engages in seasonal herd

consumed in the past 12 months.

migration, and a 21.9 percentage point increase in the share of livestock kept away from the base camp. These effects are statistically significant at the 1 percent level and represent sizable increases relative to baseline means of 60 percent and 62 percent, respectively. These patterns are consistent with the interpretation that insurance facilitates more opportunistic grazing strategies, potentially enabling households to access distant but higher-quality pasture during non-drought periods. However, prior research suggests a more nuanced relationship between insurance and mobility. Toth et al. (2017) report that IBLI reduced average daily grazing distances and speeds, while increasing the number of days spent in temporary migration. Their interpretation is that insurance may reduce high-effort daily herding while encouraging more stable seasonal migration. In this context, our results – based on a larger representative sample – may reflect a similar underlying shift in mobility strategies. Specifically, the increase in the share of livestock away from basecamp and the likelihood of migration could signal a move toward more planned and flexible seasonal herding, rather than an increase in labor burden. These shifts likely raise the cost of juggling herding and schooling, reinforcing the move toward full-time schooling.

Therefore, we interpret the increase in mobility indicators as suggestive evidence that insurance uptake enables greater flexibility in grazing strategy. These shifts are most plausibly interpreted as part of a broader adjustment in production strategy that alters how household labor is deployed – either by reducing total labor needs or by shifting tasks in ways that make child labor less feasible. Increased mobility may reduce the feasibility of involving children in herding, as maintaining a balance between work and schooling becomes more challenging. As a result, children may be more likely to disengage from work and prioritize full-time schooling.

Despite suggested evidence of herd size reduction and observed shifts in herd mobility, we do not find evidence of broader changes in household production behavior along other margins. Specifically, neither livestock-related expenditures nor income diversification—measured using a modified Simpson's diversification index—show statistically significant effects of insurance uptake during either drought or non-drought periods (Table 7, Columns 3 to 6).[16]

The observed shifts in production strategy are reflected in how children allocate their time between work and school. While we do not find effects on school enrollment, insurance uptake leads to a meaningful reallocation from part-time combinations of work and schooling to full-time schooling. These effects are concentrated among children engaged in secondary labor roles—those who attend school as their primary activity while participating in livestock or household tasks as a secondary one (Table A5). Given that 97.5 percent of children who combine work and school

[16]The Simpson index, originally proposed by Simpson (1949) and later adapted by Hirschman (1964) for market concentration analysis, is calculated here as one minus the sum of squared income shares across sources, providing a measure of income diversity.

do so through secondary roles, this shift represents a meaningful contraction in household reliance on flexible, child-supplied labor, particularly for auxiliary herding and domestic tasks that can be difficult to maintain alongside school attendance. In other words, IBLI enables households to disengage children from auxiliary labor responsibilities without disrupting schooling or essential household functions.

6.3 Heterogeneous Effects Across Households and Children

So far, the evidence points toward a consistent mechanism: IBLI reduces child labor by enabling households to change their production strategies in ways that alter the need for or feasibility of child labor. To further support this interpretation, I now examine how the effects vary across households and children. If these production-side channels are indeed at work, I would expect stronger effects among households with more flexibility to reallocate labor or with more labor-intensive production systems, and among children who typically take on flexible or secondary work roles. As shown below, the patterns of heterogeneity line up closely with these expectations.

Households with More Flexibility Adjust More

I start by looking at whether the effects of IBLI differ depending on how much households relied on child labor at baseline. Using the share of children reported to be working at baseline, we split the sample into households with less than half versus more than half of their children working.

Table A9 shows that the effects of insurance uptake are concentrated among households with lower baseline reliance on child labor. For these households, insurance reduces child labor by 33.3 percentage points and overall child work by 34.6 percentage points, both statistically significant at the 1 percent level. In contrast, we find no significant changes in households where child labor was already prevalent, and the difference in effects between the two groups is itself statistically significant.

This pattern is exactly what we would expect if insurance reduces household labor demand. When child labor is already used intensively, households may be constrained in how much they can adjust – even if they're insured. But when there's some room to maneuver, insurance makes it easier for families to pull children out of work and reallocate their time, especially from part-time or secondary roles. This heterogeneity is consistent with both the labor demand and task feasibility mechanisms: IBLI enables families to reduce reliance on child labor when they are not already operating at their constraint, and such households are also more able to adapt when insurance facilitates a shift toward production strategies—like increased mobility—that children cannot easily accommodate. In contrast, households already relying heavily on child labor may find it difficult to adjust, even when existing labor arrangements become less feasible under the new strategy.

Asset-Constrained Households Respond More to Insurance

Next, we look at whether household asset holdings shape the effects of IBLI. If IBLI reduces child labor by lowering household labor demand or by facilitating a shift toward production strategies that children cannot easily participate in, we might expect the effects to be larger in households where labor-intensive production systems or financial constraints make adjustments more consequential. In these cases, insurance may enable changes that were previously too risky or costly – such as reducing herd size or or shifting toward more mobile herding patterns that are incompatible with child labor – by providing a buffer against adverse shocks.

We start with baseline savings—whether or not the household had any liquid assets at the beginning of the study. As shown in Table A10, the effects of insurance on child labor and total work are larger and statistically significant only among households with no savings. For these households, IBLI reduces child labor by 10.5 percentage points and total work by 14.7 percentage points. In contrast, effects among households with any savings are smaller and not statistically significant. While savings itself is not a production input, its absence may limit a household's ability to manage risk without relying on internal labor buffers, such as children. In this sense, IBLI may play a larger role in enabling labor-reducing adjustments – including those related to production strategy – when other financial coping mechanisms are unavailable. The stronger effects among households without savings are thus consistent with the interpretation that insurance facilitates shifts that both lower labor demand and raise the cost of retaining children in flexible work roles.

We next examine heterogeneity by baseline herd size, using a median split on Tropical Livestock Units (TLU). As shown in Table A11, insurance uptake leads to significant reductions in child labor and total work among households with below-median herd sizes, while effects are smaller and less consistent among those with larger herds. Although households with larger herds may have higher absolute labor needs and thus more scope for adjustment, they may also operate near their preferred scale or face fixed labor demands that are less responsive to insurance. By contrast, smaller and mid-sized herders are more likely to accumulate livestock as a precautionary buffer—a form of self-insurance against risk. For these households, IBLI may reduce the need to hold excess stock, enabling them to downsize and adopt more mobile herding strategies. This combination can reduce routine labor requirements and also make herding tasks less compatible with school attendance, thereby contributing to the observed reductions in child labor. This interpretation aligns with findings from Barrett et al. (2024), who show that long-run improvements in educational attainment are concentrated among households in the bottom two terciles of the baseline herd size distribution, further supporting the view that smaller herders benefit more from IBLI-enabled production adjustments.

Finally, we examine heterogeneity by the composition of livestock holdings, focusing on the baseline share of shoats (sheep and goats). These animals typically require more frequent care and supervision than larger livestock like cattle or camels, making shoat-heavy herds more labor-intensive to manage. They are also more compatible with static or localized herding systems in which children can easily participate. In contrast, cattle or camels are often managed through more mobile strategies that may be physically demanding or logistically infeasible for children to accompany. Thus, if insurance enables households to shift toward more mobile or extensive herding systems, child labor may decline not only because of reduced labor demand, but also because the nature of herding becomes incompatible with children's involvement. As shown in Table A12, the effects of insurance are concentrated among households with an above-median share of shoats. For these households, insurance uptake reduces child labor by 37.8 percentage points and total work by 31.4 percentage points, both statistically significant. In contrast, we find no significant effects among households with a lower share of shoats, and the differences in treatment effects between the two groups are statistically significant. This pattern is consistent with two complementary mechanisms: first, that insurance reduces household labor demand in more labor-intensive systems; and second, that it enables production shifts—such as increased mobility—that are less compatible with child participation, especially in shoat-dominated herds. This interpretation is also consistent with Barrett et al. (2024), which finds that insured households shift toward a greater share of smaller animals over time and exhibit increased educational attainment in the long run, pointing to broader changes in production strategies and household labor organization.

Children in Key Labor Roles

We also examine heterogeneity by child characteristics, focusing on gender, age, and birth order—traits that may influence how involved a child is in household labor. If IBLI reduces household labor demand or facilitates a shift toward tasks incompatible with child participation, we would expect the largest effects among children most engaged in production – those whose labor is most integral to household operations.

The results are broadly consistent with this pattern. Disaggregating by gender (Table A13), we find that boys, who are typically more involved in primary herding roles, are more likely to shift from part-time work and schooling to full-time schooling, especially during non-drought periods. Girls, by contrast, appear more likely to be withdrawn from work during drought periods, with increased full-time schooling and reduced part-time engagement.

By age (Table A14), we observe stronger effects among older children (ages 12–17), who tend to take on more labor responsibilities than younger children. Older children show larger reductions in work and greater increases in full-time schooling, particularly in non-drought seasons.

Finally, first-born children (Table A15)—who often play a central role in household production—show greater reductions in full-time and primary work and a corresponding increase in full-time schooling relative to their younger siblings, particularly in non-drought periods.

Together, these results indicate that the effects of IBLI are strongest among children who are more deeply engaged in household production. Whether due to birth order, age, or gendered task assignments, children who play more central labor roles are more likely to be withdrawn from work—consistent with a mechanism in which insurance-induced shifts in production make it harder to maintain those roles without disrupting schooling. Rather than withdrawing labor from marginal contributors, as might be expected under a purely income-driven or substitution-based model, insured households appear to release labor from core contributors. Insurance facilitates production-side changes – such as reductions in herd size or increases in mobility – that either reduce overall labor demand or raise the logistical cost of balancing work and schooling. As a result, households appear to release labor from children whose work matters most, particularly older or first-born children. This reinforces the interpretation that IBLI reduces child labor by lowering overall labor demand and by by shifting the nature and feasibility of children's tasks within the household, through shifts in production strategy.

Overall, the evidence presented in this section supports a coherent mechanism: IBLI reduces child labor by enabling changes in household production strategies – such as herd downsizing and increased mobility – that reduce household labor needs (a labor demand channel) or raise the logistical cost of involving children in work (a task infeasibility channel). Households with labor-intensive or risk-sensitive production systems show larger responses to insurance, consistent with strategic adjustments like herd downsizing or more mobile grazing. Likewise, children who play more central labor roles (e.g., boys, older children, first-borns) experience the largest reductions in work – especially in forms like part-time labor or secondary work-school combinations that become harder to maintain under increased mobility. While the evidence is strongest in certain dimensions, we interpret these patterns as consistent with the interpretation emphasized in our conceptual framework.

7 Conclusion

This paper examines how index-based livestock insurance (IBLI) affects child labor and schooling decisions in drought-prone pastoralist households in northern Kenya and southern Ethiopia. Exploiting exogenous variation in insurance premiums via randomized discount coupons, I find that one additional season of insurance uptake reduces child labor by 8.9 percentage points, total work participation by 12.1 points, and part-time work-schooling combinations by 9.6 points – while increasing full-time schooling by 11.8 points. These shifts are most pronounced in non-drought periods, when insurance enables reallocation of children's time even in the absence of immediate crisis.

Evidence points to a consistent mechanism: IBLI enables production-side adjustments – specifically herd downsizing and increased herd mobility – that alter how children's time is used. Insured households reduce herd size, in a manner consistent with decreased reliance on livestock as a form of precautionary savings, although other motivations may also contribute. They also adopt more mobile grazing strategies, which increase the logistical difficulty of combining herding with schooling. This makes part-time labor less feasible and encourages a shift toward full-time schooling. These effects are not explained by income gains or adult labor substitution. Heterogeneity across households and children reinforces this mechanism: impacts are larger among households with lower baseline child labor use, limited financial buffers (e.g., no savings, mid- or low-size herds), or a high reliance on labor-intensive livestock (e.g., shoat-heavy herds) and among children with higher baseline labor burdens (e.g., first-borns, older children, boys).

This study contributes to a growing literature on how formal risk mitigation tools shape household behavior beyond traditional financial outcomes. While existing work highlights the role of credit in buffering child outcomes after shocks, this paper shows that insurance can enable households to reorganize labor and production decisions in ways that fundamentally shift children's roles. Unlike health insurance, which often operates through adult-child labor substitution, IBLI reshapes the underlying structure of household production.

The findings also offer important implications for policy. Public interventions that directly target child labor have shown mixed effectiveness across settings (Dammert et al., 2018; Piza et al., 2024). In contrast, this study shows that financial risk management tools – specifically, index-based insurance – can reduce households' reliance on child labor by enabling production adjustments that either lower labor needs or shift labor tasks in ways that are less compatible with schooling. By protecting against climatic risk in both drought and non-drought periods, insurance reduces reliance on part-time child labor and enables a shift toward full-time schooling, even in the absence of crisis-induced pressures. Complementary ongoing work examines longer-term effects on children's educational attainment and household welfare, helping to build a broader understanding of how insurance can support human capital development in high-risk environments.

While the setting of this study—pastoralist households in arid East Africa—is specific, the mechanisms identified here may be relevant in other high-risk rural contexts. In particular, the labor allocation effects observed stem not from the nature of pastoralism per se, but from the interaction between production uncertainty, mobility constraints, and informal labor. Similar dynamics may emerge in settings where household members – especially children – serve as flexible labor inputs in response to production risk.

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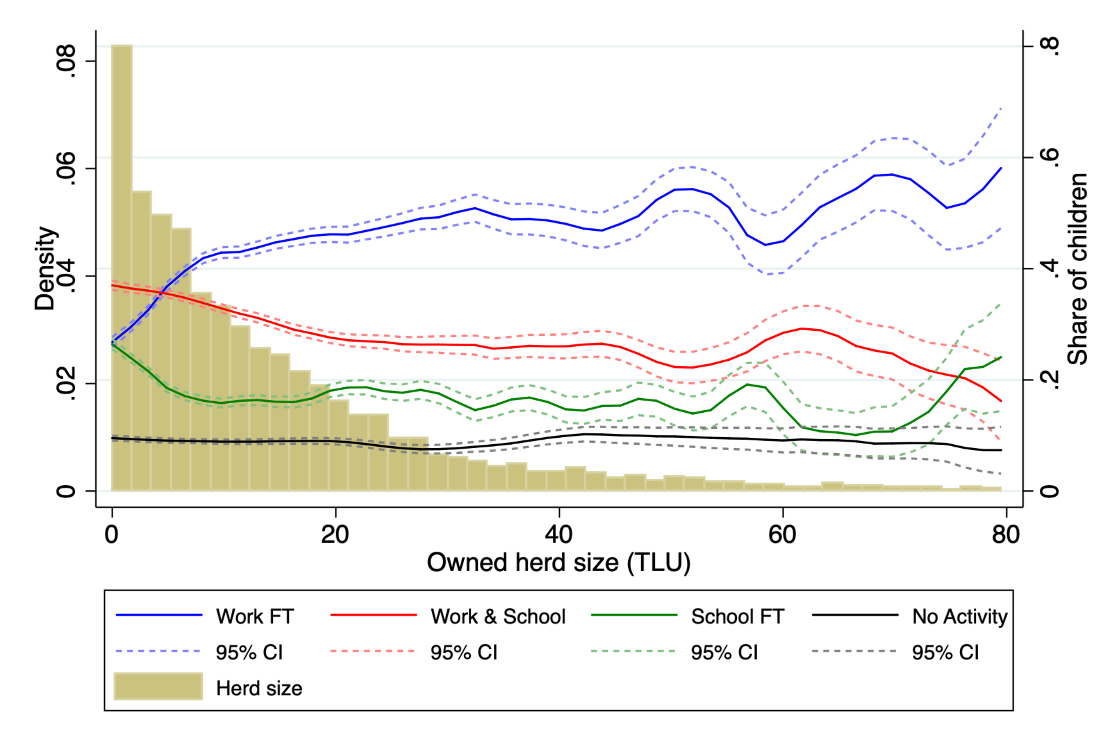
Figure 1: Children's activity by herd size

(a) Participation



(b) Hours, equals to zero if not participating

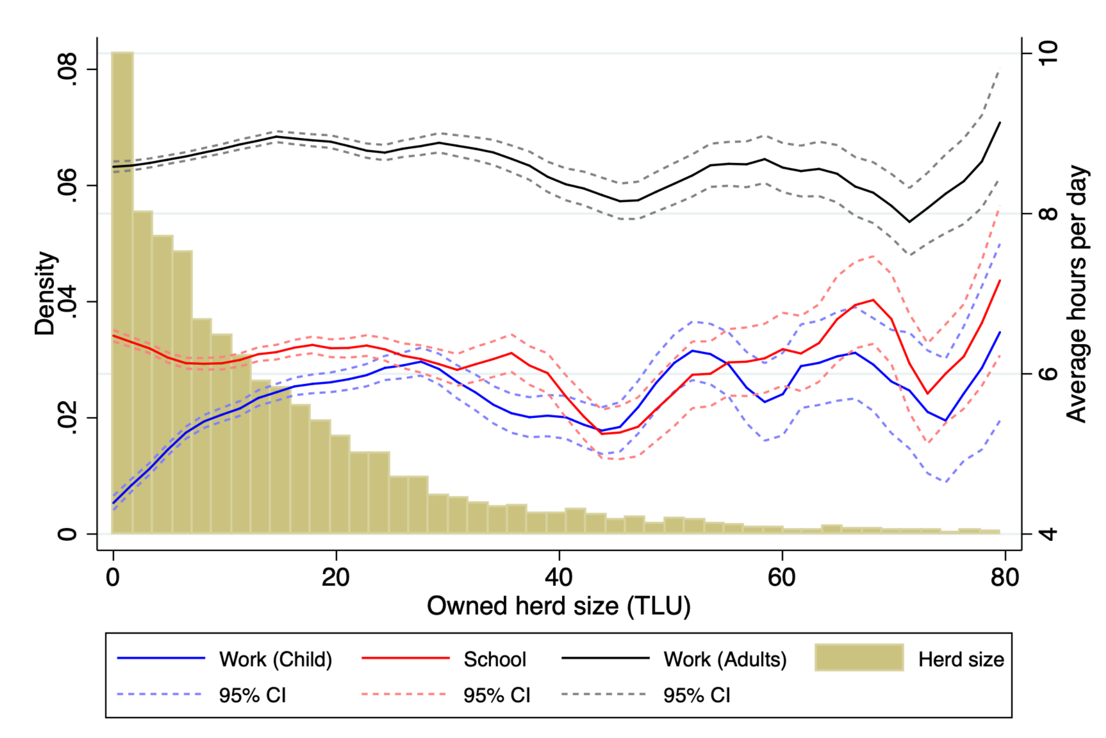


Figure 2: Map of project areas

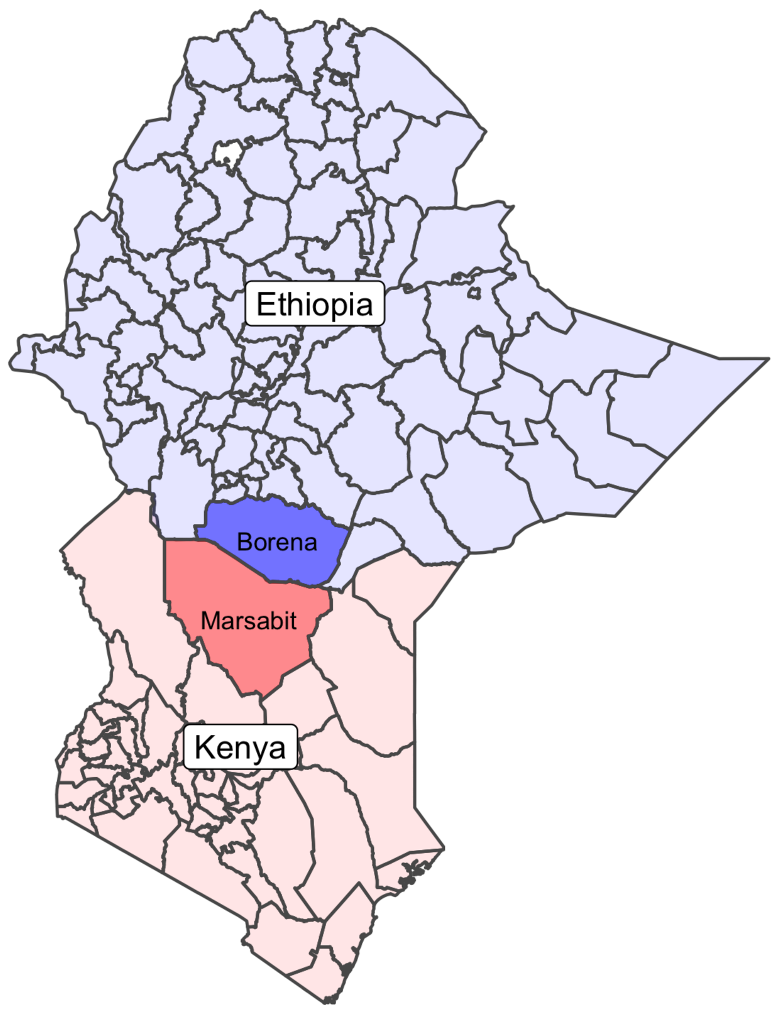
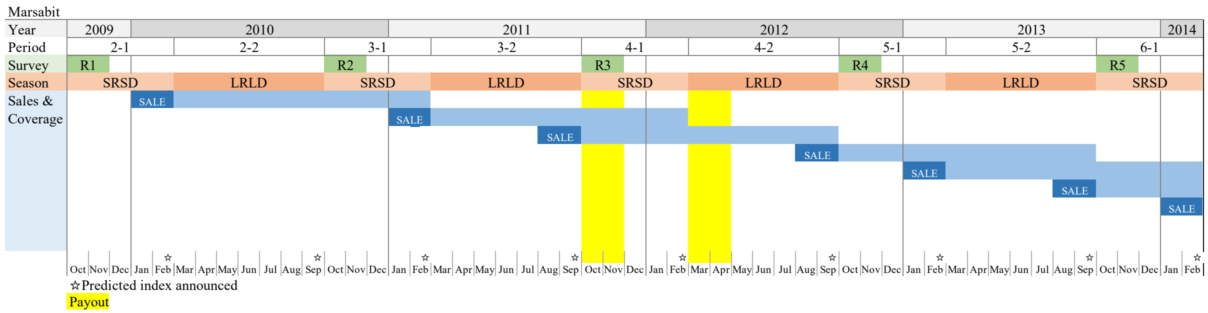


Figure 3: Timeline of the projects

(a) Marsabit District, Kenya



(b) Borena Zone, Ethiopia

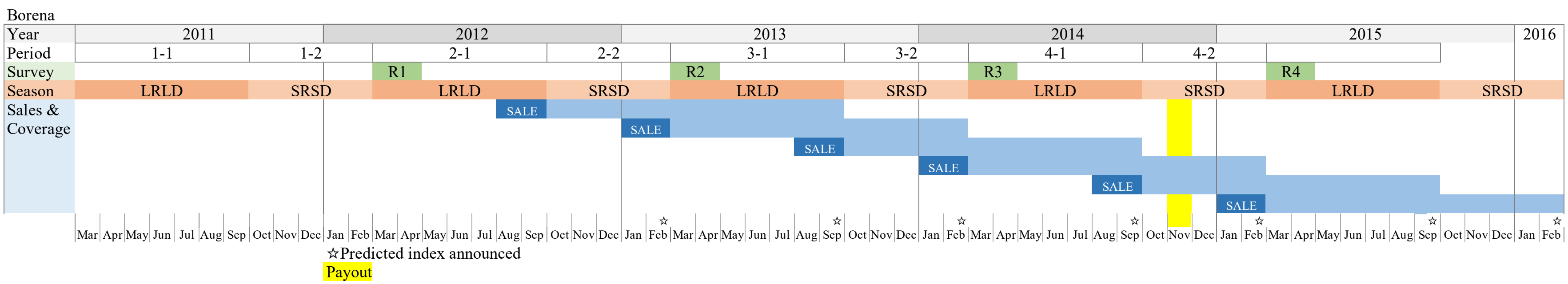
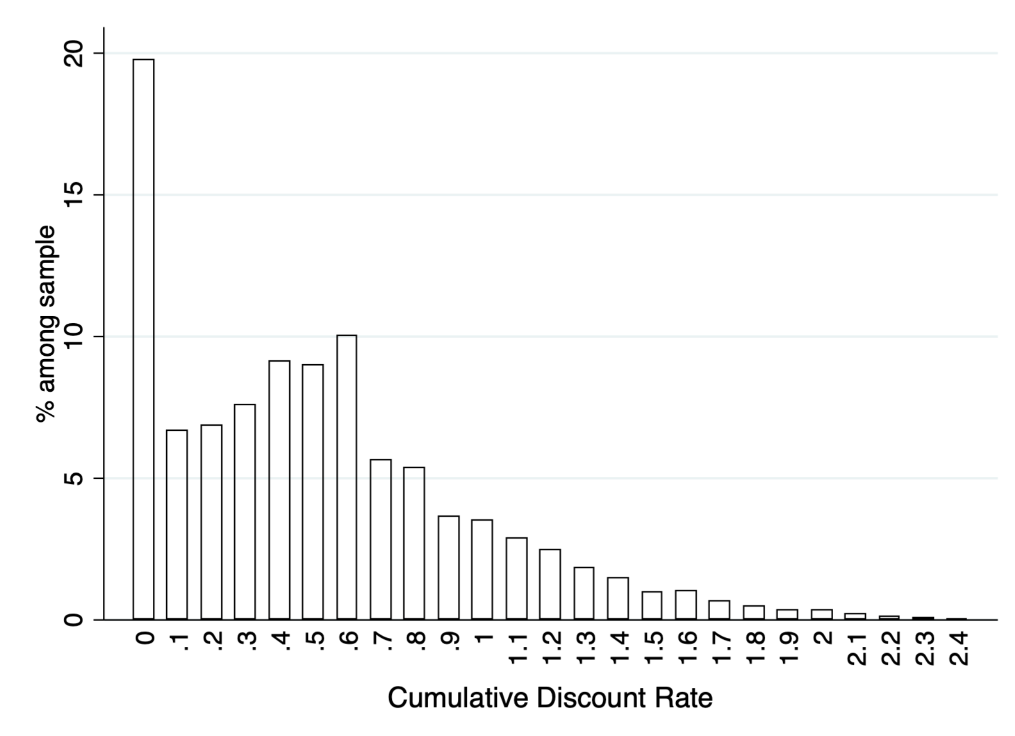


Figure 4: Cumulative discount rate and Insurance uptake

(a) Cumulative Discount Rates, the three recent sales seasons



(b) Total number of Insurance uptake, the three recent sales seasons

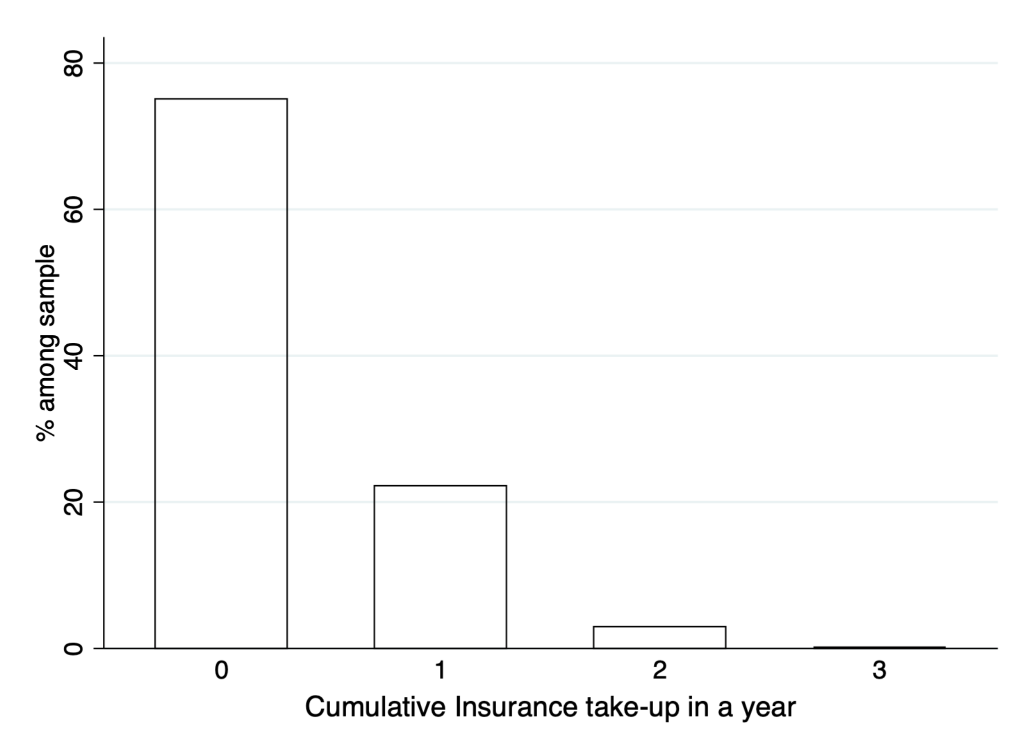
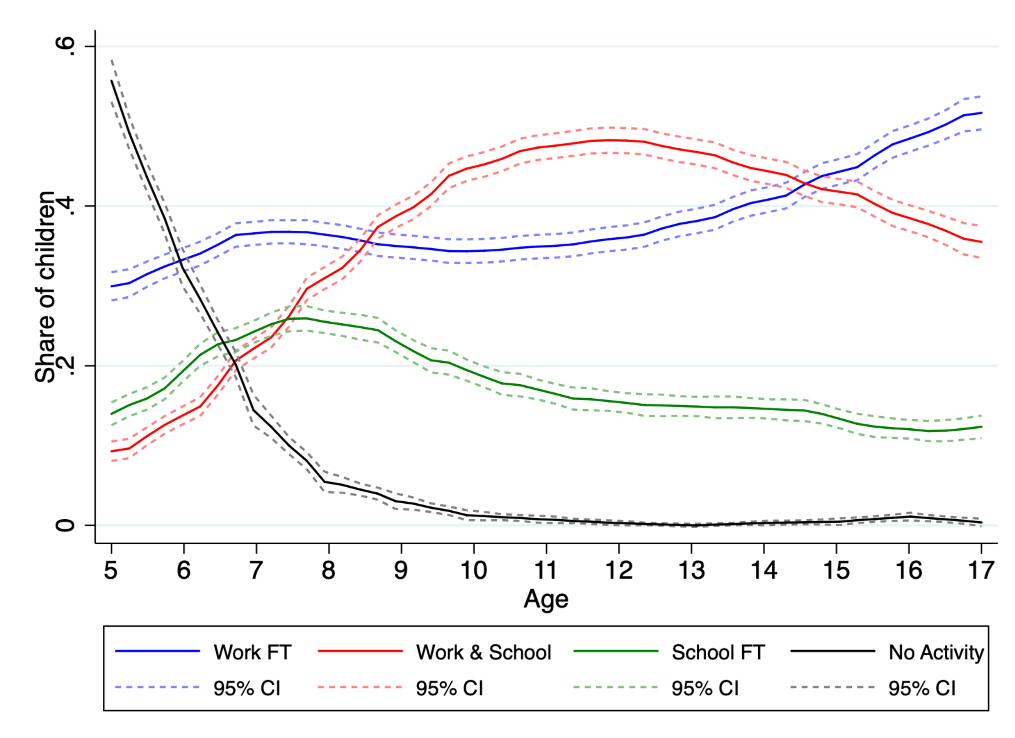


Figure 5: Children's activity by age and gender

(a) Girls



(b) Boys

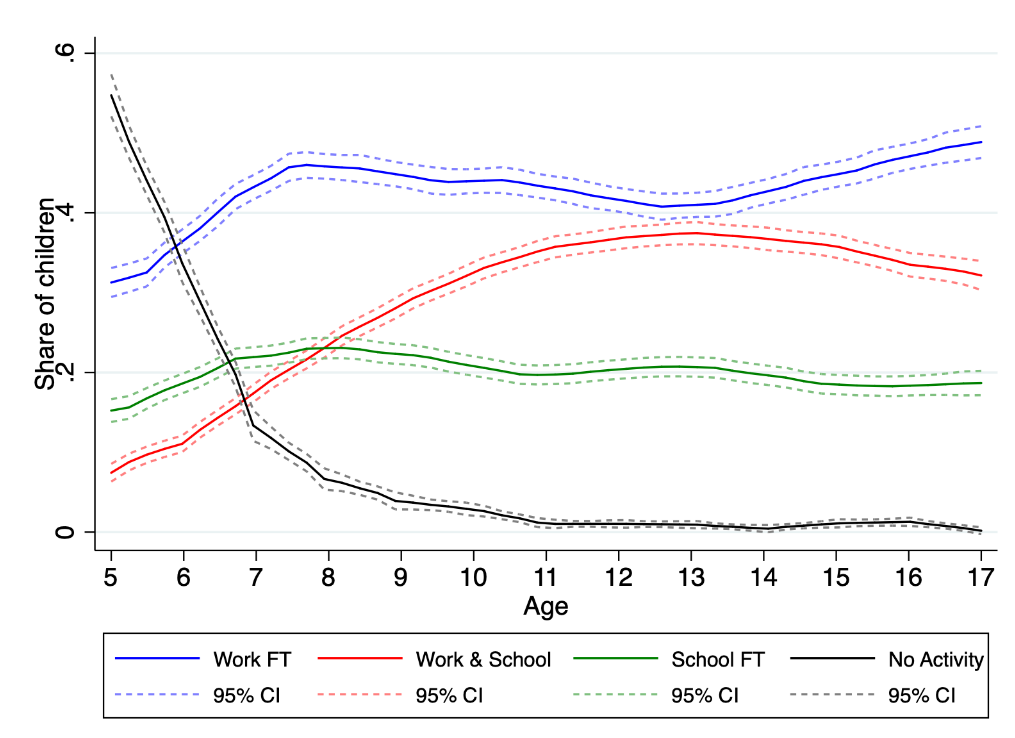


Table 1: Balance between recipients and non-recipients of coupon

	Coupon		No Coupon		Coupon vs. No Coupon		
	Mean (1)	SD (2)	Mean (3)	SD (4)	Difference (5)	SE (6)	N (7)
Panel A: Household Characteristics							
Head age	49.0	[17.8]	49.1	[16.2]	1.12	(0.678)	7530
=1 if Male-headed household	0.648	[0.478]	0.624	[0.484]	0.00126	(0.0177)	7533
Adult Equivalent	4.63	[2.02]	4.90	[2.06]	0.0928	(0.0727)	7553
Herd size (TLU)	14.4	[23.3]	12.2	[18.4]	0.426	(0.713)	7561
Consumption expenditure (USD)	21.5	[25.1]	24.3	[25.5]	-0.126	(1.21)	6657
Livestock expenditure (USD)	0.511	[1.51]	0.638	[2.00]	-0.146**	(0.0647)	7547
Joint test, p-val:					0.143		
Panel B: Individual Characteristics							
Age	11.3	[3.60]	11.7	[3.51]	-0.130	(0.0981)	8657
Female	0.479	[0.500]	0.469	[0.499]	0.00565	(0.0152)	8657
=1 if Work full time	0.450	[0.498]	0.413	[0.492]	0.0170	(0.0157)	8638
=1 if Work and school	0.278	[0.448]	0.292	[0.455]	-0.00647	(0.0158)	8638
=1 if School full time	0.182	[0.386]	0.221	[0.415]	-0.00808	(0.0173)	8638
=1 if No Activity	0.0897	[0.286]	0.0740	[0.262]	-0.00247	(0.00805)	8638
Hr: Work	3.89	[4.27]	3.32	[4.13]	0.0234	(0.123)	8638
Hr: School	2.73	[3.65]	2.94	[3.75]	-0.0946	(0.114)	8638
Hr: Leisure	17.4	[4.45]	17.8	[4.61]	0.0733	(0.107)	8657
Joint test, p-val:					0.823		

Notes: Column 1 to 4 reports mean and stadard deviation (in square brackets) of variables for subjects received and not received discount coupon. Columns 5 and 6 report mean differences between the two groups with standard errors are in parentheses. Herd size is the sum of the animals herded by the household, aggregated using Tropical Livestock Unit (TLU). Adult equivalent is the weighted sum of the household members as their adult equivalent, based on the following age-specific weights: A household member between 16 to 65 (AE=1), a child under 5 (AE=0.5), a child between 5 to 15 (AE=0.7), a household member above 65 (AE=0.7). Consumption expenditure is the average weekly expenditure on food and nonfood items. Livestock expenditure is the sum of the expenditure on water, fodder, supplementary feeding, and veterinary expenses. * denotes significance at 0.10; ** at 0.05; and *** at 0.01.

Table 2: 1st Stage Correlation

	Insurance Uptake (Cum.)	Shock × Insurance Uptake (Cum.)	Insurance Uptake (Cum.)
	(1)	(2)	(3)
Discount rate (Cum.)	0.358***	0.328***	0.041***
	(0.029)	(0.031)	(0.010)
Shock × Discount rate (Cum.)		0.001*	0.003***
		(0.001)	(0.001)
N	12201	12201	12201
F_{eff}	54.851	.	
K-P F-stat	150.163	52.561	
5% Critical Value	37.418	.	
10% Critical Value	23.109	.	
AR test p-val.	0.037	0.096	

Notes: Standard errors, clustered at household level, are (in parentheses). * denotes significance at 0.10; ** at 0.05; and *** at 0.01. Discount rate (Cum.) is the sum of discount rates provided by the coupon over the latest three sales seasons. Relevant periods for insurance uptake are the same as those of the discount rate. All specifications include household-, insurance area-, survey year- fixed effects, adult equivalent, age and age-squared, female dummy, age and sex of the household head, and the number of children in the household.

Table 3: Impact on Children's Work and Schooling

	Child labor	Work	Schooling	
			Activity: School	Enrollment
	(1)	(2)	(3)	(4)
Insurance Uptake (Cum.)	-0.095**	-0.131***	-0.016	-0.026
	(0.044)	(0.044)	(0.032)	(0.025)
	{0.0331}	{0.00269}	{0.617}	{0.286}
	[0.053]	[0.011]	[0.446]	[0.237]
N	12201	12201	12201	11152
Mean of Dep. Var.	0.535	0.720	0.495	0.421

Notes: Standard errors, clustered at household level, are in parentheses. * denotes significance at 0.10; ** at 0.05; and *** at 0.01. Insurance uptake (Cum.) is the sum of discount rates provided by the coupon over the three seasons prior to the interview. All specifications include household-, insurance area-, survey year- fixed effects, adult equivalent, age, age-squared, female dummy, age and sex of the household head, number of children in the household.

Table 4: Impact on Children's Activities

	Work FT	Work and School	School FT	No activity
	(1)	(2)	(3)	(4)
Insurance Uptake (Cum.)	-0.008	-0.123***	0.107***	0.024
	(0.035)	(0.040)	(0.036)	(0.027)
	{0.819}	{0.00208}	{0.00303}	{0.362}
	[0.673]	[0.006]	[0.006]	[0.386]
N	12201	12201	12201	12208
Mean of Dep. Var.	0.406	0.314	0.180	0.100

Notes: Standard errors, clustered at household level, are in parentheses. * denotes significance at 0.10; ** at 0.05; and *** at 0.01. Insurance uptake (Cum.) is the sum of discount rates provided by the coupon over the three seasons prior to the interview. All specifications include household-, insurance area-, survey year- fixed effects, adult equivalent, age, age-squared, female dummy, age and sex of the household head, number of children in the household.

Table 5: Impact on Household Income and Expenditures in Response to Shock

	Annual income (Total)	Annual income per capita	Food expenditure	Non-food expenditure
	(1)	(2)	(3)	(4)
Shock	186.433	44.278*	-1.827**	-1.199
	(137.480)	(24.050)	(0.859)	(1.405)
Insurance Uptake (Cum.)	-225.122	-37.145	-1.312	0.133
	(147.915)	(25.511)	(1.194)	(1.151)
Shock $\times$ Insurance Uptake (Cum.)	-25.730	-14.352	1.328	-0.500
	(320.173)	(57.058)	(2.244)	(2.767)
Shock+Uptake $\times$ Shock (coef.)	160.704	29.926	-0.499	-1.699
Shock+Uptake $\times$ Shock (p-val.)	0.454	0.439	0.755	0.316
N	5085	5085	5082	5074
K-P F-stat	29.302	29.302	29.317	29.260
AR test p-val.	0.131	0.168	0.539	0.981
Mean of Dep. Var.	678.358	136.733	15.844	8.182

Notes: Standard errors, clustered at household level, are in parentheses. * denotes significance at 0.10; ** at 0.05; and *** at 0.01.

Table 6: Impact on Herd Size

	Herd size (own)	Herd size (herding)	Adult animals	Lactating animals
	(1)	(2)	(3)	(4)
Panel A: Winsorized at 99 percent				
Shock	1.569**	3.232***	1.742**	0.350
	(0.800)	(0.928)	(0.695)	(0.254)
Insurance Uptake (Cum.)	1.431	-0.179	0.288	-0.893
	(1.375)	(1.712)	(1.156)	(0.560)
Shock × Insurance Uptake (Cum.)	-1.715	-3.011	-2.012	0.177
	(2.144)	(2.360)	(1.728)	(0.684)
Shock+Uptake × Shock (coef.)	-0.146	0.222	-0.270	0.527
Shock+Uptake × Shock (p-val.)	0.925	0.896	0.826	0.308
N	5085	5085	5085	5085
K-P F-stat	29.302	29.302	29.302	29.302
AR test p-val.	0.565	0.269	0.475	0.208
Mean of Dep. Var.	14.288	16.032	10.631	3.859
Panel B: Winsorized at 95 percent				
Shock	1.084	2.117***	1.108*	0.120
	(0.663)	(0.790)	(0.583)	(0.206)
Insurance Uptake (Cum.)	0.486	-1.627	-1.030	-1.172**
	(1.150)	(1.435)	(0.978)	(0.489)
Shock × Insurance Uptake (Cum.)	-0.229	-0.222	-0.041	0.771
	(1.735)	(1.971)	(1.417)	(0.581)
Shock+Uptake × Shock (coef.)	0.855	1.895	1.067	0.891
Shock+Uptake × Shock (p-val.)	0.489	0.176	0.276	0.044
N	5085	5085	5085	5085
K-P F-stat	29.302	29.302	29.302	29.302
AR test p-val.	0.906	0.329	0.442	0.045
Mean of Dep. Var.	13.283	14.967	9.848	3.621
Panel C: Winsorized at 90 percent				
Shock	0.458	0.933	0.522	0.024
	(0.570)	(0.686)	(0.491)	(0.189)
Insurance Uptake (Cum.)	-1.559	-3.573***	-2.317***	-1.556***
	(1.017)	(1.243)	(0.850)	(0.464)
Shock × Insurance Uptake (Cum.)	1.280	2.288	1.366	1.047**
	(1.477)	(1.698)	(1.186)	(0.533)
Shock+Uptake × Shock (coef.)	1.738	3.221	1.888	1.071
Shock+Uptake × Shock (p-val.)	0.099	0.008	0.024	0.008
N	5085	5085	5085	5085
K-P F-stat	29.302	29.302	29.302	29.302
AR test p-val.	0.306	0.012	0.020	0.001
Mean of Dep. Var.	12.419	13.930	9.089	3.419

Notes: Standard errors, clustered at household level, are in parentheses. * denotes significance at 0.10; ** at 0.05; and *** at 0.01.

Table 7: Impact on Production Stratgeies

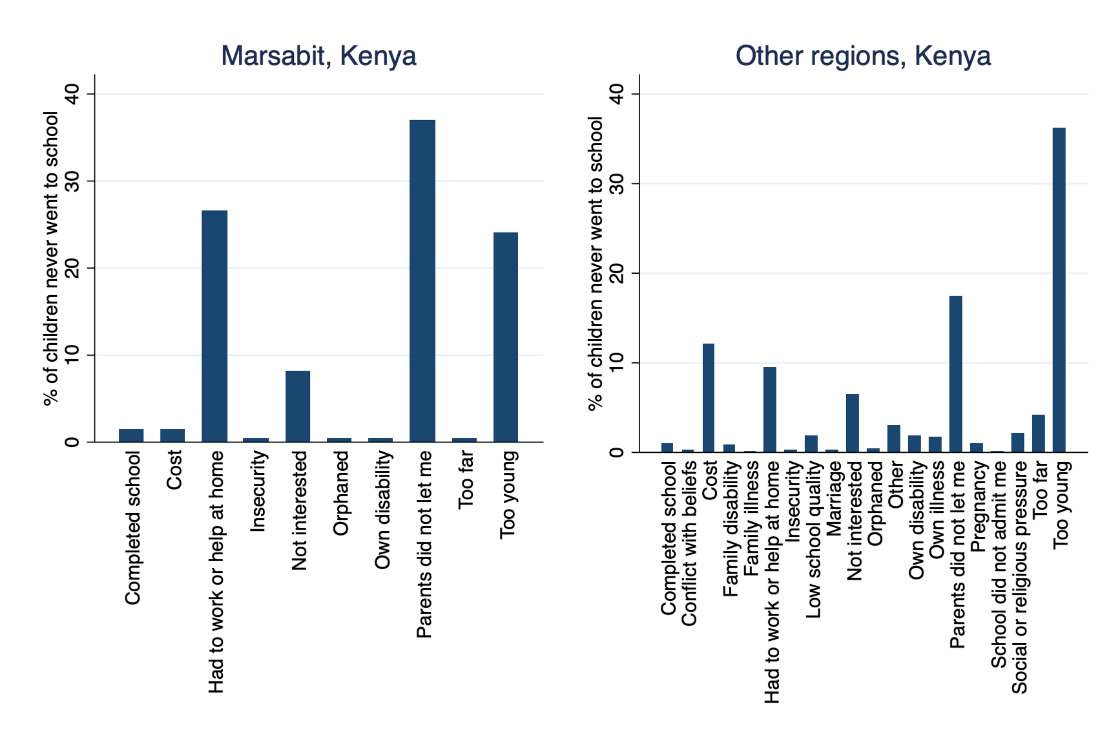
	Mobile	Share of livestock kept away	Livestock expenditure (Total)	Livestock food	Livestock Veterinary	Income Diversity Index
	(1)	(2)	(3)	(4)	(5)	(6)
Shock	-0.045	0.033	0.088	-0.015	0.045**	-0.003
	(0.043)	(0.034)	(0.076)	(0.053)	(0.019)	(0.029)
Insurance Uptake (Cum.)	0.223***	0.219***	-0.012	0.089	-0.044	0.038
	(0.072)	(0.055)	(0.109)	(0.058)	(0.031)	(0.040)
Shock $\times$ Insurance Uptake (Cum.)	-0.176	-0.197**	-0.200	-0.129	-0.007	-0.020
	(0.117)	(0.090)	(0.222)	(0.151)	(0.053)	(0.073)
Shock+Uptake $\times$ Shock (coef.)	-0.221	-0.163	-0.112	-0.144	0.037	-0.023
Shock+Uptake $\times$ Shock (p-val.)	0.012	0.016	0.495	0.178	0.337	0.668
N	5085	4832	5072	5072	5072	5085
K-P F-stat	29.302	28.005	29.200	29.200	29.200	29.302
AR test p-val.	0.004	0.000	0.594	0.281	0.175	0.611
Mean of Dep. Var.	0.600	0.633	0.517	0.246	0.163	0.215

Notes: Standard errors, clustered at household level, are in parentheses. * denotes significance at 0.10; ** at 0.05; and *** at 0.01.

Appendix A: Additional Figures and Tables

Figure A1: Reason why children never attended school

(a) Marsabit District, Kenya



(b) Borena Zone, Ethiopia

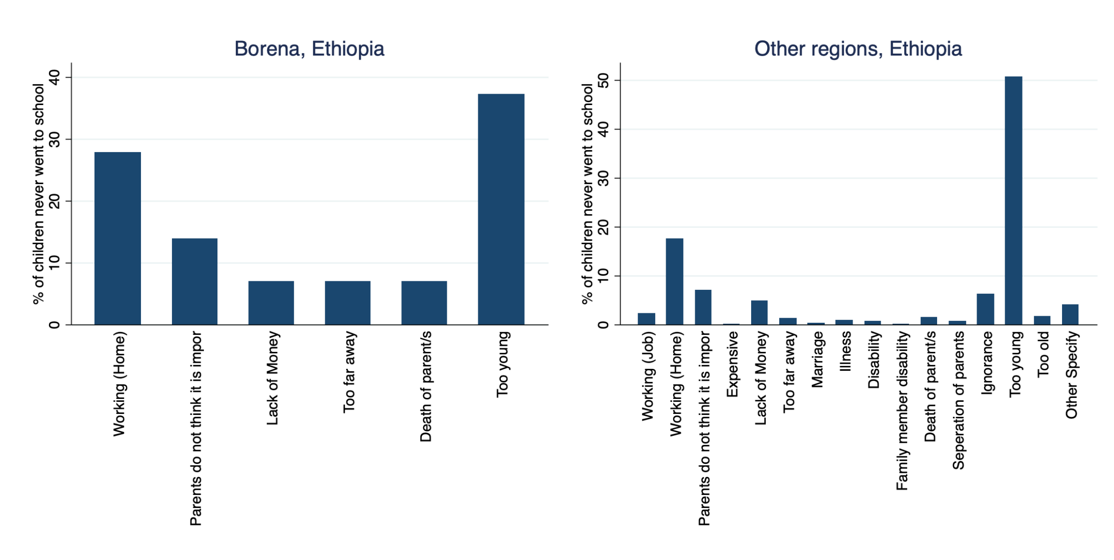
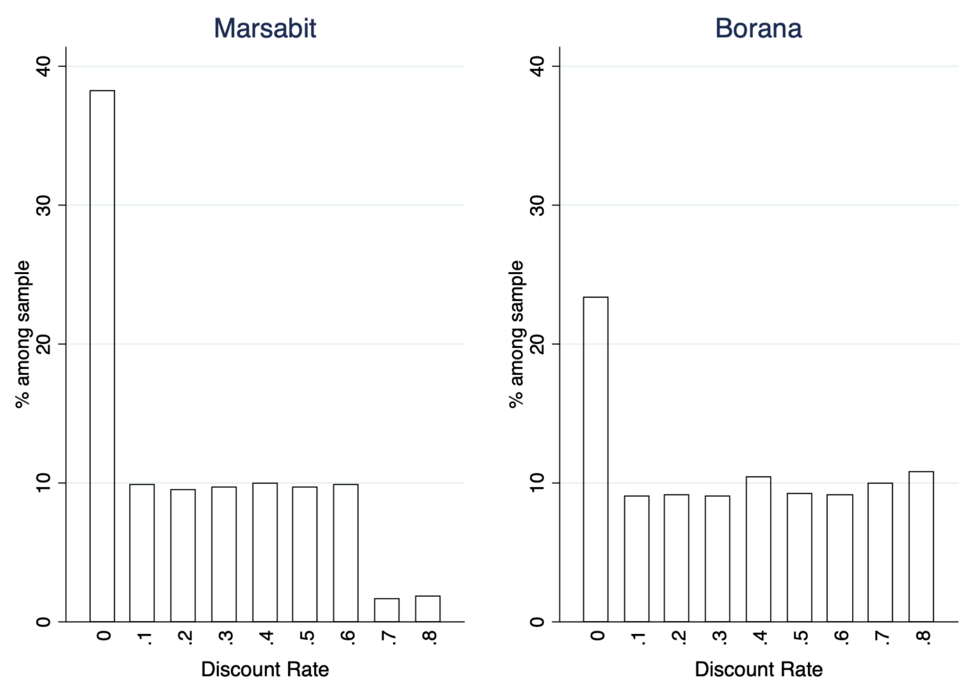


Figure A2: Discount Rate and Insured Livestock

(a) Discount Rates



(b) Livestock (TLU) insured, conditional on insurance purchase

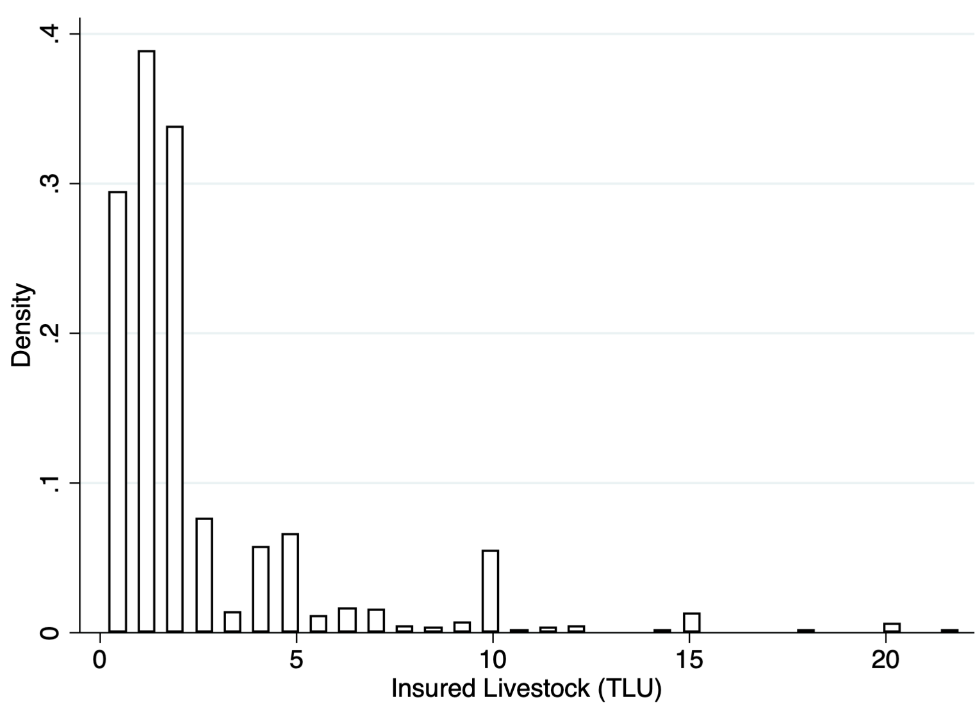


Table A1: Relationship between premium discounts and insurance uptake among neighbors

	Peers' IBLI uptake		Own IBLI uptake	
	(1)	(2)	(3)	(4)
Own Discount Rate	0.510***	-0.092		0.357***
	(0.148)	(0.118)		(0.030)
Peers' Average Discount Rate		0.556***	0.003*	0.001
		(0.044)	(0.002)	(0.002)
N	12027	12027	12027	12027
Mean of Dep. Var.	1.121	1.121	0.140	0.140

Notes: Standard errors, clustered at household level, are in parentheses. * denotes significance at 0.10; ** at 0.05; and *** at 0.01. Insurance uptake (Cum.) is the sum of discount rates provided by the coupon over the three seasons prior to the interview. All specifications include individual-, insurance area-, survey year- fixed effects, adult equivalent, age, age-squared, female dummy, age and sex of the household head, number of children in the household.

Table A2: Impact on Children's Work and Schooling in drought and non-drought periods

	Child labor	Work	Schooling	
			Activity: School	Enrollment
	(1)	(2)	(3)	(4)
Shock	0.091**	0.051	0.008	0.005
	(0.039)	(0.037)	(0.021)	(0.013)
	{0.0199}	{0.173}	{0.691}	{0.718}
	[0.709]	[0.827]	[1.000]	[1.000]
Insurance Uptake (Cum.)	-0.036	-0.102**	0.020	0.018
	(0.053)	(0.051)	(0.037)	(0.027)
	{0.492}	{0.0466}	{0.592}	{0.520}
	[0.827]	[0.375]	[1.000]	[0.827]
Shock × Insurance Uptake (Cum.)	-0.197*	-0.083	-0.006	-0.006
	(0.101)	(0.097)	(0.060)	(0.041)
	{0.0509}	{0.391}	{0.920}	{0.878}
	[0.827]	[1.000]	[1.000]	[1.000]
N	12262	12262	12262	11223
Mean of Dep. Var.	0.427	0.645	0.434	0.390

Notes: Standard errors, clustered at household level, are in parentheses. * denotes significance at 0.10; ** at 0.05; and *** at 0.01. Insurance uptake (Cum.) is the sum of discount rates provided by the coupon over the three seasons prior to the interview. All specifications include household-, insurance area-, survey year- fixed effects, adult equivalent, age, age-squared, female dummy, age and sex of the household head, number of children in the household.

Table A3: Impact on Children's Work and Schooling in drought and non-drought periods

	Work FT	Work and School	School FT	No activity
	(1)	(2)	(3)	(4)
Shock	0.014	0.037	-0.028	-0.022
	(0.022)	(0.035)	(0.035)	(0.018)
	{0.518}	{0.290}	{0.420}	{0.213}
	[1.000]	[1.000]	[1.000]	[1.000]
Insurance Uptake (Cum.)	-0.015	-0.087*	0.107**	-0.005
	(0.043)	(0.046)	(0.042)	(0.034)
	{0.735}	{0.0591}	{0.0107}	{0.883}
	[1.000]	[0.256]	[1.000]	[1.000]
Shock × Insurance Uptake (Cum.)	-0.031	-0.052	0.046	0.038
	(0.065)	(0.088)	(0.089)	(0.053)
	{0.632}	{0.558}	{0.607}	{0.475}
	[1.000]	[1.000]	[1.000]	[1.000]
N	12262	12262	12262	12269
Mean of Dep. Var.	0.374	0.271	0.163	0.193

Notes: Standard errors, clustered at household level, are in parentheses. * denotes significance at 0.10; ** at 0.05; and *** at 0.01. Insurance uptake (Cum.) is the sum of discount rates provided by the coupon over the three seasons prior to the interview. All specifications include household-, insurance area-, survey year- fixed effects, adult equivalent, age, age-squared, female dummy, age and sex of the household head, number of children in the household.

Table A4: Impact on Hours Children Spent on Each Activity

	Work	School	Leisure
	(1)	(2)	(3)
Panel A: Average Effects			
Insurance Uptake (Cum.)	-0.518*	-0.240	0.876***
	(0.307)	(0.221)	(0.332)
	{0.0915}	{0.277}	{0.00849}
	[0.234]	[0.275]	[0.075]
N	12201	12201	12399
Mean of Dep. Var.	4.247	3.478	16.410
Panel B: Disaggreagted Effects			
Shock	0.387*	0.044	-0.391
	(0.226)	(0.171)	(0.254)
	{0.0864}	{0.799}	{0.124}
	[0.977]	[1.000]	[0.574]
Insurance Uptake (Cum.)	-0.609*	-0.038	0.749*
	(0.369)	(0.247)	(0.402)
	{0.0994}	{0.879}	{0.0628}
	[1.000]	[0.574]	[0.574]
Shock $\times$ Insurance Uptake (Cum.)	0.107	-0.038	-0.053
	(0.635)	(0.432)	(0.690)
	{0.866}	{0.929}	{0.939}
	[1.000]	[1.000]	[1.000]
N	12262	12262	12457
Mean of Dep. Var.	3.809	3.115	17.372

Notes: Standard errors, clustered at household level, are in parentheses. * denotes significance at 0.10; ** at 0.05; and *** at 0.01. Insurance uptake (Cum.) is the sum of discount rates provided by the coupon over the three seasons prior to the interview. All specifications include household-, insurance area-, survey year-fixed effects, adult equivalent, age, age-squared, female dummy, age and sex of the household head, number of children in the household.

Table A5: Impact on Various Types of Child Activities

	Primary Activity				Secondary Activity			
	Any work	Livestock related tasks	HH tasks	School	Any work	Livestock related tasks	HH Tasks	School
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: Average Effects								
Insurance Uptake (Cum.)	0.019	0.022	0.009	-0.038	-0.209***	-0.068*	-0.106**	0.022*
	(0.036)	(0.033)	(0.029)	(0.032)	(0.055)	(0.039)	(0.045)	(0.013)
	{0.591}	{0.506}	{0.768}	{0.239}	{0.000146}	{0.0820}	{0.0172}	{0.0793}
	[0.464]	[0.348]	[0.673]	[0.252]	[0.002]	[0.084]	[0.084]	[0.084]
N	12200	12200	12200	12200	12201	12201	12201	12201
Mean of Dep. Var.	0.412	0.310	0.089	0.487	0.446	0.152	0.270	0.009
Panel B: Disaggreagted Effects								
Shock	0.026	0.057***	-0.025	-0.004	0.045	-0.037	0.061	0.031***
	(0.021)	(0.022)	(0.020)	(0.022)	(0.046)	(0.028)	(0.043)	(0.009)
	{0.219}	{0.00950}	{0.210}	{0.841}	{0.324}	{0.191}	{0.154}	{0.000946}
	[0.667]	[0.667]	[0.460]	[0.667]	[0.406]	[0.460]	[0.241]	[0.116]
Insurance Uptake (Cum.)	0.029	0.036	0.001	-0.015	-0.193***	-0.064	-0.094*	0.040**
	(0.044)	(0.042)	(0.036)	(0.037)	(0.067)	(0.050)	(0.053)	(0.017)
	{0.513}	{0.386}	{0.975}	{0.694}	{0.00380}	{0.200}	{0.0774}	{0.0213}
	[0.565]	[0.406]	[0.828]	[0.460]	[0.403]	[0.597]	[0.578]	[0.710]
Shock $\times$ Insurance Uptake (Cum.)	-0.062	-0.101	0.035	0.019	-0.034	0.027	-0.028	-0.048
	(0.063)	(0.066)	(0.056)	(0.061)	(0.124)	(0.071)	(0.110)	(0.031)
	{0.327}	{0.127}	{0.534}	{0.749}	{0.784}	{0.705}	{0.798}	{0.128}
	[0.828]	[0.667]	[0.460]	[1.000]	[0.578]	[0.828]	[0.578]	[0.828]
N	12261	12261	12261	12261	12262	12262	12262	12262
Mean of Dep. Var.	0.376	0.253	0.105	0.430	0.398	0.121	0.249	0.005

Notes: Standard errors, clustered at household level, are in parentheses. * denotes significance at 0.10; ** at 0.05; and *** at 0.01. Insurance uptake (Cum.) is the sum of discount rates provided by the coupon over the three seasons prior to the interview. All specifications include household-, insurance area-, survey year- fixed effects, adult equivalent, age, age-squared, female dummy, age and sex of the household head, number of children in the household.

Table A6: Impact on Production Stratgeies

	Mobile	Share of livestock kept away	Livestock expenditure (Total)	Livestock food	Livestock Veterinary	Income Diversity Index
	(1)	(2)	(3)	(4)	(5)	(6)
Insurance Uptake (Cum.)	0.179***	0.149***	-0.053	0.038	-0.023	0.033
	(0.058)	(0.044)	(0.116)	(0.063)	(0.025)	(0.033)
N	4426	4254	4415	4415	4415	4426
F_{eff}	146.391	141.329	146.251	146.251	146.251	146.391
Mean of Dep. Var.	0.562	0.564	0.413	0.183	0.147	0.208

Notes: Standard errors, clustered at household level, are in parentheses. * denotes significance at 0.10; ** at 0.05; and *** at 0.01. An observation corresponds to a household. The sample includes the households that have children of age 5-17. Insurance uptake (Cum.) is the sum of insurance uptake incidences over the latest three seasons. The relevant periods for discount rates align with those for insurance uptake. All specifications include insurance area- and survey year- fixed effects, adult equivalent, age, sex and education of the household head, the number of children in the household, whether a household received food aid, participated in a school feeding or supplementary feeding program, and share of female members and members older than 65 years old in the household.

Table A7: Impact on Household Income and Expenditures

	Annual income (Total)	Annual income per capita	Food expenditure	Non-food expenditure
	(1)	(2)	(3)	(4)
Insurance Uptake (Cum.)	-113.403	-7.480	-1.992**	-0.220
	(75.040)	(13.405)	(0.864)	(0.792)
N	4426	4426	4423	4417
F_{eff}	146.391	146.391	145.163	145.976
Mean of Dep. Var.	628.147	127.565	15.324	6.634

Notes: Standard errors, clustered at household level, are in parentheses. * denotes significance at 0.10; ** at 0.05; and *** at 0.01. An observation corresponds to a household. The sample includes the households that have children of age 5-17. Insurance uptake (Cum.) is the sum of insurance uptake incidences over the latest three seasons. The relevant periods for discount rates align with those for insurance uptake. All specifications include insurance area- and survey year- fixed effects, adult equivalent, age, sex and education of the household head, the number of children in the household, whether a household received food aid, participated in a school feeding or supplementary feeding program, and share of female members and members older than 65 years old in the household.

Table A8: Impact on Adult's Work

	Any work	Livestock-related tasks	Household tasks	Other work	Work as primary activity	Work as secondary activity
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Adults of all age						
Insurance Uptake (Cum.)	0.010	-0.000	-0.055	0.026	0.004	-0.115**
	(0.021)	(0.041)	(0.036)	(0.022)	(0.021)	(0.058)
	{0.632}	{0.997}	{0.122}	{0.235}	{0.843}	{0.0466}
	[0.900]	[0.994]	[0.437]	[0.575]	[0.994]	[0.388]
N	12608	12608	12608	12966	12608	12608
Mean of Dep. Var.	0.932	0.583	0.504	0.078	0.867	0.599
Panel B: Young Adults, 18-45 years old						
Insurance Uptake (Cum.)	0.019	0.027	-0.034	0.038	0.010	-0.079
	(0.024)	(0.045)	(0.037)	(0.027)	(0.023)	(0.063)
	{0.415}	{0.542}	{0.360}	{0.152}	{0.663}	{0.210}
	[1.000]	[1.000]	[1.000]	[1.000]	[1.000]	[1.000]
N	9044	9044	9044	9361	9044	9044
Mean of Dep. Var.	0.933	0.574	0.511	0.080	0.846	0.617
Panel C: Older Adults, 46-80 years old						
Insurance Uptake (Cum.)	-0.001	-0.075	-0.140**	0.018	-0.004	-0.203**
	(0.045)	(0.096)	(0.063)	(0.036)	(0.046)	(0.098)
	{0.979}	{0.437}	{0.0272}	{0.617}	{0.923}	{0.0373}
	[1.000]	[1.000]	[0.127]	[1.000]	[1.000]	[0.127]
N	3448	3448	3448	3488	3448	3448
Mean of Dep. Var.	0.928	0.608	0.488	0.073	0.924	0.551

Notes: Standard errors, clustered at household level, are in parentheses. * denotes significance at 0.10; ** at 0.05; and *** at 0.01. Insurance uptake (Cum.) is the sum of discount rates provided by the coupon over the three seasons prior to the interview. All specifications include household-, insurance area-, survey year- fixed effects, adult equivalent, age, age-squared, female dummy, age and sex of the household head, number of children in the household.

Table A9: Impact on Child Activities, by initial child labor usage

	Child labor	Work	Schooling	
			Activity: School	Enrollment
	(1)	(2)	(3)	(4)
Panel A: Heterogeneity of Average Effects				
Less than half work × Insurance Uptake (Cum.)	-0.333***	-0.346***	-0.049	-0.083
	(0.110)	(0.113)	(0.055)	(0.052)
	{0.00255}	{0.00223}	{0.373}	{0.112}
More than half work × Insurance Uptake (Cum.)	0.001	-0.045	0.002	0.001
	(0.055)	(0.052)	(0.041)	(0.032)
	{0.983}	{0.386}	{0.963}	{0.979}
Less-More	-0.334**	-0.301**	-0.051	-0.084
	(0.130)	(0.132)	(0.070)	(0.065)
	{0.0101}	{0.0224}	{0.470}	{0.198}
N	11287	11287	11287	10316
Panel B: Disaggreagted Effects, Less than half of the children worked initially				
Shock	0.073	0.063	0.013	-0.004
	(0.059)	(0.055)	(0.034)	(0.029)
	{0.219}	{0.258}	{0.698}	{0.885}
Insurance Uptake (Cum.)	-0.238*	-0.290**	-0.036	-0.116
	(0.124)	(0.131)	(0.078)	(0.072)
	{0.0552}	{0.0280}	{0.642}	{0.108}
Shock × Insurance Uptake (Cum.)	-0.058	0.065	-0.019	0.113
	(0.152)	(0.153)	(0.082)	(0.079)
	{0.703}	{0.670}	{0.815}	{0.154}
Shock+Uptake × Shock (coef.)	0.015	0.128	-0.006	0.109
Shock+Uptake × Shock (p-val.)	0.902	0.312	0.930	0.112
N	3467	3467	3467	3053
Mean of Dep. Var.	0.496	0.673	0.590	0.515
Panel C: Disaggreagted Effects, More than half of the children worked initially				
Shock	0.053	0.033	0.023	0.006
	(0.053)	(0.054)	(0.036)	(0.028)
	{0.320}	{0.539}	{0.533}	{0.830}
Insurance Uptake (Cum.)	-0.018	-0.075	-0.005	-0.007
	(0.059)	(0.054)	(0.045)	(0.034)
	{0.767}	{0.167}	{0.915}	{0.845}
Shock × Insurance Uptake (Cum.)	-0.101	-0.067	-0.002	0.003
	(0.142)	(0.139)	(0.103)	(0.079)
	{0.476}	{0.627}	{0.985}	{0.966}
Shock+Uptake × Shock (coef.)	-0.048	-0.035	0.021	0.009
Shock+Uptake × Shock (p-val.)	0.624	0.715	0.776	0.869
N	7820	7820	7820	7263
Mean of Dep. Var.	0.559	0.744	0.443	0.368

Notes: Standard errors, clustered at household level, are in parentheses. * denotes significance at 0.10; ** at 0.05; and *** at 0.01. Insurance uptake (Cum.) is the sum of discount rates provided by the coupon over the three seasons prior to the interview. All specifications include individual-, insurance area-, survey year-fixed effects, adult equivalent, age, age-squared, female dummy, age and sex of the household head, number of children in the household.

Table A10: Impact on Child Activities, by initial savings

	Child labor	Work	Schooling	
			Activity: School	Enrollment
	(1)	(2)	(3)	(4)
Panel A: Heterogeneity of Average Effects				
Any saving × Insurance Uptake (Cum.)	-0.103	-0.119	-0.032	-0.028
	(0.078)	(0.079)	(0.055)	(0.043)
	{0.188}	{0.131}	{0.564}	{0.518}
No saving × Insurance Uptake (Cum.)	-0.105*	-0.147***	-0.007	-0.023
	(0.058)	(0.056)	(0.040)	(0.032)
	{0.0706}	{0.00883}	{0.864}	{0.473}
Any saving - No saving	0.002	0.028	-0.025	-0.005
	(0.101)	(0.100)	(0.070)	(0.056)
	{0.984}	{0.779}	{0.718}	{0.930}
N	11259	11259	11259	10287
Panel B: Disaggreagted Effects, have any savings initially				
Shock	0.152	0.142	0.001	0.019
	(0.110)	(0.124)	(0.060)	(0.053)
	{0.167}	{0.254}	{0.992}	{0.725}
Insurance Uptake (Cum.)	-0.062	-0.071	-0.035	-0.047
	(0.078)	(0.077)	(0.062)	(0.052)
	{0.428}	{0.357}	{0.576}	{0.371}
Shock × Insurance Uptake (Cum.)	-0.258	-0.155	0.056	-0.003
	(0.272)	(0.300)	(0.140)	(0.105)
	{0.343}	{0.606}	{0.690}	{0.981}
Shock+Uptake × Shock (coef.)	-0.106	-0.013	0.056	0.016
Shock+Uptake × Shock (p-val.)	0.561	0.946	0.543	0.806
N	2203	2203	2203	2035
Mean of Dep. Var.	0.523	0.698	0.525	0.457
Panel C: Disaggreagted Effects, no savings initially				
Shock	0.038	0.020	0.022	-0.007
	(0.040)	(0.039)	(0.026)	(0.020)
	{0.342}	{0.602}	{0.398}	{0.731}
Insurance Uptake (Cum.)	-0.082	-0.154**	-0.002	-0.036
	(0.068)	(0.066)	(0.048)	(0.038)
	{0.228}	{0.0203}	{0.965}	{0.350}
Shock × Insurance Uptake (Cum.)	-0.065	0.002	-0.034	0.046
	(0.107)	(0.103)	(0.074)	(0.060)
	{0.544}	{0.988}	{0.650}	{0.445}
Shock+Uptake × Shock (coef.)	-0.027	0.022	-0.012	0.039
Shock+Uptake × Shock (p-val.)	0.735	0.777	0.838	0.400
N	9056	9056	9056	8252
Mean of Dep. Var.	0.543	0.728	0.481	0.402

Notes: Standard errors, clustered at household level, are in parentheses. * denotes significance at 0.10; ** at 0.05; and *** at 0.01. Insurance uptake (Cum.) is the sum of discount rates provided by the coupon over the three seasons prior to the interview. All specifications include individual-, insurance area-, survey year- fixed effects, adult equivalent, age, age-squared, female dummy, age and sex of the household head, number of children in the household.

Table A11: Impact on Child Activities, by initial herd size

	Child labor	Work	Schooling	
			Activity: School	Enrollment
	(1)	(2)	(3)	(4)
Panel A: Heterogeneity of Average Effects				
Below median × Insurance Uptake (Cum.)	-0.165*	-0.166**	0.046	0.006
	(0.089)	(0.082)	(0.065)	(0.051)
	{0.0640}	{0.0440}	{0.475}	{0.907}
Above median × Insurance Uptake (Cum.)	-0.062	-0.123**	-0.057	-0.046
	(0.056)	(0.057)	(0.037)	(0.033)
	{0.268}	{0.0315}	{0.127}	{0.159}
Below-Above	-0.102	-0.043	0.103	0.052
	(0.112)	(0.106)	(0.079)	(0.066)
	{0.360}	{0.683}	{0.190}	{0.430}
N	11287	11287	11287	10316
Panel B: Disaggreagted Effects, initial herds size below median				
Shock	0.128*	0.051	0.070	0.020
	(0.068)	(0.064)	(0.043)	(0.033)
	{0.0620}	{0.426}	{0.109}	{0.554}
Insurance Uptake (Cum.)	-0.036	-0.072	0.086	-0.064
	(0.104)	(0.100)	(0.087)	(0.065)
	{0.730}	{0.472}	{0.326}	{0.331}
Shock × Insurance Uptake (Cum.)	-0.341	-0.212	-0.174	0.046
	(0.227)	(0.206)	(0.160)	(0.126)
	{0.134}	{0.304}	{0.277}	{0.715}
Shock+Uptake × Shock (coef.)	-0.213	-0.161	-0.104	0.066
Shock+Uptake × Shock (p-val.)	0.208	0.294	0.402	0.507
N	5442	5442	5442	4883
Mean of Dep. Var.	0.494	0.705	0.516	0.459
Panel C: Disaggreagted Effects, initial herds size above median				
Shock	0.005	0.065	-0.015	-0.032
	(0.053)	(0.052)	(0.034)	(0.025)
	{0.926}	{0.212}	{0.654}	{0.202}
Insurance Uptake (Cum.)	-0.076	-0.143**	-0.067	-0.024
	(0.061)	(0.061)	(0.041)	(0.033)
	{0.213}	{0.0194}	{0.101}	{0.475}
Shock × Insurance Uptake (Cum.)	0.019	0.035	0.071	0.050
	(0.102)	(0.107)	(0.064)	(0.054)
	{0.852}	{0.743}	{0.269}	{0.357}
Shock+Uptake × Shock (coef.)	0.024	0.101	0.056	0.018
Shock+Uptake × Shock (p-val.)	0.734	0.173	0.193	0.631
N	5845	5845	5845	5433
Mean of Dep. Var.	0.581	0.738	0.463	0.370

Notes: Standard errors, clustered at household level, are in parentheses. * denotes significance at 0.10; ** at 0.05; and *** at 0.01. Insurance uptake (Cum.) is the sum of discount rates provided by the coupon over the three seasons prior to the interview. All specifications include individual-, insurance area-, survey year- fixed effects, adult equivalent, age, age-squared, female dummy, age and sex of the household head, number of children in the household.

Table A12: Impact on Child Activities, by initial share of shoats

	Child labor	Work	Schooling	
			Activity: School	Enrollment
	(1)	(2)	(3)	(4)
Panel A: Heterogeneity of Average Effects				
Below median × Insurance Uptake (Cum.)	0.079	-0.024	-0.022	-0.063**
	(0.055)	(0.050)	(0.034)	(0.031)
	{0.150}	{0.635}	{0.508}	{0.0435}
Above median × Insurance Uptake (Cum.)	-0.378***	-0.314***	-0.002	0.033
	(0.101)	(0.097)	(0.070)	(0.056)
	{0.000184}	{0.00117}	{0.975}	{0.552}
Below-Above	0.457***	0.291**	-0.020	-0.096
	(0.121)	(0.115)	(0.082)	(0.070)
	{0.000173}	{0.0117}	{0.807}	{0.168}
N	11287	11287	11287	10316
Panel B: Disaggreagted Effects, initial share of shoats below median				
Shock	-0.016	-0.000	0.046	0.009
	(0.052)	(0.055)	(0.033)	(0.026)
	{0.756}	{0.993}	{0.168}	{0.746}
Insurance Uptake (Cum.)	0.026	-0.080	-0.012	-0.041
	(0.063)	(0.057)	(0.037)	(0.033)
	{0.679}	{0.162}	{0.746}	{0.211}
Shock × Insurance Uptake (Cum.)	0.022	0.024	-0.076	0.023
	(0.120)	(0.125)	(0.078)	(0.068)
	{0.854}	{0.845}	{0.331}	{0.731}
Shock+Uptake × Shock (coef.)	0.006	0.024	-0.030	0.032
Shock+Uptake × Shock (p-val.)	0.945	0.778	0.576	0.512
N	5313	5313	5313	4864
Mean of Dep. Var.	0.554	0.736	0.500	0.434
Panel C: Disaggreagted Effects, initial share of shoats above median				
Shock	0.119**	0.072	0.003	-0.012
	(0.055)	(0.052)	(0.036)	(0.027)
	{0.0310}	{0.164}	{0.924}	{0.663}
Insurance Uptake (Cum.)	-0.227**	-0.206**	-0.008	-0.016
	(0.101)	(0.097)	(0.079)	(0.059)
	{0.0258}	{0.0336}	{0.915}	{0.786}
Shock × Insurance Uptake (Cum.)	-0.240	-0.095	0.045	0.057
	(0.158)	(0.150)	(0.112)	(0.075)
	{0.129}	{0.525}	{0.685}	{0.447}
Shock+Uptake × Shock (coef.)	-0.121	-0.023	0.049	0.046
Shock+Uptake × Shock (p-val.)	0.306	0.839	0.576	0.438
N	5974	5974	5974	5452
Mean of Dep. Var.	0.527	0.710	0.479	0.393

Notes: Standard errors, clustered at household level, are in parentheses. * denotes significance at 0.10; ** at 0.05; and *** at 0.01. Insurance uptake (Cum.) is the sum of discount rates provided by the coupon over the three seasons prior to the interview. All specifications include individual-, insurance area-, survey year- fixed effects, adult equivalent, age, age-squared, female dummy, age and sex of the household head, number of children in the household.

Table A13: Impact on Child Activities, by children's gender

	Child labor	Work	Schooling	
			Activity: School	Enrollment
	(1)	(2)	(3)	(4)
Panel A: Heterogeneity of Average Effects				
Female × Insurance Uptake	-0.207***	-0.122***	0.023	-0.001
	(0.050)	(0.045)	(0.037)	(0.032)
	{0.0000416}	{0.00714}	{0.546}	{0.965}
Male × Insurance Uptake	0.028	-0.141***	-0.057	-0.053*
	(0.047)	(0.046)	(0.037)	(0.031)
	{0.555}	{0.00229}	{0.121}	{0.0939}
Female - Male	-0.234***	0.019	0.080**	0.051
	(0.037)	(0.028)	(0.037)	(0.039)
	{4.60e-10}	{0.489}	{0.0335}	{0.190}
N	12201	12201	12201	11152
Panel B: Disaggreagted Effects, female children				
Shock	0.178***	0.111**	0.005	0.014
	(0.063)	(0.054)	(0.037)	(0.024)
	{0.00450}	{0.0410}	{0.884}	{0.551}
Insurance Uptake (Cum.)	-0.038	-0.052	-0.013	-0.013
	(0.073)	(0.066)	(0.058)	(0.042)
	{0.605}	{0.428}	{0.824}	{0.764}
Shock × Insurance Uptake (Cum.)	-0.331**	-0.263*	0.008	-0.045
	(0.163)	(0.145)	(0.097)	(0.064)
	{0.0422}	{0.0701}	{0.931}	{0.482}
Shock+Uptake × Shock (coef.)	-0.153	-0.151	0.014	-0.031
Shock+Uptake × Shock (p-val.)	0.179	0.145	0.846	0.527
N	5808	5808	5808	5243
Mean of Dep. Var.	0.490	0.733	0.518	0.438
Panel C: Disaggreagted Effects, male children				
Shock	0.002	0.003	0.027	-0.021
	(0.044)	(0.045)	(0.028)	(0.022)
	{0.963}	{0.955}	{0.337}	{0.351}
Insurance Uptake (Cum.)	-0.068	-0.149**	0.030	-0.025
	(0.073)	(0.071)	(0.045)	(0.036)
	{0.351}	{0.0366}	{0.505}	{0.495}
Shock × Insurance Uptake (Cum.)	0.012	0.098	-0.051	0.104
	(0.121)	(0.121)	(0.076)	(0.069)
	{0.920}	{0.417}	{0.501}	{0.135}
Shock+Uptake × Shock (coef.)	0.014	0.101	-0.024	0.083
Shock+Uptake × Shock (p-val.)	0.875	0.261	0.674	0.125
N	6252	6252	6252	5760
Mean of Dep. Var.	0.576	0.708	0.474	0.406

Notes: Standard errors, clustered at household level, are in parentheses. * denotes significance at 0.10; ** at 0.05; and *** at 0.01. Insurance uptake (Cum.) is the sum of discount rates provided by the coupon over the three seasons prior to the interview. All specifications include individual-, insurance area-, survey year- fixed effects, adult equivalent, age, age-squared, female dummy, age and sex of the household head, number of children in the household.

Table A14: Impact on Child Activities, by children's age

	Child labor	Work	Schooling	
			Activity: School	Enrollment
	(1)	(2)	(3)	(4)
Panel A: Heterogeneity of Average Effects				
Female × Insurance Uptake	-0.137***	-0.118**	0.012	0.009
	(0.049)	(0.047)	(0.038)	(0.030)
	{0.00506}	{0.0133}	{0.749}	{0.765}
Male × Insurance Uptake	-0.018	-0.155***	-0.066	-0.081**
	(0.052)	(0.046)	(0.044)	(0.040)
	{0.737}	{0.000766}	{0.135}	{0.0442}
Female - Male	-0.119**	0.037	0.078	0.090*
	(0.047)	(0.037)	(0.051)	(0.049)
	{0.0118}	{0.321}	{0.126}	{0.0693}
N	12201	12201	12201	11152
Panel B: Disaggreagted Effects, younger children (5-12 years old)				
Shock	0.068	-0.002	0.039	0.005
	(0.048)	(0.044)	(0.032)	(0.023)
	{0.157}	{0.957}	{0.225}	{0.842}
Insurance Uptake (Cum.)	-0.116*	-0.097	0.022	0.033
	(0.068)	(0.064)	(0.049)	(0.038)
	{0.0871}	{0.131}	{0.651}	{0.386}
Shock × Insurance Uptake (Cum.)	-0.121	-0.007	-0.058	0.011
	(0.125)	(0.115)	(0.087)	(0.063)
	{0.333}	{0.952}	{0.501}	{0.862}
Shock+Uptake × Shock (coef.)	-0.053	-0.009	-0.019	0.016
Shock+Uptake × Shock (p-val.)	0.555	0.913	0.764	0.745
N	7599	7599	7599	6513
Mean of Dep. Var.	0.549	0.654	0.471	0.354
Panel C: Disaggreagted Effects, older children (13-17 years old)				
Shock	0.099*	0.167***	-0.009	-0.027
	(0.053)	(0.056)	(0.034)	(0.028)
	{0.0640}	{0.00278}	{0.787}	{0.329}
Insurance Uptake (Cum.)	-0.044	-0.173**	-0.044	-0.102*
	(0.080)	(0.070)	(0.061)	(0.055)
	{0.582}	{0.0142}	{0.469}	{0.0625}
Shock × Insurance Uptake (Cum.)	-0.122	-0.135	0.001	0.062
	(0.130)	(0.138)	(0.087)	(0.077)
	{0.349}	{0.328}	{0.991}	{0.421}
Shock+Uptake × Shock (coef.)	-0.023	0.032	-0.008	0.035
Shock+Uptake × Shock (p-val.)	0.802	0.746	0.898	0.569
N	4440	4440	4440	4476
Mean of Dep. Var.	0.510	0.831	0.535	0.517

Notes: Standard errors, clustered at household level, are in parentheses. * denotes significance at 0.10; ** at 0.05; and *** at 0.01. Insurance uptake (Cum.) is the sum of discount rates provided by the coupon over the three seasons prior to the interview. All specifications include individual-, insurance area-, survey year- fixed effects, adult equivalent, age, age-squared, female dummy, age and sex of the household head, number of children in the household.

Table A15: Impact on Child Activities, by children's birth order

	Child labor	Work	Schooling	
			Activity: School	Enrollment
	(1)	(2)	(3)	(4)
Panel A: Heterogeneity of Average Effects				
First child × Insurance Uptake	-0.041	-0.053	-0.044	-0.042
	(0.054)	(0.048)	(0.042)	(0.039)
	{0.449}	{0.270}	{0.297}	{0.285}
Younger siblings × Insurance Uptake	-0.132***	-0.184***	0.004	-0.015
	(0.046)	(0.047)	(0.035)	(0.028)
	{0.00410}	{0.0000898}	{0.907}	{0.597}
First child - Younger siblings	0.091**	0.131***	-0.048	-0.027
	(0.042)	(0.036)	(0.044)	(0.046)
	{0.0322}	{0.000315}	{0.271}	{0.555}
N	12201	12201	12201	11152
Panel B: Disaggreagted Effects, first child				
Shock	0.119**	0.078*	-0.015	-0.027
	(0.052)	(0.047)	(0.035)	(0.028)
	{0.0227}	{0.0986}	{0.677}	{0.337}
Insurance Uptake (Cum.)	0.049	-0.074	-0.064	-0.114*
	(0.098)	(0.079)	(0.077)	(0.061)
	{0.614}	{0.348}	{0.405}	{0.0638}
Shock × Insurance Uptake (Cum.)	-0.319**	-0.192	-0.002	0.100
	(0.148)	(0.133)	(0.112)	(0.080)
	{0.0311}	{0.148}	{0.984}	{0.214}
Shock+Uptake × Shock (coef.)	-0.201	-0.114	-0.017	0.073
Shock+Uptake × Shock (p-val.)	0.078	0.264	0.850	0.255
N	4343	4343	4343	4199
Mean of Dep. Var.	0.523	0.815	0.504	0.455
Panel C: Disaggreagted Effects, younger siblings				
Shock	0.006	0.022	0.038	0.036
	(0.048)	(0.047)	(0.033)	(0.025)
	{0.905}	{0.633}	{0.248}	{0.143}
Insurance Uptake (Cum.)	-0.108*	-0.127**	0.020	0.041
	(0.060)	(0.059)	(0.041)	(0.036)
	{0.0697}	{0.0307}	{0.630}	{0.252}
Shock × Insurance Uptake (Cum.)	0.034	0.026	0.007	-0.034
	(0.119)	(0.117)	(0.077)	(0.070)
	{0.772}	{0.822}	{0.926}	{0.627}
Shock+Uptake × Shock (coef.)	0.040	0.049	0.045	0.002
Shock+Uptake × Shock (p-val.)	0.626	0.550	0.406	0.970
N	7701	7701	7701	6793
Mean of Dep. Var.	0.541	0.666	0.489	0.400

Notes: Standard errors, clustered at household level, are in parentheses. * denotes significance at 0.10; ** at 0.05; and *** at 0.01. Insurance uptake (Cum.) is the sum of discount rates provided by the coupon over the three seasons prior to the interview. All specifications include individual-, insurance area-, survey year- fixed effects, adult equivalent, age, age-squared, female dummy, age and sex of the household head, number of children in the household.

Appendix B: Robustness Check Tables

Table B1: Impact on Child Activities (ITT)

	Child labor	Work	Schooling	
			Activity: School	Enrollment
	(1)	(2)	(3)	(4)
Panel A: Average Effects				
Discount rate (Current + Cum.)	-0.031**	-0.045***	-0.003	-0.008
	(0.015)	(0.014)	(0.011)	(0.008)
N	12136	12136	12136	11088
Mean of Dep. Var.	0.489	0.694	0.547	0.497
Panel B: Disaggregated Effects				
Shock	0.042	0.028	0.017	0.0023
	(0.026)	(0.025)	(0.017)	(0.012)
Discount rate (Current + Cum.)	-0.024	-0.041***	-0.0025	-0.011
	(0.015)	(0.015)	(0.011)	(0.0091)
Shock $\times$ Discount rate (Cum.)	-0.00049*	-0.00031	-0.000096	0.000093
	(0.00029)	(0.00029)	(0.00020)	(0.00015)
N	12136	12136	12136	11088
Mean of Dep. Var.	0.548	0.728	0.466	0.396

Notes: Standard errors, clustered at household level, are in parentheses. * denotes significance at 0.10; ** at 0.05; and *** at 0.01. Insurance uptake (Cum.) is the sum of discount rates provided by the coupon over the three seasons prior to the interview. All specifications include individual-, insurance area-, survey year- fixed effects, adult equivalent, age, age-squared, female dummy, age and sex of the household head, number of children in the household.

Table B2: Impact on Child Activities (OLS using insurance uptake)

	Child labor	Work	Schooling	
			Activity: School	Enrollment
	(1)	(2)	(3)	(4)
Panel A: Average Effects				
Insurance Uptake (Cum.)	0.003	-0.012	-0.005	-0.010
	(0.012)	(0.012)	(0.008)	(0.007)
N	12136	12136	12136	11088
Mean of Dep. Var.	0.535	0.720	0.495	0.421
Panel B: Disaggregated Effects				
Shock	0.015	-0.003	0.009	0.006
	(0.020)	(0.020)	(0.014)	(0.011)
Insurance Uptake (Cum.)	0.012	-0.023	-0.011	-0.013
	(0.014)	(0.014)	(0.010)	(0.009)
Shock $\times$ Insurance Uptake (Cum.)	-0.024	0.026	0.012	0.007
	(0.022)	(0.023)	(0.013)	(0.010)
N	12136	12136	12136	11088
Mean of Dep. Var.	0.548	0.728	0.466	0.396

Notes: Standard errors, clustered at household level, are in parentheses. * denotes significance at 0.10; ** at 0.05; and *** at 0.01. Insurance uptake (Cum.) is the sum of discount rates provided by the coupon over the three seasons prior to the interview. All specifications include individual-, insurance area-, survey year- fixed effects, adult equivalent, age, age-squared, female dummy, age and sex of the household head, number of children in the household.

Table B3: Impact on Child Activities with lapsed insurance

	Child labor	Work	Schooling	
			Activity: School	Enrollment
	(1)	(2)	(3)	(4)
Insurance Uptake (Cum.)	-0.136	-0.220***	0.044	0.017
	(0.083)	(0.084)	(0.051)	(0.036)
Insurance Updatke (Lapsed)	-0.113	-0.220	0.048	0.001
	(0.150)	(0.154)	(0.088)	(0.056)
N	11276	11276	11276	10336
K-P F-stat	28.162	28.162	28.162	27.920
AR test p-val.	0.097	0.003	0.648	0.702
Mean of Dep. Var.	0.489	0.694	0.547	0.497

Notes: Standard errors, clustered at household level, are in parentheses. * denotes significance at 0.10; ** at 0.05; and *** at 0.01. Insurance uptake (Cum.) is the sum of insurance uptake incidences over the latest three seasons. The relevant periods for discount rates align with those for insurance uptake. Insurance uptake (Lapsed) is the insurance uptake prior to the latest three seasons, that is lapsed during the survey periods. All specifications include individual-, insurance area-, survey year- fixed effects, adult equivalent, age, age-squared, female dummy, age and sex of the household head, number of children in the household.

Table B4: Impact on Child Activities using IBLI Coverage in TLU

	Child labor	Work	Schooling	
			Activity: School	Enrollment
	(1)	(2)	(3)	(4)
Panel A: Average Effects				
Insurance coverage (TLU)	-0.017*	-0.024***	0.004	0.003
	(0.009)	(0.009)	(0.005)	(0.004)
N	12173	12173	12173	11137
F_{eff}	9.162	9.162	9.162	8.687
5% Critical Value	37.418	37.418	37.418	37.418
10% Critical Value	23.109	23.109	23.109	23.109
AR test p-val.	0.034	0.002	0.399	0.445
Mean of Dep. Var.	0.427	0.647	0.434	0.389
Panel B: Disaggregated Effects				
Shock	0.038	0.008	0.012	0.007
	(0.026)	(0.025)	(0.014)	(0.009)
Insurance coverage (TLU)	-0.009	-0.021**	0.004	0.003
	(0.010)	(0.010)	(0.007)	(0.005)
Shock $\times$ Insurance coverage (TLU)	-0.030	-0.010	-0.002	-0.001
	(0.020)	(0.018)	(0.010)	(0.007)
Shock+Uptake $\times$ Shock (coef.)	0.008	-0.002	0.010	0.005
Shock+Uptake $\times$ Shock (p-val.)	0.713	0.931	0.438	0.538
N	11249	11249	11249	10312
K-P F-stat	8.756	8.756	8.756	9.245
AR test p-val.	0.006	0.004	0.758	0.786
Mean of Dep. Var.	0.489	0.694	0.547	0.497

Notes: Standard errors, clustered at household level, are in parentheses. * denotes significance at 0.10; ** at 0.05; and *** at 0.01. An observation corresponds to an individual. The sample includes children of age 5-17. Insurance uptake (TLU) is the sum of insured animals in Tropical Livestock Unit (TLU) over the latest three seasons. The relevant periods for discount rates align with those for insurance uptake. Shock is an indicator equals to one if the insurance payout was triggered for the season in the index unit. All columns include insurance area- and survey year-fixed effects, adult equivalent, age and age-squared, female dummy, age, sex, and education of the household head, whether or not a household is participating in a school feeding or supplementary feeding program.

Table B5: Impact on Children's Work and Schooling: Measured at HH level

	Share of children who are participating in:			
	Child labor	Work	Schooling	
			Activity: School	Enrollment
	(1)	(2)	(3)	(4)
Panel A: Average Effects				
Insurance Uptake (Cum.)	-0.086**	-0.113***	-0.008	-0.005
	(0.044)	(0.043)	(0.032)	(0.025)
N	4441	4441	4441	4441
F_{eff}	148.122	148.122	148.122	148.122
5% Critical Value	37.418	37.418	37.418	37.418
10% Critical Value	23.109	23.109	23.109	23.109
AR test p-val.	0.045	0.007	0.792	0.835
Mean of Dep. Var.	0.513	0.714	0.458	0.368
Panel B: Disaggregated Effects				
Shock	0.061	0.039	0.023	0.002
	(0.037)	(0.036)	(0.025)	(0.018)
Insurance Uptake (Cum.)	-0.067	-0.113**	-0.010	-0.026
	(0.054)	(0.054)	(0.040)	(0.033)
Shock × Insurance Uptake (Cum.)	-0.100	-0.031	-0.015	0.051
	(0.096)	(0.095)	(0.066)	(0.050)
Shock+Uptake × Shock (coef.)	-0.026	-0.013	0.024	0.019
Shock+Uptake × Shock (p-val.)	0.650	0.824	0.651	0.715
N	4333	4333	4333	4333
K-P F-stat	25.430	25.430	25.430	25.430
AR test p-val.	0.846	0.379	0.250	0.519
Mean of Dep. Var.	0.488	0.691	0.532	0.424

Notes: Standard errors, clustered at household level, are in parentheses. * denotes significance at 0.10; ** at 0.05; and *** at 0.01. Household-level outcomes are calculated as the proportion of children aged 5–17 within each household participating in the corresponding activity (e.g., child labor, work, schooling). Insurance uptake (Cum.) is the sum of discount rates provided by the coupon over the three seasons prior to the interview. All specifications include household-, insurance area-, survey year- fixed effects, adult equivalent, household head's gender, household head's age, and household head's years of education.

Table B6: Impact on Child Activities using Balanced Panel

	Child labor	Work	Schooling	
			Activity: School	Enrollment
	(1)	(2)	(3)	(4)
Panel A: Average Effects				
Insurance Uptake (Cum.)	-0.084**	-0.129***	0.018	0.019
	(0.043)	(0.041)	(0.028)	(0.022)
N	10587	10587	10587	9722
F_{eff}	48.390	48.390	48.390	43.565
5% Critical Value	37.418	37.418	37.418	37.418
10% Critical Value	23.109	23.109	23.109	23.109
AR test p-val.	0.044	0.001	0.518	0.381
Mean of Dep. Var.	0.412	0.627	0.408	0.352
Panel B: Disaggregated Effects				
Shock	0.094**	0.040	0.013	0.006
	(0.043)	(0.041)	(0.023)	(0.016)
Insurance Uptake (Cum.)	-0.033	-0.122**	0.014	0.020
	(0.054)	(0.052)	(0.037)	(0.029)
Shock $\times$ Insurance Uptake (Cum.)	-0.205*	-0.050	0.000	-0.009
	(0.108)	(0.101)	(0.065)	(0.045)
Shock+Uptake $\times$ Shock (coef.)	-0.111	-0.011	0.013	-0.003
Shock+Uptake $\times$ Shock (p-val.)	0.145	0.882	0.781	0.930
N	9936	9936	9936	9136
K-P F-stat	19.078	19.078	19.078	14.821
AR test p-val.	0.009	0.005	0.896	0.736
Mean of Dep. Var.	0.501	0.701	0.551	0.491

Notes: Standard errors, clustered at household level, are in parentheses. * denotes significance at 0.10; ** at 0.05; and *** at 0.01. An observation corresponds to an individual. The sample includes children of age 5-17, restricted to individuals who were interviewed in all survey rounds. Insurance uptake (Cum.) is the sum of insurance uptake incidences over the latest three seasons. The relevant periods for discount rates align with those for insurance uptake. Shock is an indicator equals to one if the insurance payout was triggered for the season in the index unit. All columns include insurance area- and survey year- fixed effects, adult equivalent, age and age-squared, female dummy, age, sex, and education of the household head, whether or not a household is participating in a school feeding or supplementary feeding program.

Table B7: Impact on Child Activities with Children who were 5-17 at baseline

	Child labor	Work	Schooling	
			Activity: School	Enrollment
	(1)	(2)	(3)	(4)
Panel A: Average Effects				
Insurance Uptake (Cum.)	-0.079*	-0.102**	0.036	0.006
	(0.046)	(0.045)	(0.031)	(0.026)
N	8486	8486	8486	8330
F_{eff}	48.935	48.935	48.935	46.069
5% Critical Value	37.418	37.418	37.418	37.418
10% Critical Value	23.109	23.109	23.109	23.109
AR test p-val.	0.080	0.019	0.240	0.810
Mean of Dep. Var.	0.489	0.785	0.523	0.473
Panel B: Disaggregated Effects				
Shock	0.056	0.024	-0.002	-0.008
	(0.044)	(0.044)	(0.021)	(0.016)
Insurance Uptake (Cum.)	-0.044	-0.103*	0.028	-0.005
	(0.057)	(0.055)	(0.040)	(0.033)
Shock $\times$ Insurance Uptake (Cum.)	-0.149	-0.016	0.027	0.041
	(0.116)	(0.114)	(0.064)	(0.050)
Shock+Uptake $\times$ Shock (coef.)	-0.093	0.008	0.025	0.033
Shock+Uptake $\times$ Shock (p-val.)	0.269	0.924	0.612	0.407
N	8172	8172	8172	8005
K-P F-stat	17.279	17.279	17.279	16.118
AR test p-val.	0.071	0.064	0.441	0.613
Mean of Dep. Var.	0.529	0.742	0.575	0.528

Notes: Standard errors, clustered at household level, are in parentheses. * denotes significance at 0.10; ** at 0.05; and *** at 0.01. An observation corresponds to an individual. The sample includes children who were 5 to 17 years old at baseline. Insurance uptake (Cum.) is the sum of insurance uptake incidences over the latest three seasons. The relevant periods for discount rates align with those for insurance uptake. Shock is an indicator equals to one if the insurance payout was triggered for the season in the index unit. All columns include insurance area- and survey year- fixed effects, adult equivalent, age and age-squared, female dummy, age, sex, and education of the household head, whether or not a household is participating in a school feeding or supplementary feeding program.

Table B8: Impact on Child Activities (Country $\times$ Year FE)

	Child labor	Work	Schooling	
			Activity: School	Enrollment
	(1)	(2)	(3)	(4)
Panel A: Average Effects				
Insurance Uptake (Cum.)	-0.093*	-0.086	-0.022	-0.010
	(0.056)	(0.054)	(0.039)	(0.029)
N	12197	12197	12197	11159
F_{eff}	29.728	29.728	29.728	27.761
5% Critical Value	37.418	37.418	37.418	37.418
10% Critical Value	23.109	23.109	23.109	23.109
AR test p-val.	0.087	0.108	0.584	0.724
Mean of Dep. Var.	0.426	0.645	0.434	0.389
Panel B: Disaggregated Effects				
Shock	0.106**	0.087**	-0.019	-0.013
	(0.044)	(0.043)	(0.024)	(0.015)
Insurance Uptake (Cum.)	0.000	-0.018	-0.044	-0.022
	(0.074)	(0.072)	(0.054)	(0.039)
Shock $\times$ Insurance Uptake (Cum.)	-0.232**	-0.167	0.057	0.034
	(0.113)	(0.110)	(0.069)	(0.047)
Shock+Uptake $\times$ Shock (coef.)	-0.126	-0.081	0.038	0.021
Shock+Uptake $\times$ Shock (p-val.)	0.109	0.290	0.442	0.561
N	11276	11276	11276	10336
K-P F-stat	26.070	26.070	26.070	25.592
AR test p-val.	0.008	0.051	0.675	0.760
Mean of Dep. Var.	0.489	0.694	0.547	0.497

Notes: Standard errors, clustered at household level, are in parentheses. * denotes significance at 0.10; ** at 0.05; and *** at 0.01. An observation corresponds to an individual. The sample includes children of age 5-17. Insurance uptake (Cum.) is the sum of insurance uptake incidences over the latest three seasons. The relevant periods for discount rates align with those for insurance uptake. Shock is an indicator equals to one if the insurance payout was triggered for the season in the index unit. All columns include insurance area-, survey year-, and country $\times$ year fixed effects, adult equivalent, age and age-squared, female dummy, age, sex, and education of the household head, whether or not a household is participating in a school feeding or supplementary feeding program.

Table B9: Impact on Child Activities, by country

	Child labor	Work	Schooling	
			Activity: School	Enrollment
	(1)	(2)	(3)	(4)
Panel A: Heterogeneity of Average Effects				
Ethopia × Insurance Uptake (Cum.)	-0.003	-0.026	-0.067	-0.040
	(0.057)	(0.050)	(0.048)	(0.040)
Kenya × Insurance Uptake (Cum.)	-0.246**	-0.193*	0.047	0.040
	(0.115)	(0.116)	(0.068)	(0.031)
Difference	0.242*	0.167	-0.114	-0.080
	(0.129)	(0.127)	(0.084)	(0.051)
N	12197	12197	12197	11159
Panel B: Disaggreagted Effects, Ethiopia				
Shock	0.108**	0.017	0.024	0.039**
	(0.054)	(0.048)	(0.032)	(0.018)
Insurance Uptake (Cum.)	-0.083	-0.071	0.035	0.089**
	(0.072)	(0.068)	(0.051)	(0.039)
Shock × Insurance Uptake (Cum.)	-0.247*	-0.092	-0.035	-0.127**
	(0.141)	(0.125)	(0.088)	(0.055)
Shock+Uptake × Shock (coef.)	-0.140	-0.075	-0.011	-0.088
Shock+Uptake × Shock (p-val.)	0.167	0.416	0.871	0.044
N	6862	6862	6862	5886
K-P F-stat	0.535	0.720	0.495	0.421
Panel C: Disaggreagted Effects, Kenya				
Shock	0.126**	0.126**	-0.045	-0.049**
	(0.057)	(0.061)	(0.028)	(0.021)
Insurance Uptake (Cum.)	-0.009	-0.198**	-0.043	-0.100**
	(0.084)	(0.079)	(0.053)	(0.044)
Shock × Insurance Uptake (Cum.)	-0.186	-0.088	0.111	0.133**
	(0.139)	(0.155)	(0.072)	(0.061)
Shock+Uptake × Shock (coef.)	-0.060	0.038	0.066	0.084
Shock+Uptake × Shock (p-val.)	0.545	0.730	0.209	0.092
N	3846	3846	3846	3890
K-P F-stat	0.535	0.720	0.495	0.421

Notes: Standard errors, clustered at household level, are in parentheses. * denotes significance at 0.10; ** at 0.05; and *** at 0.01. Insurance uptake (Cum.) is the sum of discount rates provided by the coupon over the three seasons prior to the interview. All specifications include individual-, insurance area-, survey year- fixed effects, adult equivalent, age, age-squared, female dummy, age and sex of the household head, number of children in the household.

Table B10: Impact on Children's Work and Schooling (Region × Year FE)

	Child labor	Work	Schooling	
			Activity: School	Enrollment
	(1)	(2)	(3)	(4)
Panel A: Average Effects				
Insurance Uptake (Cum.)	-0.086**	-0.123***	0.021	0.016
	(0.042)	(0.041)	(0.028)	(0.021)
N	12243	12243	12243	11205
F_{eff}	54.561	54.561	54.561	49.490
5% Critical Value	37.418	37.418	37.418	37.418
10% Critical Value	23.109	23.109	23.109	23.109
AR test p-val.	0.036	0.002	0.456	0.437
Mean of Dep. Var.	0.426	0.645	0.434	0.389
Panel B: Disaggregated Effects				
Shock	0.056	0.054	-0.012	-0.023
	(0.037)	(0.035)	(0.030)	(0.029)
Insurance Uptake (Cum.)	0.076	0.023	-0.083*	-0.069
	(0.048)	(0.043)	(0.047)	(0.048)
Shock × Insurance Uptake (Cum.)	-0.137*	-0.086	0.048	0.074
	(0.081)	(0.078)	(0.074)	(0.076)
Shock+Uptake × Shock (coef.)	0.005	0.058	0.019	0.070
Shock+Uptake × Shock (p-val.)	0.951	0.440	0.775	0.314
N	12243	12243	12243	11205
K-P F-stat	38.461	38.461	38.461	22.409
AR test p-val.	0.202	0.621	0.167	0.302
Mean of Dep. Var.	0.489	0.694	0.547	0.497

Notes: Standard errors, clustered at household level, are in parentheses. * denotes significance at 0.10; ** at 0.05; and *** at 0.01. Insurance uptake (Cum.) is the sum of discount rates provided by the coupon over the three seasons prior to the interview. All specifications include individual-, insurance area-, survey year- fixed effects, adult equivalent, age, age-squared, female dummy, age and sex of the household head, number of children in the household.

Table B11: Impact on Children's Work and Schooling (Region × Linear trend)

	Child labor	Work	Schooling	
			Activity: School	Enrollment
	(1)	(2)	(3)	(4)
Panel A: Average Effects				
Insurance Uptake (Cum.)	-0.086**	-0.123***	0.021	0.016
	(0.042)	(0.041)	(0.028)	(0.021)
N	12243	12243	12243	11205
F_{eff}	54.561	54.561	54.561	49.490
5% Critical Value	37.418	37.418	37.418	37.418
10% Critical Value	23.109	23.109	23.109	23.109
AR test p-val.	0.036	0.002	0.456	0.437
Mean of Dep. Var.	0.426	0.645	0.434	0.389
Panel B: Disaggregated Effects				
Shock	0.099**	0.067	-0.011	-0.022
	(0.042)	(0.041)	(0.027)	(0.019)
Insurance Uptake (Cum.)	0.036	-0.028	-0.069	-0.068
	(0.069)	(0.067)	(0.053)	(0.042)
Shock × Insurance Uptake (Cum.)	-0.250**	-0.119	0.045	0.068
	(0.105)	(0.102)	(0.069)	(0.053)
Shock+Uptake × Shock (coef.)	0.005	0.058	0.019	0.070
Shock+Uptake × Shock (p-val.)	0.951	0.440	0.775	0.314
N	12182	12182	12182	11134
K-P F-stat	36.088	36.088	36.088	34.186
AR test p-val.	0.202	0.621	0.167	0.302
Mean of Dep. Var.	0.489	0.694	0.547	0.497

Notes: Standard errors, clustered at household level, are in parentheses. * denotes significance at 0.10; ** at 0.05; and *** at 0.01. Insurance uptake (Cum.) is the sum of discount rates provided by the coupon over the three seasons prior to the interview. All specifications include individual-, insurance area-, survey year- fixed effects, adult equivalent, age, age-squared, female dummy, age and sex of the household head, number of children in the household.

Table B12: Impact on Children's Work and Schooling (Area × Year FE)

	Child labor	Work	Schooling	
			Activity: School	Enrollment
	(1)	(2)	(3)	(4)
Panel A: Average Effects				
Insurance Uptake (Cum.)	-0.086**	-0.123***	0.021	0.016
	(0.042)	(0.041)	(0.028)	(0.021)
N	12243	12243	12243	11205
F_{eff}	54.561	54.561	54.561	49.490
5% Critical Value	37.418	37.418	37.418	37.418
10% Critical Value	23.109	23.109	23.109	23.109
AR test p-val.	0.036	0.002	0.456	0.437
Mean of Dep. Var.	0.426	0.645	0.434	0.389
Panel B: Disaggregated Effects				
Shock	0.000	0.000	0.000	0.000
	(.)	(.)	(.)	(.)
Insurance Uptake (Cum.)	0.025	-0.030	-0.071	-0.069*
	(0.067)	(0.065)	(0.053)	(0.040)
Shock × Insurance Uptake (Cum.)	-0.237**	-0.112	0.036	0.073
	(0.100)	(0.096)	(0.066)	(0.048)
Shock+Uptake × Shock (coef.)	0.005	0.058	0.019	0.070
Shock+Uptake × Shock (p-val.)	0.951	0.440	0.775	0.314
N	12182	12182	12182	11134
K-P F-stat	32.885	32.885	32.885	35.727
AR test p-val.	0.202	0.621	0.167	0.302
Mean of Dep. Var.	0.489	0.694	0.547	0.497

Notes: Standard errors, clustered at household level, are in parentheses. * denotes significance at 0.10; ** at 0.05; and *** at 0.01. Insurance uptake (Cum.) is the sum of discount rates provided by the coupon over the three seasons prior to the interview. All specifications include individual-, insurance area-, survey year- fixed effects, adult equivalent, age, age-squared, female dummy, age and sex of the household head, number of children in the household.