The Effect of Microinsurance on Child Work and Schooling

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May 12, 2024

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Abstract

Adverse weather shocks disrupt human capital investment in low-income families in developing countries, but the effectiveness of formal insurance in mitigating this is underexplored. This paper investigates how index-based microinsurance affects children's engagement in work and schooling, employing randomized premium discounts for the Index-Based Livestock Insurance (IBLI) program as instrumental variables for insurance uptake. I find that insured pastoral households shift children's activity from work to schooling during non-drought periods, and less likely to increase children's work during droughts. Moreover, there are heterogeneous impacts across age, birth order, and gender, with insurance increasing full-time work among first-born and older children during non-drought periods, while mitigating adverse effects of droughts, particularly for girls. These shifts in children's activities are largely influenced by increased herd mobility and size, as well as investments in livestock during non-drought periods.

JEL Classifications: G52, I20, J22, O15

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

*Utrecht University (h.son@uu.nl). I am grateful to John Hoddinott, Kaushik Basu, Michael Lovenheim, Christopher Barrett, Brian Dillon, Nathan Jensen, and seminar participants at the American Economic Association Annual Meeting, Northeast Universities Development Consortium Conference, Agricultural & Applied Economics Association and Western Agricultural Economics Association Joint Annual Meeting, KDIS-World Bank DIME Conference, Cornell University, Wageningen University, and Chungang university for helpful comments and suggestions. All errors are on the author.

1 Introduction

Poor households in low- and middle-income countries struggle to invest in human capital due to high education cost and need for children to work (Todd and Wolpin, 2006; Basu and Van, 1998; Edmonds and Schady, 2012). Especially during the time of adverse income shocks such as droughts or illnesses, these households often withdraw children from school and send them to work to cope with shocks (Beegle, Dehejia, and Gatti, 2006; Björkman-Nyqvist, 2013; Bandara, Dehejia, and Lavie-Rouse, 2015; Shah and Steinberg, 2017; Koohi-Kamali and Roy, 2021; Park, Behrer, and Goodman, 2021). However, policy responses to reduce child labor typically focus on increasing household income, overlooking the role of income variability and the risk mitigation strategies.

Access to financial markets, such as credit or insurance markets, can help mitigate the impact of adverse shocks on children's work and schooling. Studies have shown that index insurance have potential to improve household well-being, including income and subjective well-being, to reduce harmful risk-coping strategies (e.g., distress livestock sales and meal skipping) (Jensen, Barrett, and Mude, 2017; Janzen and Carter, 2019; Matsuda, Takahashi, and Ikegami, 2019). However, there is scant evidence on the impact of index insurance on children's work and schooling.

This paper examines how index-based microinsurance impacts children's participation in work and schooling, typically considered as negatively correlated with each other due to conflicting demands on children's time. First, it analyzes the average effects, and then the effects disaggregated by drought and non-drought periods. Additionally, it explores how the effects of insurance vary based on child characteristics like gender, age, and birth order, which significantly influence household decisions regarding children's activities. Furthermore, it investigates the underlying mechanisms by studying related household outcomes such as household income, production strategies, and herd size.

To investigate these questions, I focus on the Index-Based Livestock Insurance (IBLI) program launched in the Arid and Semi-Arid Lands (ASAL) of Northern Kenya and Southern Ethiopia, which targets pastoral households constituting the majority of the region's population. I focus on this product unlike conventional insurance which is often inaccessible due to high implementation costs, index insurance, which uses geographical area indices, is more accessible due to its lower cost in data collection and claims validation (Jensen and Barrett, 2017; Greatrex et al., 2015).[1][2]

[1] For the details of the product design, please refer to Chantarat et al. (2013).

[2] Over 30 million farmers are insured in India through national index insurance programs, nearly 200,000 farmers in East Africa (Kenya, Rwanda, and Tanzania) through the Agriculture and Climate Risk Enterprise (ACRE), over 20,000 smallholder farmers in Ethiopia and Senegal through the R4 Rural Resilience Initiative, and more than 15,000 nomadic herders in Mongolia through Index-Based Livestock Insurance Project (IBLIP).

The primary data source is a panel survey containing comprehensive information on herding strategies and demographic characteristics of 924 Kenyan households and 528 Ethiopian households over six and four rounds of surveys, respectively. This survey was part of a pilot program implemented to evaluate the welfare effects of insurance, where randomized discount coupons were distributed to households with varying discount rates each sales season. To establish causality, I leverage the variation in insurance premiums generated by randomized discount coupon offers, which were conducted biannually, providing within-household variation in insurance premiums. Specifically, I instrument cumulative IBLI uptake with cumulative discount rates.

The main finding indicates that Index-Based Livestock Insurance (IBLI) shifts children's activities from work to schooling and helps prevent their engagement in work during adverse weather events. On average, children from insured pastoral households decrease their participation in part-time work and schooling by 8.9 percentage points, while the likelihood of being a full-time student increases by 5.6 percentage points across drought and non-drought seasons, primarily due to reduced secondary work activities. However, the effects vary across demographic groups. For first-born children, the decline in part-time work and schooling corresponds to an increase in full-time work and child labor, while younger siblings tend to engage more in full-time schooling.

Furthermore, without insurance, secondary work activities increase by 6.9 percentage points during droughts, but insurance uptake mitigates this effect. Different demographic groups experience the adverse impacts of drought differently, with insurance helping to alleviate these effects. Older children (aged 12-17) and girls decrease their participation in full-time schooling during droughts without insurance, a trend that is mitigated by insurance uptake. Additionally, insurance helps mitigate the increase in child labor among first-born children during droughts.

To understand the indirect pathways through which IBLI influences household decisions on children's activities, I investigate the effects on household-level behaviors relevant to pastoral production and child activities. My findings suggest that changes in production strategies and livestock investments in food and veterinary services drive these results. First, I provide evidence to rule out the possibility that income effects from payouts are driving the results. Next, I demonstrate that households increase herd mobility and slightly enlarge their herds, leading to greater demand for labor from older children and first-born children, consistent with the observed increase in child labor and participation in primary livestock work. Additionally, expenditure on livestock food decreases, potentially replacing younger children's secondary work activities such as collecting fodder or water for animals.

These findings underscore the role of financial products, such as formal insurance, in mitigating the impact of adverse weather shocks, such as droughts. While existing literature has primarily focused on the role of access to credit in alleviating the effects of weather shocks on children's human capital investments, this study highlights the potential of microinsurance to mitigate these impacts. Moreover, it suggests that the effects may operate through changes in the marginal productivity of children's work rather than solely through income effects from the shock (Beegle, Dehejia, and Gatti, 2006; Björkman-Nyqvist, 2013; Bandara, Dehejia, and Lavie-Rouse, 2015; Koohi-Kamali and Roy, 2021; Shah and Steinberg, 2017; Nordman, Sharma, and Sunder, 2021).

Additionally, this paper contributes to the literature on the relationship between insurance and children's work and schooling. While previous research has primarily focused on health insurance and its effect on educational attainment through safeguarding adult labor, this study examines microinsurance, directly tied to household production behaviors (Landmann and Frölich, 2015; Frölich and Landmann, 2018; Guarcello, Mealli, and Rosati, 2010). It also documents rare insights into the intergenerational effects of index insurance. Previous studies have found that index insurance can facilitate investment in high-risk, high-return production strategies, protect households from adverse shocks that may lead to a poverty trap, and enhance the welfare of insured households (Barnett, Barrett, and Skees, 2008; Dercon and Christiaensen, 2011; Karlan et al., 2014; Jensen and Barrett, 2017; Jensen, Barrett, and Mude, 2017; Janzen and Carter, 2019; Tafere, Barrett, and Lentz, 2019). However, there is limited evidence on the effect of index insurance on children within insured households. To my knowledge, the only other study examining this relationship is Jensen, Barrett, and Mude (2017), which investigates the effect of IBLI on the number of days a child is absent from school, finding small and statistically insignificant effects. Given the low school attendance in the study area and the lack of further investigation into other activities children may undertake, as well as the mechanisms through which insurance operates, there is a gap in this area. This paper addresses this gap by delving deeper into the issue, investigating children's activity choices between full-time work, part-time work and schooling, and full-time schooling, and disaggregating the effects across drought and non-drought seasons.

Finally, this paper contributes to the literature on the relationship between child labor and household productive assets by focusing on Index-Based Livestock Insurance (IBLI), which insures against the loss of livestock, a crucial productive asset for pastoral households. Existing studies suggest that child labor complements productive assets (Basu, Das, and Dutta, 2010; Edmonds and Theoharides, 2020). By demonstrating that IBLI shifts children's activities from part-time work and schooling to full-time schooling, this paper highlights how protecting productive assets can lead to increased investment in children's human capital.

The paper proceeds as follows. Section 2 explains the study settings. Section 3 discusses a conceptual framework, and Section 4 describes the dataset. Section 5.1 the empirical strategy used for the estimation. We present the estimated results in section 6 and conclude in Section 7.

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 children's 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)[3]. Below this threshold, households may become trapped in a low-level equilibrium poverty trap, as demonstrated by Lybert et al. (2004).[4]

In pastoral economies, the high demand for family labor results in significant children's involvement in work, primarily within the household [5], 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.[6]

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.[7] Similarly, in the Borena zone of Ethiopia, where 56 percent of children

[3]Tropical Livestock Unit (TLU) is an integrated unit for cattle, camel, sheep, and goats. TLU allows us to measure the number of different types of livestock in one unit. 1 TLU = 0.7 Camel = 1 Cattle = 10 Sheep/goats

[4]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.

[5]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).

[6]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).

[7]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.

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 purposes.[8]

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;

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

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.

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.[9] 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, 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.[10] Between 2010 and 2015, the period that this

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

[10] 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.

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.[11] The randomization for the coupon-receiving households was administered every round. Despite discounts, most households insured less than 15 TLUs (Panel B of Figure A2), highlighting the magnitude of the potential discounts.[12]

3 Conceptual Framework

A pastoral household derives utility from consumption, children's human capital, and leisure time. Due to incomplete credit and labor markets, production decisions are not separable from the consumption decisions.

Investing time in schooling increases children's human capital, potentially increasing future household budget and utility. However, schooling reduces children's time available for work, leading to decreased current-period production and household budget. Schooling also introduces intertemporal uncertainty due to variations in the productivity of human capital production.

Households' decisions regarding children's work depend on household income, the marginal productivity of child labor (determined by production strategy), and parents' risk attitudes and views on education.

With this framework in mind, I hypothesize the effects of IBLI on children's activity status. First, IBLI may directly impact children's work and schooling by altering household risk management strategies. Uninsured risks often result in welfare losses and child labor increase (Pouliot, 2006; Landmann and Frölich, 2015). Conversely, IBLI protects pastoralists from destructive risk mitigation strategies (Jensen, Barrett, and Mude, 2017; Janzen and Carter, 2019), potentially reducing child labor if it serves as household self-insurance.

However, the direct effect of IBLI is uncertain, as per Karlan et al. (2014). In imperfect credit

[11] 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.

[12] The amount of discount could be significant: The premium for the 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.

and insurance markets, enhanced insurance access without improved credit accessibility may decrease investments in risky assets like education, and hedging inputs like child labor as well.[13]

IBLI could indirectly influence children's work and schooling by altering household behavior. For instance, households might utilize IBLI to replace inefficient methods of insuring against drought risk, such as precautionary savings of livestock. Conversely, IBLI protects non-poor households from asset decumulation (Chantarat et al., 2013) and encourages productivity-enhancing investment (Jensen, Barrett, and Mude, 2017). This could potentially enhance the risk-adjusted returns to livestock holding and increase household herd size (Toth, 2017). Therefore, the effect on children's work is ambiguous since child labor is complementary to livestock holding (Basu, Das, and Dutta, 2010; Edmonds and Theoharides, 2020).[14]

IBLI could also change herd migration patterns: Pastoral households that have purchased IBLI increase the number of days on temporary migration and while decreasing the travel distance and average travel speed (Toth, 2017). If the frequency of travel and duration of migratory herding increases, the marginal cost of balancing schooling and work simultaneously rises. This could result in an ambiguous impact on children's work and schooling depending on the weight each child places on these activities.

Moreover, IBLI's impact on income may influence children's activities. Increased income per adult equivalent[15], as shown by Jensen, Barrett, and Mude (2017), is expected to decrease children's work (Basu and Van, 1998; Edmonds and Schady, 2012; Edmonds, 2008).

Thus, analytically determining the effect of livestock insurance on children's activity choices is challenging, warranting empirical investigation. A piece of evidence on the effect of IBLI on child outcome on school absenteeism, which reported small and statistically insignificant effects (Jensen, Barrett, and Mude, 2017). However, given the low school attendance rates and the diverse range of children's activities, the evidence remains inconclusive. Further research is warranted to explore this topic, considering the complex interplay of factors involved.

[13] Education is considered a risky asset since it has higher net marginal productivity in the good season compared to the bad season. Child labor, conversely, is considered a hedging asset since the marginal productivity is higher in the bad seasons relative to the good season, by definition.

[14] Figure 1 illustrates the relationship between children's work and herd size. Panel A shows that as herd size increases, the probability of children engaging in full-time work (blue) rises, while the probability of work combined with schooling (red) and full-time schooling (green) decreases. This trend is particularly notable among households with herd sizes between 0-20 TLUs. Panel B indicates that children's daily working hours (blue) increase with herd size, especially within the range of 0-20 TLUs. However, hours spent on schooling (red) and adult household members' working hours (black) remain relatively constant across herd sizes. Notably, children from households with smaller herd sizes allocate more time to schooling than work.

[15] An adult equivalent is defined as follows, where age is in years. AE=0.5 if age < 5, AE=0.7 if 4 < age < 16 or age > 60, AE=1 if 15 < age < 61.

4 Data

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. 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 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.

5 Empirical Strategy

5.1 The Effect 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:

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

where $CIBLI_{hrt}$ represents the total number of 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.[16] DC_{hrt} denotes the cumulative discount rate over the three consecutive sales seasons preceding the survey.[17]

The model incorporates time-varying household-level characteristics denoted by X'_{hrt} along with year-, and region-fixed effects, denoted by 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:

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

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 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.[18] The coefficient β_1 is the coefficient of interest as it captures the average impact of insurance.

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

[17]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.

[18]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.

5.2 The Effect 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:

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

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 two the 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.[19]

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:

$$
\begin{aligned}
y_{(i)hrt} = & \beta_3 + \beta_4 Shock_{rt} + \beta_5 CIB\hat{L}I_{hrt} + \beta_6 Shock_{rt} \cdot \hat{C}IBLI_{hrt} + X'_{(i)hrt} \beta_7 \\
& + \theta_t + \psi_r + \varepsilon_{(i)hrt}
\end{aligned}
\tag{4}
$$

where $CIB\hat{L}I_{hrt}$ 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.

[19] 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.

5.3 Validity of the instruments

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 is 0.57, 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}). While this assumption cannot be empirically tested, it is reasonable to assume that randomized discount coupons affect household decisions on child time allocation solely through insurance uptake decisions.

Another concern about the instrumental variables approach would be the strength of instruments. Table 2 shows the result from the first stage estimation – Equation 3 and 1. Columns (1) and (2) 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. Columns (3) and (4) present the correlation coefficients from estimating Equation 1. In contrast, Column (3) presents the coefficients using cumulative insurance uptake and discount rates among the three latest sales seasons. The estimated coefficients are positive and statistically significant at the 1 percent level, suggesting strong predictive power at the first stage.

Another concern with instrumental variables approach is the strength of instruments. Table 2 presents estimated results from Equations 3 and 1. I observe strong correlations between endogenous variables and instruments, indicating predictive power at the first stage.

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 the tables whenever possible (denoted by F_{eff}).

When the estimated results of Equation 4 is reported, alternative measures of first-stage predictive power, including Kleibergen-Paap rk Wald F-statistic.[20] This is because effective F-statistic under two endogenous variables is yet to be developed. Moreover, Anderson and Rubin test p-values, are also presented to ensure robustness of second-stage estimates.[21]

6 Results

6.1 Children's activity choices

Insurance uptake encourages children to shift towards full-time schooling rather than engaging in both work and schooling, although it does not significantly affect child labor or full-time work. Panel A of Table 3 shows that each additional season of insurance uptake is associated with an 8.9 percentage point decrease in children's participation in work and schooling and a 5.6 percentage point increase in full-time schooling, both statistically significant at the five percent level.

Analyzing the Intent-To-Treat effects of cumulative discount rates further supports this finding. Panel A of Table A2 demonstrates that a ten percent increase in the discount rate decreases the likelihood of children participating in both work and schooling by 2.8 percentage points while increasing full-time schooling by 1.8 percentage points, both statistically significant at the five and ten percent level, respectively.

Panel B of Table 3 presents an additional breakdown of insurance during the drought and non-drought periods, by interacting the insurance uptake with an indicator for drought periods, as per Eq. (4). The results show that the decrease in children's participation in work and schooling primarily occurs during non-drought periods, statistically significant at the ten percent level (Column 3). There are no substantial changes in other outcomes when disaggregating the effects. I do not observe similar effects on working hours for each activity (Tables A4 and A5)

To address concerns about weak first-stage estimates, I repeat the estimation in Panel B of Table 3 using a single endogenous variable and present the results in Table A1 with an effective F-statistic. This is because appropriate 1st stage F-statistics in case of multiple endogenous variables with multiple instruments is not yet developed, as explained in Section 5.1. Panel A confirms that the cumulative insurance uptake does not suffer from a weak instrument problem, as the effective

[20] There are two endogenous variables, technically, but since $Shock_{rt}$ is exogenous to the local economic conditions, including the interaction of $Shock_{rt}$ and $CIBLI_{hrt}$ should not constrain the predictive power at the first stage

[21] The Anderson and Rubin test assures that the second stage estimate is robust in the case of multiple endogenous variables. In all cases where the estimates are statistically significant, the AR p-value is also below 0.05.

F-statistic exceeds the 5 percent critical value threshold for all models. Therefore, the estimates are not compromised by weak instrument issues.[22]

To delve deeper into how insurance uptake affects children's participation in work and schooling, I examine primary and secondary activities separately, as well as different types of work. The results in Table 4 indicate that the shift towards full-time schooling is mainly driven by a decrease in participation in work as a secondary activity, particularly during non-drought seasons. Specifically, an additional season of insurance uptake decreases the likelihood of a child working as a secondary activity by 13 percentage point, statistically significant at the one percent level. In addition, it shows that households increase the children's engagement in work as their secondary activities during drought periods without insurance, but insurance offsets this increase (Column 5).

Most primary activities were not substantially affected by IBLI, except for an increase in the engagement in livestock related tasks. An additional sales season with insurance purchase correlates with a 5.8 percentage point increase in children's livestock-related work, statistically significant at the ten percent level. Panel B illustrates that this increase is predominantly observed during non-drought seasons.

6.2 Heterogeneity of the Effects

Age, birth order, and gender are critical factors influencing children's work and schooling engagement. In this setting, first-born sons are prioritized for herding, while younger siblings are favored for schooling, with a preference for educating girls (Kenea, 2019). Moreover, Figure 5 plots the probability of a child working at different ages by gender. It shows that approximately 40 percent of children either work or study at age five, rising to nearly 100 percent engaged in work or schooling by age ten. Boys are more inclined to work full-time at all ages, often due to employment in livestock-related work, while girls are more likely to participate in part-time work and schooling between ages 8 and 15, primarily due to household tasks. Therefore, examining the effects across different age groups, birth orders, and genders can provide a clearer understanding of the dynamics at play.

Results in Table 5 shows that older children (age 12-17), whose labor is in higher demand than the younger ones (age 5-11), experience stronger impacts of the insurance. Panel A suggests that older children are increase participation in full-time work, full-time schooling, and primary work

[22]Notably, The effective F-statistic presented in Panel B is smaller than the 10 percent critical value. It is due to mechanical reasons: since the interaction term suppresses the insurance uptake decisions in non-shock periods, the exogenous variables – cumulative discount rate and its interaction with the shock period – naturally have weaker predictive power for the endogenous variable.

activities, but less likely to engage in part-time work and schooling, and secondary work activities due to insurance uptake compared to the younger children.

When examined separately, older children increase their participation in primary work activities and decrease secondary work activities during non-drought periods. This corresponds to an increase in child labor and full-time work, and a decrease in part-time work and schooling among older children during non-drought periods. However, the average increase in full-time schooling among the older children is driven by the offsetting effects of IBLI during drought periods, leading to a decrease in full-time schooling without insurance. Insurance uptake offsets this decrease in full-time schooling during drought periods.

A similar but more pronounced pattern emerges in the heterogeneity by birth order, as presented in Table 6. First-born children, who typically bear the brunt of work responsibility among children, experience increases in child labor, full-time work, and primary work activities, and decrease secondary work activities and part-time work and schooling due to insurance uptake. Conversely, younger siblings see a decrease in child labor and an increase in full-time schooling due to insurance uptake, while minimal changes in other outcomes. These differences in effects between the two groups are statistically significant at the five percent level.

These effects are mainly driven by the effects occurred during the non-drought periods. We find that the average effects found in Panel A are align with those observed during non-drought periods presented in Panel B and C, except for the effects on child labor of first-born children. They experience an increase in child labor during drought periods without insurance, but IBLI offsets this increase.

Regarding heterogeneity across gender, I observe that the magnitude of the effects are larger for boys compared to girls, consistent with other heterogeneous effects, indicating stronger effects for boys whose labor is in higher demand. However, there are no statistically significant differences in the average effects across genders.

The average effects are only statistically significant for boys, indicating that they decrease part-time work and schooling and secondary work activities, while increasing full-time schooling (Panel A). However, disaggregated effects suggest that girls' participation in work is secondary input for these households. Results in Panel B show that girls increase their participation in secondary work activities during drought periods without insurance, leading to a shift from full-time schooling to part-time work and schooling. Nevertheless, insurance uptake offsets such changes. In contrast, Panel C shows that the shift from part-time work and schooling to full-time schooling occurs for boys during non-drought periods.

6.3 Potential Mechanisms

The previous subsections unveiled two key findings regarding the impact of IBLI on children's activities. First, on average, insurance uptake shifts children's engagement from part-time work and schooling to full-time schooling. Moreover, during drought shock, households increase children's engagement in secondary work activities, which insurance can mitigate. Secondly, these effects were varied across different subgroups. Older and first-born children tend to transition from part-time work and schooling to full-time work instead of increasing full-time schooling. Boys shifted their activities from part-time work and schooling to full-time schooling during non-drought periods, while girls did so during drought periods.

These results are consistent with households making efforts to decrease the use of harmful risk mitigation strategies (Jensen, Barrett, and Mude, 2017; Janzen and Carter, 2019). These direct mechanisms cannot be tested empirically. Therefore, to unravel the mechanism driving these findings, this section examines the effects of insurance on household outcomes such as income, production strategies, and herd size. Given that effects during non-drought periods drive the average effects, this subsection focuses on disaggregated effects. Relevant average effects are reported in the Appendix.

First, I analyze the impact on household income since any income effect resulting from insurance is expected to reduce children's participation in work and increase schooling. Table 8 indicates that insurance uptake has no statistically significant effect on all four measures of household income, including total annual income, annual income per capita, food expenditure, and non-food expenditure.[23]

Next, I investigate the effects on production strategies, including herd mobility, livestock expenditure, and diversification. Herd mobility, a crucial herding strategy, carries implications for children's schooling due to its opportunity cost. I measure mobility using two indicators: whether a household is partially or fully mobile and the share of livestock holdings kept away from home.[24] Columns (1) and (2) of Table 9 indicate that IBLI uptake increased both measures during non-drought periods, suggesting heightened mobility among insured households. Specifically, an additional seasons of IBLI uptake increases the likelihood of being mobile by 17.1 percentage point (a 20 percent increase) during non-drought seasons, statistically significant at the one percent level.

[23]Annual income is defined as the sum of earnings from all income sources – sale of livestock, sale of livestock products, sale of crop, salaried employment, casual labor, business and petty trading, and others – in the past 12 months. Food expenditure is the total monetary value of food consumed in the last 7 days, while non-food expenditure is the total monetary value of non-food items consumed in the past 12 months.

[24]These indicators are positively correlated but emphasize different aspects of herding behavior. While the mobility indicator focuses on household mobility, the share of kept-away livestock reflects the intensity of the herd mobility.

However, during the drought seasons, pastoralists were 7.3 percentage points less likely to be mobile without insurance, which IBLI uptake did not offset. Similarly, the share of livestock kept away from the the base camp increased by 16.3 percentage points (26 percent increase) during non-drought seasons due to IBLI uptake, statistically significant at the one percent level.

These results imply that while IBLI enables households to conserve energy by not increasing their mobility during the droughts in anticipation of insurance payouts, it prompts mobility during the non-drought seasons to capitalize on diverse grazing opportunities in the remote areas.

Furthermore, I analyze livestock-related expenditures, which represent another production strategy. Columns (3) to (5) of Table 9 show a noticeable increase in livestock-related expenditure during non-drought periods. This increase, particularly in livestock food (e.g., water, fodder, and supplementary feeding for livestock), suggests that IBLI incentivizes investments in livestock production, consistent with the findings by Jensen, Barrett, and Mude (2017). Moreover, this rise in expenditure helps explain the decrease in secondary work participation and part-time work and schooling of younger children and siblings, as it reduces the demand for their labor in tasks such as collecting fodder, typically assigned to them.

Income diversification, measured using Simpson's diversification index, indicates that IBLI uptake did not lead to households to diversify their income sources during either drought or non-drought periods (Table 9 Column (6)).[25].

I also examine the effect on herd size, as it influences the demand for children's labor. Estimates presented in Table 10 show IBLI uptake did not have statistically significant effect on households' livestock holding, except for owned animals during non-drought periods. During non-drought periods, an additional season of IBLI uptake increases the owned herd size by 2.3 TLU, statistically significant at the ten percent level.[26]

Lastly, if insurance payouts coincide with school enrollment decisions, insured households may find it easier to send their children to school. However, it is unlikely to explain my results. Three out of four insurance payouts occurred after the school calendar started in each country[27] Moreover, most of the findings were driven by the effects during non-drought seasons.

Taken together, the changes in mobility and a slight increase in herd size align with findings

[25] Simpson (1949) introduced the index to measure the degree of concentration. In economics literature, Hirschman (1964) uses the formula to measure market concentration. Here, I subtract the sum of square of the share of income from each income sources out of the total household income to obtain a measure of diversity, instead of concentration.

[26] I further explore these effects of shock and insurance across initial herd sizes and do not find statistically significant effect on herd sizes or on children's livestock-related tasks across initial herd size quintiles (Table A9).

[27] The Kenyan school calendar starts in January, while payouts occurred in October-November 2011, March-April 2012, and March-April 2013. The Ethiopian calendar starts in September, with one payout occurred in November 2014.

on children's activities. Insurance uptake increased participation in primary livestock-related work activities during non-drought periods. Additionally, boosted participation in primary work activities, leading to full-time work, among older age children (age 12-17) and the first-born children during non-drought periods. This likely heightened the demand for labor among older age or first-born children, typically tasked with herding animals. On the other hand, increased mobility posed challenges for younger children and siblings, resulting in reduced part-time work and schooling but an increase in full-time schooling. Overall, these findings suggest that changes in herd size and mobility altered the opportunity cost of schooling, similar to Edmonds and Theoharides (2020) and Shah and Steinberg (2017).

6.4 Robustness check

In this section, I examine the robustness of the results to various specifications. First, following Jensen, Barrett, and Mude (2017), I consider the cumulative effect of current and lapsed insurance as the effect of lapsed insurance may accumulate over time. The cumulative IBLI uptake measures the number of IBLI uptake over the three latest sales seasons, considering the recall period of child outcomes. Therefore, past purchases must have happened at least four sales seasons ago. Past purchases are included as a second endogenous variable. Table A10 demonstrates that the results remain robust to the inclusion of past insurance purchases.

Another set of results uses the insurance coverage as an endogenous variable measured by Tropical Livestock Units. Table A11 demonstrates the robustness of the findings to this alternative measure of insurance coverage. These results indicate that insurance coverage has effects not only at the extensive margin of insurance uptake but also at the intensive margin. Specifically, an additional TLU of livestock insured decreases part-time work and schooling by 1.2 percentage points, and increase full-time schooling by 0.8 percentage points.

While Marsabit district and the Borena zone share a pastoral livelihood, children's activities differ between these areas. In Marsabit, 58 percent of children prioritize schooling, compared to 34 percent in the Borena zone, with work engagement also lower in Marsabit (68 percent) than in the Borena zone (77 percent). Despite including region- and year-fixed effects to control for time-invariant characteristics and common trends across areas, nationwide events each year may still influence household choices regarding children's activities. Therefore, I test the robustness of the results by including country $\times$ year fixed effects. Note that this inclusion may absorb the variations necessary to identify the effects. The results in Table A12 align qualitatively with the main findings, although the coefficients are smaller and not statistically significant. Specifically, there is a shift from part-time work and schooling to full-time schooling, but the estimates are not statistically significant.

Lastly, I assess the robustness of the results using balanced panel households and the children who are 5 to 17 years old at the baseline survey year ensuring that the findings are not driven by sample composition. Table A13 and A14 demonstrate that the results remain robust to different sample restrictions.

7 Conclusion

Children in drought-prone pastoral communities often face increased child labor and low school enrollment, particularly during periods of drought. While Index-Based Livestock Insurance (IBLI) aims to alleviate these effects of droughts, its impact on children's human capital investment remains uncertain.

This paper examines how IBLI affects children's activity choices by utilizing exogenous variation in insurance premiums through randomized discount coupons distributed to pastoral households in northern Kenya and southern Ethiopia. By instrumenting insurance uptake with discount rates, I find that an additional season of insurance purchase decreases children's part-time work and schooling by 8.9 percentage points, primarily due to reduced secondary work activities during non-drought periods. Specifically, older and first-born children shift towards increased full-time work, while younger siblings show a rise in full-time schooling. Heightened herd mobility and size during non-drought periods correspond with increased labor demand among older children, who are often tasked with herding animals. Additionally, increased expenditure on livestock food potentially replaces younger children's work in collecting fodder. These findings, coupled with the null effect on household income, suggest that changes in insured households' production strategies have influenced children's activity choices, altering their marginal productivity (Shah and Steinberg, 2017; Nordman, Sharma, and Sunder, 2021).

Furthermore, insurance mitigates the risk of children increasing work participation during droughts. First-born children and girls typically increase child labor and part-time work and schooling, respectively, during droughts without insurance. However, children from insured households do not experience these impacts, highlighting the protective role of financial products, such as insurance, against adverse weather shocks (Beegle, Dehejia, and Gatti, 2006; Koohi-Kamali and Roy, 2021).

These results underscore the vital role of financial products in mitigating the risk of adverse weather shocks, such as index insurance. From a policy perspective, it highlights the importance of investing in developing insurance markets in low-income countries to complement poverty reduction programs focusing on income growth.

However, these findings offer a nuanced perspective on the perceived benefits of insurance interventions. While insurance uptake leads to positive outcomes, such as increased full-time schooling for younger siblings and shielding girls and older children from heightened work demands during droughts, it also results in elevated full-time work participation among older children during non-drought periods due to increased labor demand. Therefore, the overall impact of insurance on human capital formation requires cautious interpretation, especially considering the potential long-term effects that may take time to materialize. This suggests that there is much more to be learned about potential policy interventions that could address the substantial heterogeneity of the effects across older and younger siblings, as well as boys and girls.

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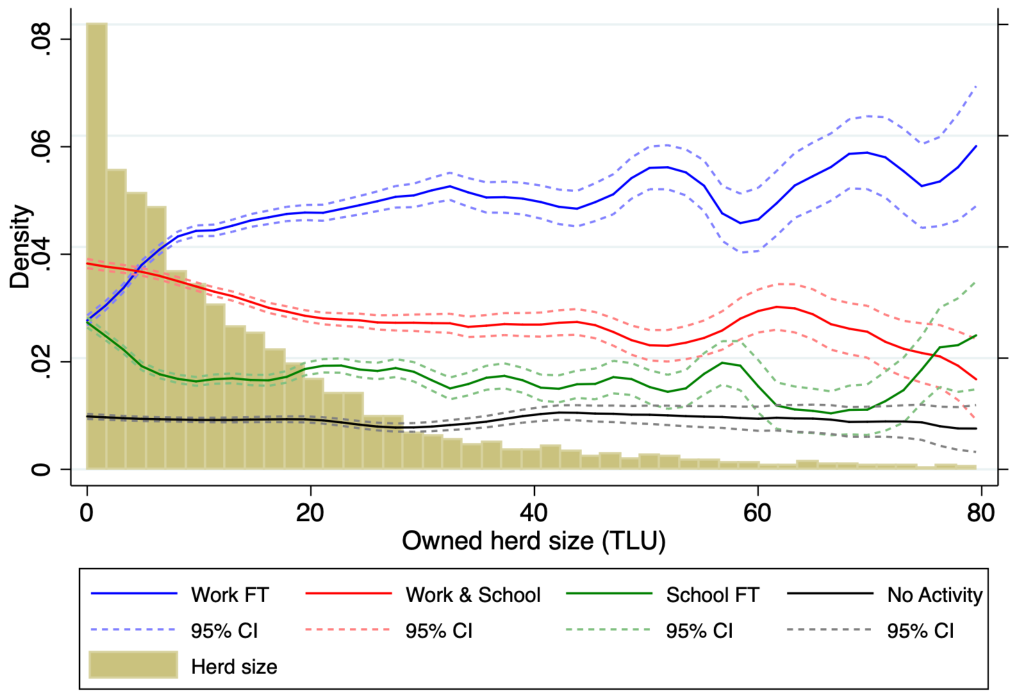
Figure 1: Children's activity by herd size

(a) Participation



(b) Hours, equals to zero if not participating

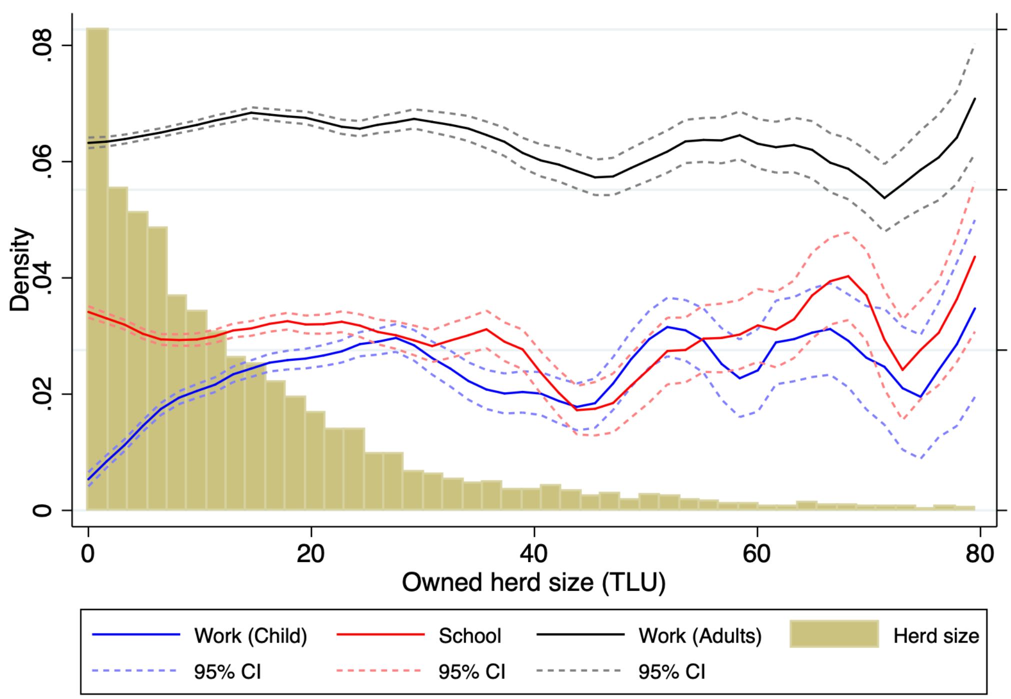


Figure 2: Map of project areas

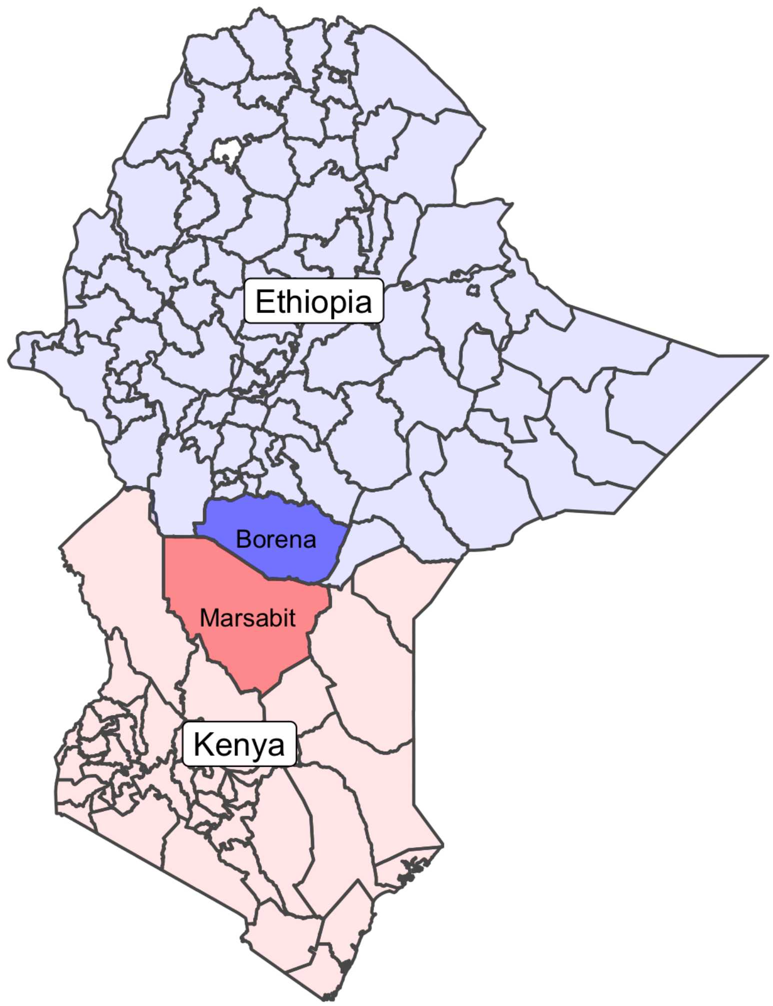
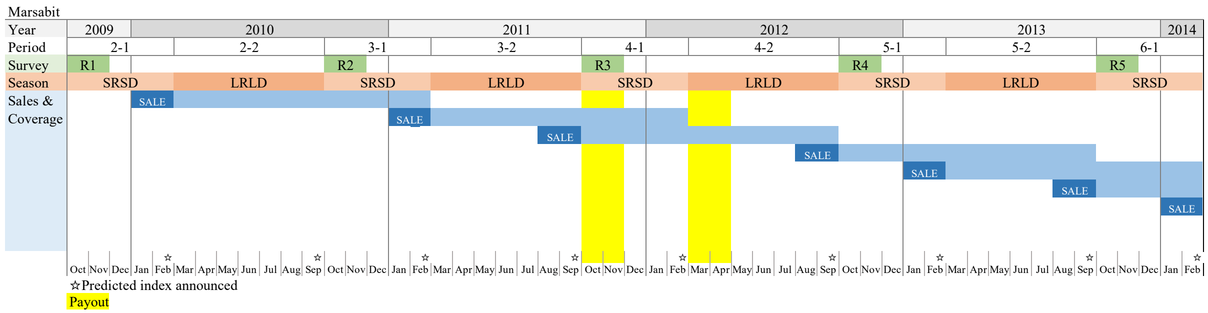


Figure 3: Timeline of the projects

(a) Marsabit District, Kenya



(b) Borena Zone, Ethiopia

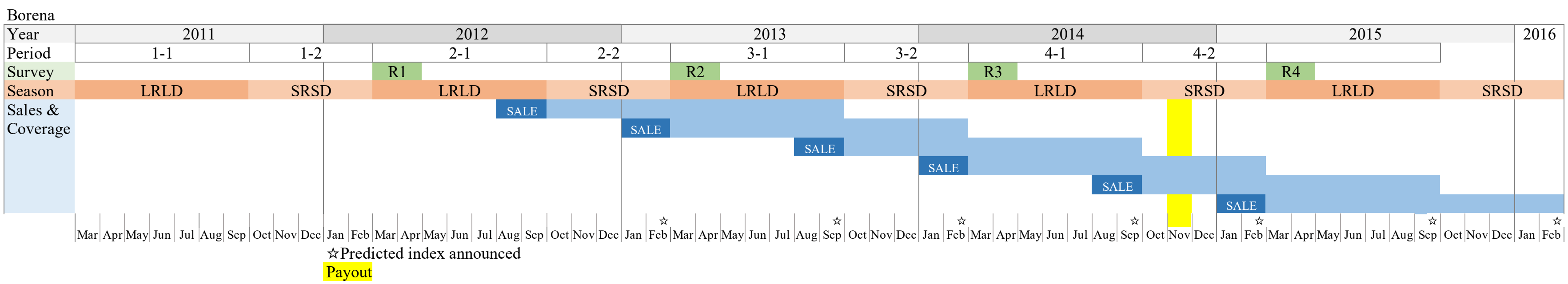
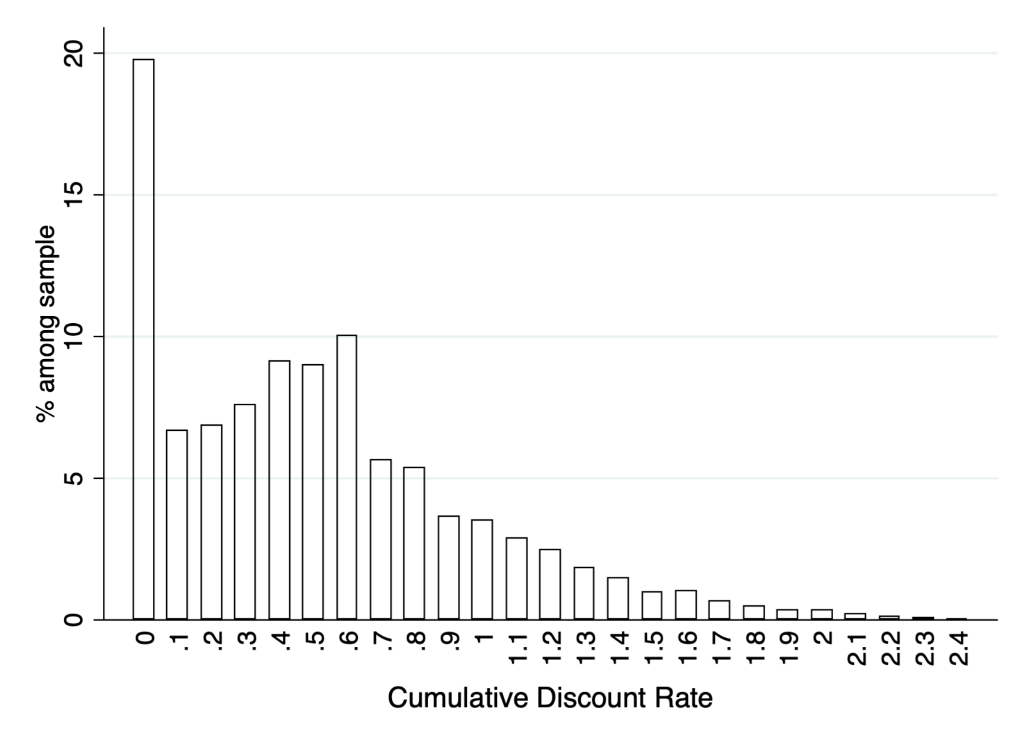


Figure 4: Cumulative discount rate and Insurance uptake

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



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

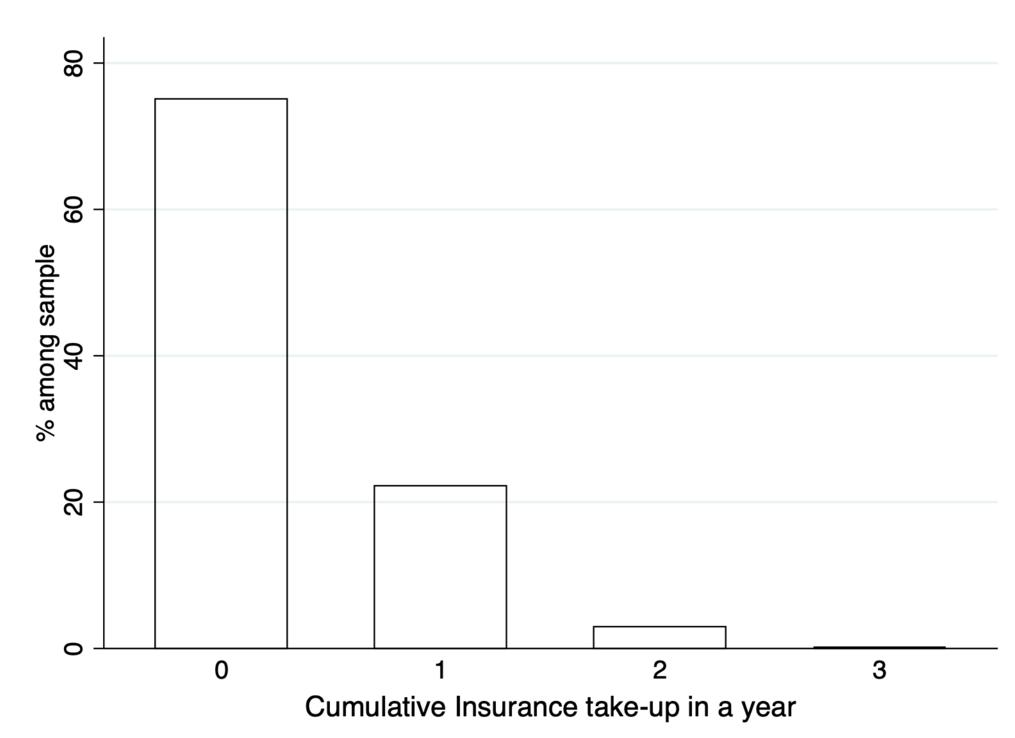
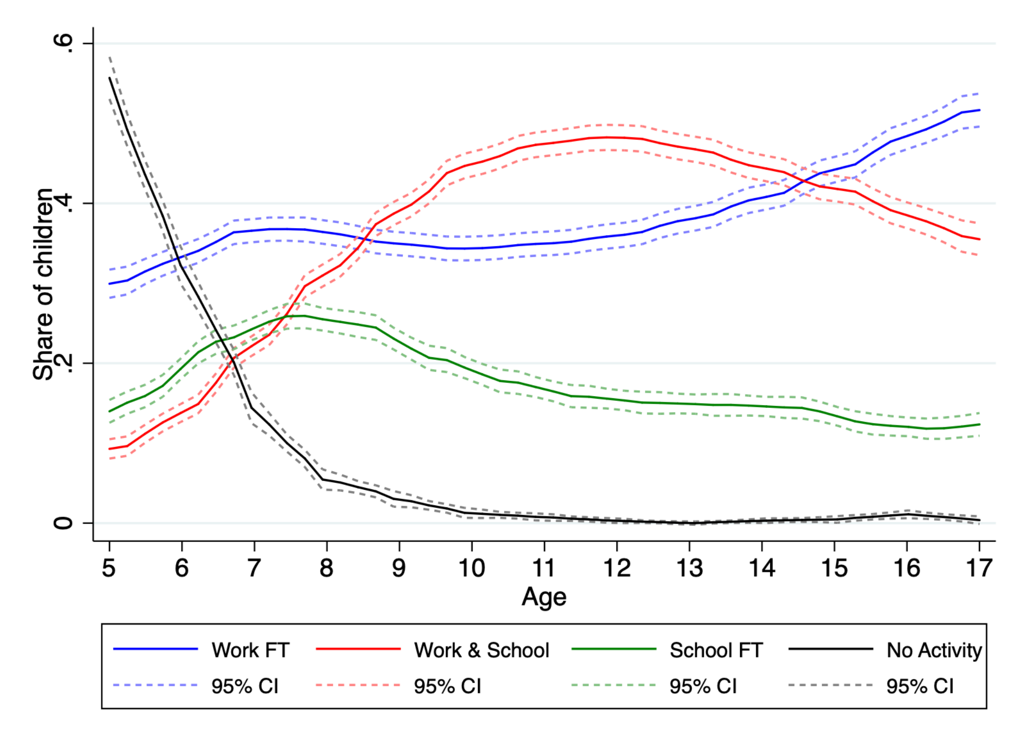


Figure 5: Children's activity by age and gender

(a) Girls



(b) Boys

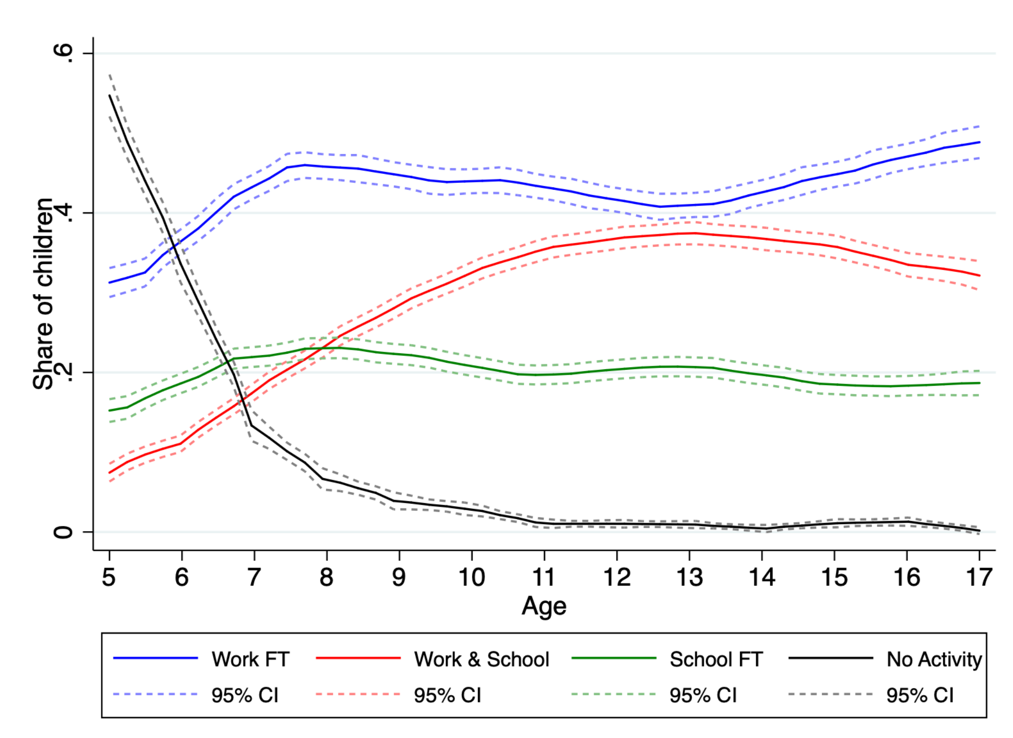


Table 1: Balance between recipients and non-recipients of coupon

	Coupon		No Coupon		Coupon vs. No Coupon		
	Mean	SD	Mean	SD	Difference	SE	N
	(1)	(2)	(3)	(4)	(5)	(6)	(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 (ETB)	21.5	[25.1]	24.3	[25.5]	-0.126	(1.21)	6657
Livestock expenditure (ETB)	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 FT	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 FT	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 of variables for subjects received and not received discount coupon. Columns 5 and 6 report mean differences between the two groups. Standard deviations are in brackets, and standard errors are in parentheses. * 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.)	0.348***	0.022***	0.375***
	(0.032)	(0.006)	(0.030)
Shock × Discount rate (Cum.)	0.001	0.004***	
	(0.001)	(0.001)	
N	12082	12082	12082

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 seasons. All specifications include insurance area- and 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 Child Activities

	Child Labor	Work FT	Work and School	School FT	Neither Work Nor School
	(1)	(2)	(3)	(4)	(5)
Panel A: Average Effects					
Insurance Uptake (Cum.)	-0.003	0.023	-0.074**	0.049*	0.002
	(0.033)	(0.034)	(0.032)	(0.026)	(0.021)
N	12082	12082	12082	12082	12089
F_{eff}	59.872	59.872	59.872	59.872	59.855
5% Critical Value	37.418	37.418	37.418	37.418	37.418
10% Critical Value	23.109	23.109	23.109	23.109	23.109
AR test p-val.	0.932	0.496	0.017	0.056	0.933
Mean of Dep. Var.	0.489	0.368	0.326	0.221	0.086
Panel B: Disaggregated Effects					
Shock	0.002	-0.028	0.029	0.008	-0.009
	(0.034)	(0.029)	(0.034)	(0.031)	(0.017)
Insurance Uptake (Cum.)	-0.008	0.007	-0.063*	0.046	0.009
	(0.040)	(0.041)	(0.038)	(0.028)	(0.026)
Shock × Insurance Uptake (Cum.)	0.015	0.067	-0.050	0.004	-0.019
	(0.079)	(0.077)	(0.076)	(0.070)	(0.047)
Shock+Uptake × Shock (coef.)	0.017	0.039	-0.021	0.012	-0.029
Shock+Uptake × Shock (p-val.)	0.770	0.483	0.699	0.800	0.422
N	12082	12082	12082	12082	12089
K-P F-stat	24.515	24.515	24.515	24.515	24.487
AR test p-val.	0.976	0.528	0.045	0.182	0.908
Mean of Dep. Var.	0.489	0.368	0.326	0.221	0.086

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. Relevant periods for discount rate are the same as those of the 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. Panel (A) presents the estimated coefficient of the average effects across drought and non-drought seasons. Panel (B) presents the estimated coefficients of the effects during drought and non-drought seasons separately.

Table 4: 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.)	0.031	0.047	-0.008	-0.030	-0.102***	-0.028	-0.042	0.008
	(0.035)	(0.032)	(0.023)	(0.032)	(0.037)	(0.026)	(0.031)	(0.010)
N	12081	12081	12081	12081	12082	12082	12082	12082
F_{eff}	59.881	59.881	59.881	59.881	59.872	59.872	59.872	59.872
5% Critical Value	37.418	37.418	37.418	37.418	37.418	37.418	37.418	37.418
10% Critical Value	23.109	23.109	23.109	23.109	23.109	23.109	23.109	23.109
AR test p-val.	0.371	0.143	0.734	0.358	0.003	0.278	0.157	0.402
Mean of Dep. Var.	0.412	0.310	0.089	0.487	0.446	0.152	0.270	0.009
Panel B: Disaggregated Effects								
Shock	-0.025	0.009	-0.033	0.031	0.064	-0.032	0.075**	0.025***
	(0.030)	(0.027)	(0.021)	(0.029)	(0.039)	(0.023)	(0.037)	(0.009)
Insurance Uptake (Cum.)	0.011	0.049	-0.030	-0.020	-0.085*	-0.028	-0.031	0.011
	(0.041)	(0.040)	(0.027)	(0.036)	(0.044)	(0.034)	(0.036)	(0.013)
Shock $\times$ Insurance Uptake (Cum.)	0.076	-0.010	0.088	-0.048	-0.091	0.018	-0.077	-0.022
	(0.076)	(0.072)	(0.056)	(0.070)	(0.096)	(0.053)	(0.084)	(0.025)
Shock+Uptake $\times$ Shock (coef.)	0.051	-0.002	0.055	-0.017	-0.027	-0.015	-0.002	0.002
Shock+Uptake $\times$ Shock (p-val.)	0.350	0.974	0.185	0.731	0.694	0.709	0.977	0.905
N	12081	12081	12081	12081	12082	12082	12082	12082
K-P F-stat	24.717	24.717	24.717	24.717	24.515	24.515	24.515	24.515
AR test p-val.	0.407	0.383	0.256	0.514	0.006	0.683	0.188	0.641
Mean of Dep. Var.	0.412	0.310	0.089	0.487	0.446	0.152	0.270	0.009

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. Relevant periods for discount rate are the same as those of the 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. Panel (A) presents the estimated coefficient of the average effects across drought and non-drought seasons. Panel (B) presents the estimated coefficients of the effects during drought and non-drought seasons separately.

Table 5: Impact on Child Activities, by Age

	Child Labor	Work FT	Work and School	School FT	Work as Primary	Work as Secondary
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Heterogeneity of Average Effects						
Age 12-17 × Insurance Uptake (Cum.)	0.072	0.101*	-0.188***	0.091**	0.122*	-0.209***
	(0.054)	(0.061)	(0.062)	(0.041)	(0.062)	(0.067)
Age 5-11 × Insurance Uptake (Cum.)	-0.043	-0.016	-0.008	0.024	-0.017	-0.043
	(0.041)	(0.043)	(0.035)	(0.031)	(0.043)	(0.041)
Difference	0.115*	0.117	-0.180**	0.067	0.138*	-0.166**
	(0.066)	(0.075)	(0.071)	(0.048)	(0.076)	(0.077)
N	12082	12082	12082	12082	12081	12082
Panel B: Disaggreagted Effects, Children of Age 12-17						
Shock	0.081	0.043	0.091	-0.124***	0.054	0.154**
	(0.051)	(0.044)	(0.058)	(0.048)	(0.044)	(0.064)
Insurance Uptake (Cum.)	0.120*	0.119*	-0.174**	0.058	0.147**	-0.188**
	(0.065)	(0.071)	(0.075)	(0.045)	(0.071)	(0.081)
Shock × Insurance Uptake (Cum.)	-0.201*	-0.081	-0.093	0.171	-0.110	-0.146
	(0.115)	(0.112)	(0.138)	(0.108)	(0.110)	(0.162)
Shock+Uptake × Shock (coef.)	-0.121	-0.039	-0.002	0.047	-0.057	0.007
Shock+Uptake × Shock (p-val.)	0.126	0.621	0.983	0.520	0.457	0.948
N	5494	5494	5494	5494	5493	5494
Mean of Dep. Var.	0.545	0.449	0.380	0.164	0.459	0.567
Panel C: Disaggreagted Effects, Children of Age 5-11						
Shock	-0.055	-0.085**	0.006	0.087**	-0.084**	0.010
	(0.042)	(0.037)	(0.039)	(0.038)	(0.038)	(0.044)
Insurance Uptake (Cum.)	-0.085	-0.060	0.009	0.041	-0.070	-0.023
	(0.052)	(0.054)	(0.044)	(0.034)	(0.054)	(0.050)
Shock × Insurance Uptake (Cum.)	0.161	0.187*	-0.056	-0.103	0.216**	-0.069
	(0.100)	(0.101)	(0.085)	(0.084)	(0.102)	(0.103)
Shock+Uptake × Shock (coef.)	0.107	0.102	-0.049	-0.016	0.132	-0.058
Shock+Uptake × Shock (p-val.)	0.153	0.178	0.421	0.786	0.084	0.442
N	6588	6588	6588	6588	6588	6588
Mean of Dep. Var.	0.526	0.371	0.260	0.194	0.373	0.347

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. Relevant periods for discount rate are the same as those of the 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. Panel (A) presents the estimated coefficient of the average effects across drought and non-drought seasons older age children (age 12-17) and younger age children (age 5-11), and the difference of the effects between the two groups. Panel (B) and (C) presents the estimated coefficients of the effects during drought and non-drought seasons separately, for older age children (age 12-17) and younger age children (age 5-11), respectively

Table 6: Impact on Child Activities, by Birth Order

	Child Labor	Work FT	Work and School	School FT	Work as Primary	Work as Secondary
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Heterogeneity of Average Effects						
1st born × Insurance Uptake (Cum.)	0.105*	0.156**	-0.191***	0.039	0.162**	-0.208***
	(0.064)	(0.068)	(0.063)	(0.043)	(0.068)	(0.073)
Others × Insurance Uptake (Cum.)	-0.066*	-0.053	-0.007	0.063**	-0.046	-0.036
	(0.038)	(0.039)	(0.031)	(0.029)	(0.039)	(0.037)
Difference	0.171**	0.209***	-0.183***	-0.024	0.208***	-0.172**
	(0.074)	(0.081)	(0.069)	(0.049)	(0.080)	(0.080)
N	12082	12082	12082	12082	12081	12082
Panel B: Disaggreagted Effects, Oldest siblings						
Shock	0.095*	0.038	0.018	-0.005	0.051	0.075
	(0.055)	(0.049)	(0.056)	(0.049)	(0.049)	(0.060)
Insurance Uptake (Cum.)	0.180**	0.179**	-0.170**	0.020	0.191**	-0.179*
	(0.080)	(0.084)	(0.078)	(0.047)	(0.082)	(0.094)
Shock × Insurance Uptake (Cum.)	-0.283*	-0.093	-0.074	0.060	-0.116	-0.131
	(0.149)	(0.149)	(0.145)	(0.125)	(0.145)	(0.167)
Shock+Uptake × Shock (coef.)	-0.188	-0.055	-0.056	0.055	-0.065	-0.057
Shock+Uptake × Shock (p-val.)	0.099	0.631	0.602	0.550	0.556	0.659
N	3589	3589	3589	3589	3589	3589
K-P F-stat	0.538	0.470	0.353	0.153	0.478	0.547
Panel C: Disaggreagted Effects, Younger siblings						
Shock	-0.060	-0.066*	0.028	0.019	-0.072*	0.053
	(0.040)	(0.036)	(0.038)	(0.035)	(0.037)	(0.044)
Insurance Uptake (Cum.)	-0.108**	-0.082*	-0.003	0.068**	-0.084*	-0.023
	(0.046)	(0.048)	(0.038)	(0.033)	(0.049)	(0.045)
Shock × Insurance Uptake (Cum.)	0.171*	0.134	-0.030	-0.030	0.165*	-0.071
	(0.090)	(0.087)	(0.078)	(0.072)	(0.088)	(0.097)
Shock+Uptake × Shock (coef.)	0.111	0.068	-0.002	-0.011	0.093	-0.019
Shock+Uptake × Shock (p-val.)	0.081	0.270	0.964	0.819	0.142	0.782
N	8493	8493	8493	8493	8492	8493
K-P F-stat	0.533	0.379	0.298	0.192	0.384	0.404

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. Relevant periods for discount rate are the same as those of the 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. Panel (A) presents the estimated coefficient of the average effects across drought and non-drought seasons first-born children and their younger siblings, and the difference of the effects between the two groups. Panel (B) and (C) presents the estimated coefficients of the effects during drought and non-drought seasons separately, for first-born children and their younger siblings, respectively

Table 7: Impact on Child Activities, by Gender

	Child Labor	Work FT	Work and School	School FT	Work as Primary	Work as Secondary
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Heterogeneity of Average Effects						
Girls × Insurance Uptake (Cum.)	0.015	-0.001	-0.038	0.036	0.016	-0.070
	(0.044)	(0.047)	(0.041)	(0.030)	(0.047)	(0.047)
Boys × Insurance Uptake (Cum.)	-0.021	0.048	-0.112**	0.063*	0.045	-0.134***
	(0.048)	(0.049)	(0.045)	(0.037)	(0.049)	(0.051)
Difference	0.036	-0.050	0.074	-0.027	-0.029	0.065
	(0.064)	(0.068)	(0.059)	(0.043)	(0.068)	(0.066)
N	12082	12082	12082	12082	12081	12082
Panel B: Disaggreagted Effects, Girls						
Shock	0.062	-0.042	0.093*	-0.050	-0.031	0.106*
	(0.049)	(0.044)	(0.050)	(0.043)	(0.044)	(0.059)
Insurance Uptake (Cum.)	0.035	-0.019	0.015	-0.001	-0.006	0.001
	(0.054)	(0.056)	(0.049)	(0.033)	(0.054)	(0.055)
Shock × Insurance Uptake (Cum.)	-0.102	0.081	-0.227**	0.151	0.088	-0.291**
	(0.107)	(0.108)	(0.108)	(0.094)	(0.108)	(0.136)
Shock+Uptake × Shock (coef.)	-0.041	0.040	-0.134	0.101	0.057	-0.186
Shock+Uptake × Shock (p-val.)	0.586	0.596	0.068	0.114	0.449	0.046
N	5826	5826	5826	5826	5826	5826
K-P F-stat	0.490	0.380	0.352	0.165	0.387	0.504
Panel C: Disaggreagted Effects, Boys						
Shock	-0.055	-0.011	-0.033	0.060	-0.015	0.025
	(0.044)	(0.039)	(0.042)	(0.040)	(0.039)	(0.048)
Insurance Uptake (Cum.)	-0.060	0.039	-0.157***	0.098**	0.032	-0.180***
	(0.059)	(0.060)	(0.056)	(0.042)	(0.060)	(0.065)
Shock × Insurance Uptake (Cum.)	0.154	0.036	0.161	-0.145	0.048	0.133
	(0.112)	(0.108)	(0.102)	(0.093)	(0.106)	(0.125)
Shock+Uptake × Shock (coef.)	0.100	0.025	0.128	-0.085	0.033	0.158
Shock+Uptake × Shock (p-val.)	0.231	0.752	0.084	0.191	0.669	0.087
N	6256	6256	6256	6256	6255	6256
K-P F-stat	0.576	0.429	0.279	0.195	0.434	0.393

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. Relevant periods for discount rate are the same as those of the 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. Panel (A) presents the estimated coefficient of the average effects across drought and non-drought seasons for boys and girls, and the difference of the effects between the two groups. Panel (B) and (C) presents the estimated coefficients of the effects during drought and non-drought seasons separately for boys and girls, respectively

Table 8: 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	-85.435	-14.347	-1.599**	-1.749***
	(61.558)	(12.139)	(0.781)	(0.664)
Insurance Uptake (Cum.)	-87.157	-8.980	-0.830	0.399
	(75.818)	(14.838)	(0.765)	(0.820)
Shock $\times$ Insurance Uptake (Cum.)	207.140	37.335	0.201	0.509
	(135.856)	(26.005)	(1.828)	(1.375)
Shock+Uptake $\times$ Shock (coef.)	121.705	22.988	-1.398	-1.240
Shock+Uptake $\times$ Shock (p-val.)	0.200	0.206	0.260	0.186
N	4379	4379	4376	4370
K-P F-stat	24.528	24.528	24.534	24.773
AR test p-val.	0.282	0.363	0.508	0.613
Mean of Dep. Var.	579.944	125.800	15.026	6.784

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. Relevant periods for discount rate are the same as those of the 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 9: 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	-0.073*	0.028	0.007	-0.045	0.032*	-0.002
	(0.043)	(0.034)	(0.081)	(0.050)	(0.018)	(0.029)
Insurance Uptake (Cum.)	0.171***	0.163***	0.059	0.093**	-0.013	0.026
	(0.059)	(0.045)	(0.087)	(0.046)	(0.026)	(0.033)
Shock $\times$ Insurance Uptake (Cum.)	-0.074	-0.157*	-0.104	-0.108	0.002	-0.008
	(0.111)	(0.084)	(0.190)	(0.126)	(0.048)	(0.069)
Shock+Uptake $\times$ Shock (coef.)	-0.147	-0.129	-0.097	-0.152	0.034	-0.010
Shock+Uptake $\times$ Shock (p-val.)	0.075	0.038	0.456	0.076	0.340	0.843
N	4379	4211	4368	4368	4368	4379
K-P F-stat	24.528	23.310	24.769	24.769	24.769	24.528
AR test p-val.	0.005	0.001	0.768	0.116	0.834	0.693
Mean of Dep. Var.	0.569	0.620	0.457	0.211	0.160	0.206

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. Relevant periods for discount rate are the same as those of the 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 10: Impact on Herd Size

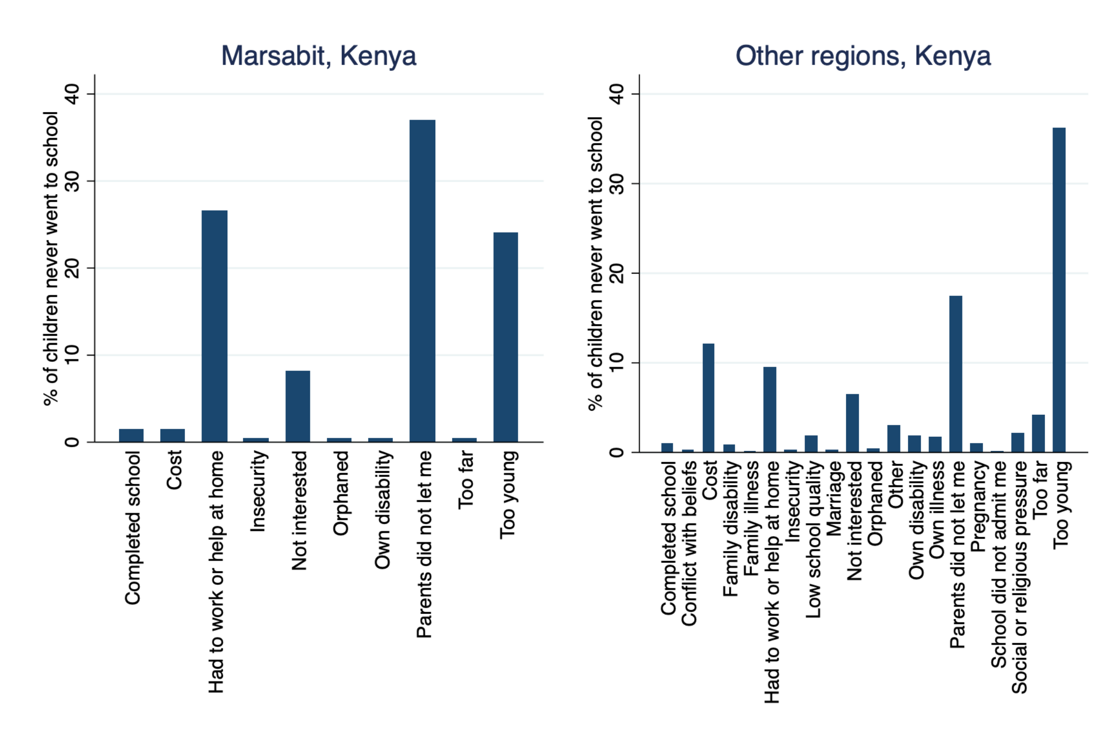
	Herd size (own)	Herd size (herding)	Adult animals	Lactating animals
	(1)	(2)	(3)	(4)
Shock	0.912	1.050	0.639	0.100
	(0.697)	(0.796)	(0.537)	(0.192)
Insurance Uptake (Cum.)	2.358*	1.305	0.854	0.293
	(1.327)	(1.403)	(0.848)	(0.391)
Shock $\times$ Insurance Uptake (Cum.)	-1.316	-0.027	-0.158	0.035
	(1.967)	(2.142)	(1.399)	(0.548)
Shock+Uptake $\times$ Shock (coef.)	-0.404	1.023	0.481	0.135
Shock+Uptake $\times$ Shock (p-val.)	0.775	0.499	0.623	0.742
N	4379	4379	4379	4379
K-P F-stat	24.528	24.528	24.528	24.528
AR test p-val.	0.192	0.574	0.567	0.593
Mean of Dep. Var.	12.016	13.465	8.781	3.290

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. Relevant periods for discount rate are the same as those of the 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.

A Appendix: Additional Figures and Tables

Figure A1: Reason why children never attended school

(a) Marsabit District, Kenya



(b) Borena Zone, Ethiopia

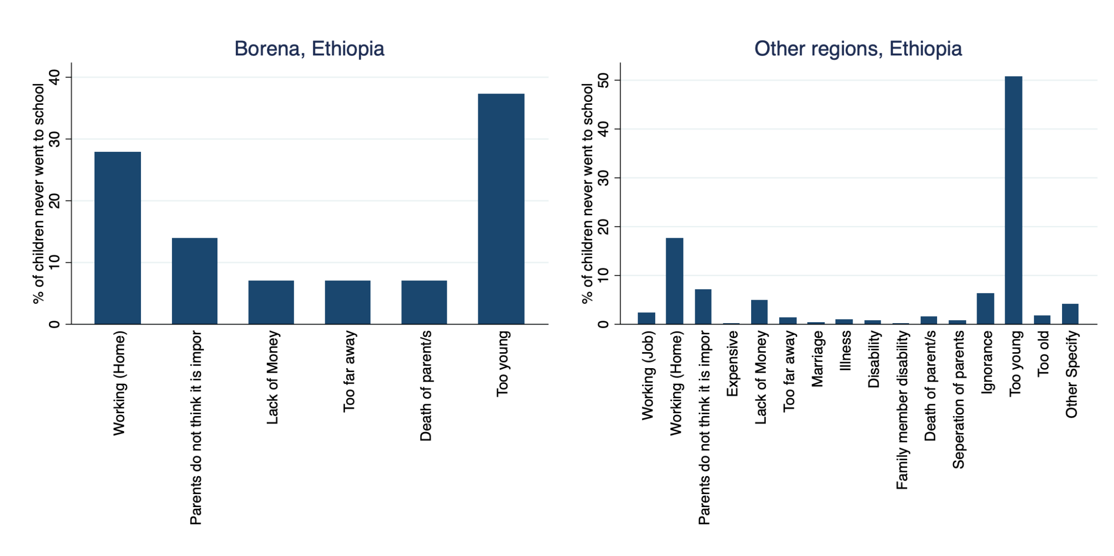
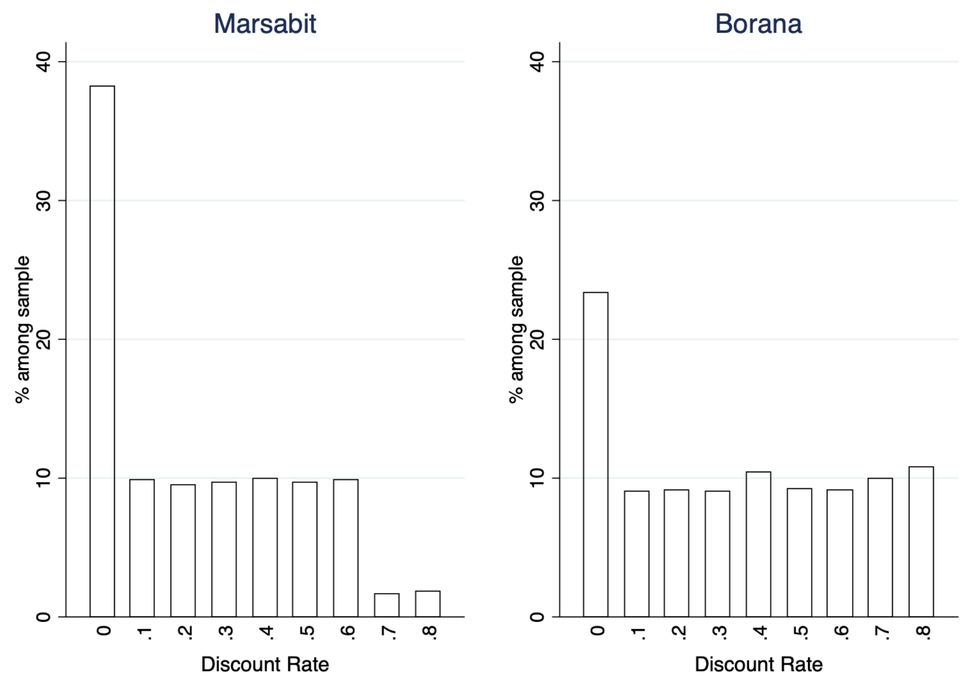


Figure A2: Discount Rate and Insured Livestock

(a) Discount Rates



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

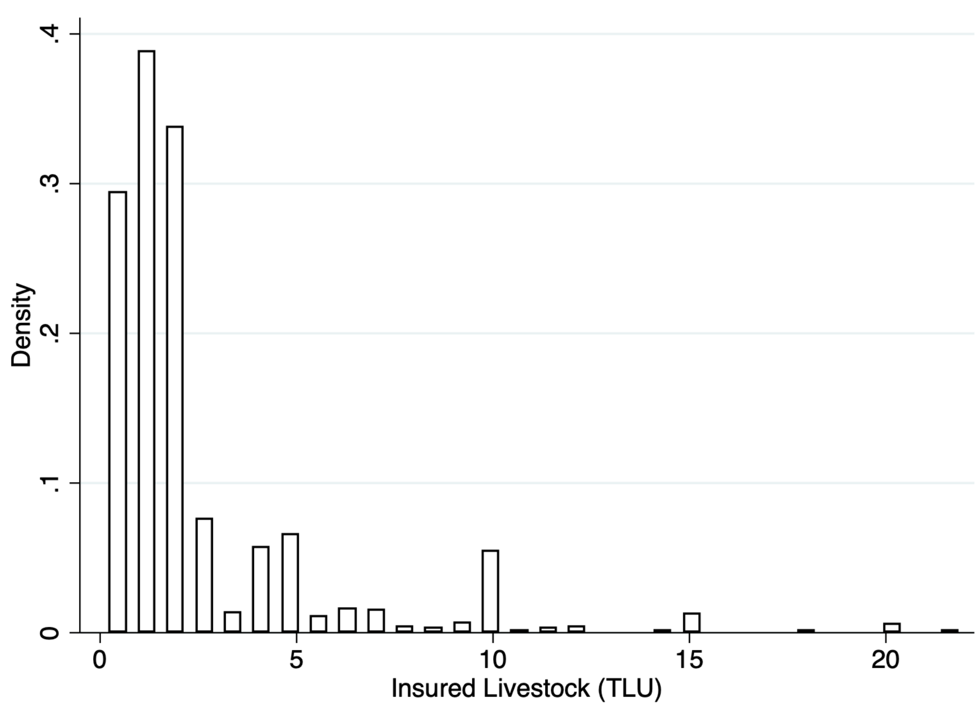


Table A1: First-stage predictive power of Table 3, Panel B

Panel A					
Shock	0.042*	0.003	0.032	-0.024	-0.006
	(0.023)	(0.015)	(0.021)	(0.021)	(0.012)
Insurance Uptake (Cum.)	-0.110**	-0.027	-0.114***	0.133***	0.036
	(0.047)	(0.035)	(0.041)	(0.039)	(0.027)
N	11744	11744	11744	11744	11744
F_{eff}	24.714	24.714	24.714	24.714	24.714
5% Critical Value	6.278	4.450	4.874	5.179	7.221
10% Critical Value	4.819	3.771	4.010	4.185	5.366
AR test p-val.	0.009	0.672	0.017	0.001	0.383
Mean of Dep. Var.	0.431	0.392	0.251	0.164	0.111

Panel B					
Shock	0.102***	0.012	0.061*	-0.056	-0.008
	(0.039)	(0.021)	(0.034)	(0.035)	(0.017)
Shock $\times$ Insurance Uptake (Cum.)	-0.223***	-0.040	-0.141*	0.160**	0.025
	(0.085)	(0.050)	(0.076)	(0.076)	(0.039)
N	11744	11744	11744	11744	11744
F_{eff}	14.274	14.274	14.274	14.274	14.274
5% Critical Value	31.459	31.456	31.456	31.456	31.462
10% Critical Value	19.617	19.615	19.615	19.615	19.619
AR test p-val.	0.009	0.672	0.017	0.001	0.383
Mean of Dep. Var.	0.431	0.392	0.251	0.164	0.111

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. Shock is an indicator if an insurance area is affected by the drought in that year. 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 Child Activities (ITT)

	Child Labor	Work FT	Work and School	School FT	Neither Work Nor School
	(1)	(2)	(3)	(4)	(5)
Panel A: Average Effects					
Discount rate (Current + Cum.)	-0.001	0.009	-0.028**	0.018*	0.001
	(0.013)	(0.013)	(0.012)	(0.010)	(0.008)
N	12082	12082	12082	12082	12089
Mean of Dep. Var.	0.489	0.368	0.326	0.221	0.086
Panel B: Disaggregated Effects					
Shock	0.003	-0.017	0.016	0.012	-0.011
	(0.026)	(0.021)	(0.026)	(0.024)	(0.013)
Discount rate (Current + Cum.)	-0.002	0.004	-0.023*	0.016*	0.003
	(0.013)	(0.013)	(0.012)	(0.009)	(0.008)
Shock $\times$ Discount rate (Cum.)	0.000	0.000	-0.000	0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
N	12082	12082	12082	12082	12089
Mean of Dep. Var.	0.548	0.426	0.302	0.164	0.108

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 A3: Impact on Child Activities (OLS using insurance uptake)

	Child Labor	Work FT	Work and School	School FT	Neither Work Nor School
	(1)	(2)	(3)	(4)	(5)
Panel A: Average Effects					
Insurance Uptake (Cum.)	-0.013	-0.027**	0.013	0.016*	-0.002
	(0.010)	(0.011)	(0.010)	(0.009)	(0.005)
N	11308	11308	11308	11308	11314
Mean of Dep. Var.	0.558	0.418	0.334	0.185	0.064
Panel B: Disaggregated Effects					
Shock	0.019	0.005	-0.000	0.011	-0.016
	(0.021)	(0.016)	(0.021)	(0.019)	(0.010)
Insurance Uptake (Cum.)	-0.003	-0.034***	0.013	0.023**	-0.002
	(0.013)	(0.012)	(0.012)	(0.010)	(0.006)
Shock × Insurance Uptake (Cum.)	-0.029	0.018	0.000	-0.022	0.002
	(0.020)	(0.018)	(0.022)	(0.019)	(0.009)
N	11308	11308	11308	11308	11314
Mean of Dep. Var.	0.571	0.440	0.321	0.170	0.069

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 A4: Impact on Children's Working Hours Conditional on Working

	Child Labor	Work FT	Work and School	School FT	No activity
	(1)	(2)	(3)	(4)	(5)
Panel A: Average Effects					
Insurance Uptake (Cum.)	-0.010	-0.268	-0.046	-0.617	0.214
	(0.288)	(0.298)	(0.216)	(0.377)	(0.230)
N	6512	4814	3932	2170	12082
F_{eff}	38.951	34.638	29.860	15.856	54.090
5% Critical Value	37.418	37.418	37.418	37.418	37.418
10% Critical Value	23.109	23.109	23.109	23.109	23.109
AR test p-val.	0.845	0.320	0.896	0.060	0.354
Mean of Dep. Var.	6.790	8.151	2.940	7.513	16.064
Panel B: Disaggregated Effects					
Shock	0.051	0.520	0.051	-0.100	-0.363*
	(0.304)	(0.394)	(0.155)	(0.380)	(0.219)
Insurance Uptake (Cum.)	-0.164	-0.600*	-0.048	-0.936*	0.418
	(0.341)	(0.363)	(0.281)	(0.531)	(0.283)
Shock × Insurance Uptake (Cum.)	0.548	0.940	-0.025	0.701	-0.445
	(0.721)	(0.868)	(0.424)	(0.947)	(0.553)
Shock+Uptake × Shock (coef.)	0.763	1.599	-0.026	0.763	-0.859
Shock+Uptake × Shock (p-val.)	0.156	0.005	0.940	0.256	0.036
N	6512	4814	3932	2170	12082
K-P F-stat	11.053	8.167	15.846	15.941	24.515
AR test p-val.	0.680	0.176	0.964	0.098	0.309
Mean of Dep. Var.	6.790	8.151	2.940	7.513	16.064

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 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.)	0.025	0.077	-0.428	0.088	-0.104	-0.163	-0.054	-0.457
	(0.253)	(0.293)	(0.422)	(0.186)	(0.126)	(0.192)	(0.168)	(0.506)
N	4898	3775	1001	5994	5491	1884	3298	128
F_{eff}	35.573	25.087	16.301	37.112	36.156	21.694	20.766	4.882
5% Critical Value	37.418	37.418	37.418	37.418	37.418	37.418	37.418	37.418
10% Critical Value	23.109	23.109	23.109	23.109	23.109	23.109	23.109	23.109
AR test p-val.	0.967	0.648	0.241	0.587	0.331	0.188	0.640	0.239
Mean of Dep. Var.	7.216	7.817	5.330	7.278	2.802	2.746	2.820	4.278
Panel B: Disaggregated Effects								
Shock	0.226	0.133	0.869	-0.034	-0.011	0.178	-0.173	1.391
	(0.325)	(0.366)	(0.576)	(0.140)	(0.127)	(0.230)	(0.152)	(0.990)
Insurance Uptake (Cum.)	-0.272	-0.150	-0.749	-0.039	-0.207	-0.237	-0.115	-0.620
	(0.311)	(0.353)	(0.527)	(0.257)	(0.152)	(0.207)	(0.224)	(0.565)
Shock $\times$ Insurance Uptake (Cum.)	0.949	0.790	0.554	0.332	0.301	0.305	0.218	0.232
	(0.722)	(0.796)	(1.268)	(0.371)	(0.266)	(0.491)	(0.324)	(1.689)
Shock+Uptake $\times$ Shock (coef.)	1.239	1.022	1.329	0.312	0.268	0.578	0.056	1.866
Shock+Uptake $\times$ Shock (p-val.)	0.012	0.067	0.104	0.286	0.201	0.104	0.834	0.047
N	4898	3775	1001	5994	5491	1884	3298	128
K-P F-stat	8.250	5.943	3.093	42.587	18.301	19.263	14.349	0.389
AR test p-val.	0.346	0.412	0.273	0.454	0.340	0.234	0.799	0.435
Mean of Dep. Var.	7.216	7.817	5.330	7.278	2.802	2.746	2.820	4.278

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 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.)	0.134***	0.119***	0.028	0.051	-0.007	0.024
	(0.047)	(0.035)	(0.074)	(0.040)	(0.020)	(0.028)
N	4379	4211	4368	4368	4368	4379
F_{eff}	155.296	153.630	155.532	155.532	155.532	155.296
5% Critical Value	37.418	37.418	37.418	37.418	37.418	37.418
10% Critical Value	23.109	23.109	23.109	23.109	23.109	23.109
AR test p-val.	0.002	0.001	0.717	0.298	0.912	0.442
Mean of Dep. Var.	0.525	0.633	0.436	0.197	0.164	0.201

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. Relevant periods for discount rate are the same as those of the 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.)	-37.343	0.188	-1.056	0.244
	(64.184)	(12.743)	(0.691)	(0.663)
N	4379	4379	4376	4370
F_{eff}	155.296	155.296	155.188	155.522
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.	0.678	0.899	0.153	0.729
Mean of Dep. Var.	633.959	145.766	16.723	6.556

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. Relevant periods for discount rate are the same as those of the 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 Herd Size

	Herd size (own)	Herd size (herding)	Adult animals	Lactating animals
	(1)	(2)	(3)	(4)
Insurance Uptake (Cum.)	1.514	1.031	-0.180	-0.361
	(3.557)	(3.674)	(2.448)	(0.858)
N	4379	4379	4379	4379
F_{eff}	155.296	155.296	155.296	155.296
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.	0.561	0.644	0.885	0.867
Mean of Dep. Var.	14.014	16.410	11.140	3.569

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. Relevant periods for discount rate are the same as those of the 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 A9: Impact on Herd Size and Children's work by Initial Herd Size

	Smallest Quintile	Second Quintile	Third Quintile	Fourth Quitile	Largest Quintile
	(1)	(2)	(3)	(4)	(5)
Panel A: Effects on Herd size					
Shock	-0.874	-0.056	1.702	-1.471	8.402
	(0.723)	(0.927)	(1.817)	(1.856)	(7.290)
Insurance Uptake (Cum.)	0.220	3.108	-1.415	-2.246	-5.953
	(1.241)	(3.165)	(4.582)	(1.938)	(16.794)
Shock $\times$ Insurance Uptake (Cum.)	0.822	-1.435	-3.016	8.019**	-7.063
	(2.698)	(4.024)	(5.434)	(3.459)	(18.835)
Shock+Uptake $\times$ Shock (coef.)	-0.052	-1.491	-1.313	6.548	1.339
Shock+Uptake $\times$ Shock (p-val.)	0.980	0.635	0.740	0.004	0.919
N	783	796	822	810	854
K-P F-stat	1.627	7.261	6.830	13.847	5.584
AR test p-val.	0.858	0.330	0.222	0.061	0.529
Mean of Dep. Var.	2.861	6.096	10.752	17.081	37.669
Panel B: Effects on Children's Livestock-related Tasks					
Shock	0.012	-0.054	0.031	0.099	-0.042
	(0.053)	(0.053)	(0.081)	(0.069)	(0.083)
Insurance Uptake (Cum.)	0.077	0.103	-0.058	0.079	-0.030
	(0.093)	(0.135)	(0.166)	(0.070)	(0.063)
Shock $\times$ Insurance Uptake (Cum.)	-0.076	-0.080	0.070	-0.101	0.094
	(0.245)	(0.180)	(0.226)	(0.130)	(0.165)
Shock+Uptake $\times$ Shock (coef.)	0.118	-0.126	0.115	-0.017	0.024
Shock+Uptake $\times$ Shock (p-val.)	0.637	0.396	0.459	0.868	0.815
N	1974	2130	2298	2216	2553
K-P F-stat	2.940	6.605	5.376	12.844	5.003
AR test p-val.	0.358	0.624	0.796	0.473	0.928
Mean of Dep. Var.	0.198	0.250	0.347	0.371	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 insurance uptake incidences over the latest three seasons. Relevant periods for discount rate are the same as those of the 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 A10: Impact on Child Activities with lapsed insurance

	Child Labor	Work FT	Work and School	School FT	No activity
	(1)	(2)	(3)	(4)	(5)
Insurance Uptake (Cum.)	-0.002	0.023	-0.073**	0.049*	0.001
	(0.034)	(0.034)	(0.032)	(0.026)	(0.021)
Insurance Updatke (Lapsed)	0.053	0.006	0.009	0.000	-0.015
	(0.059)	(0.055)	(0.057)	(0.052)	(0.034)
N	12082	12082	12082	12082	12089
K-P F-stat	92.606	92.606	92.606	92.606	92.380
AR test p-val.	0.649	0.664	0.043	0.220	0.913
Mean of Dep. Var.	0.489	0.368	0.326	0.221	0.086

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. Relevant periods for discount rate are the same as those of the 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 A11: Impact on Child Activities using IBLI Coverage in TLU

	Child Labor	Work FT	Work and School	School FT	No activity
	(1)	(2)	(3)	(4)	(5)
Panel A: Average Effects					
Insurance coverage (TLU)	-0.000	0.004	-0.012**	0.008*	0.000
	(0.005)	(0.006)	(0.005)	(0.004)	(0.003)
N	12058	12058	12058	12058	12065
F_{eff}	12.008	12.008	12.008	12.008	12.018
5% Critical Value	37.418	37.418	37.418	37.418	37.418
10% Critical Value	23.109	23.109	23.109	23.109	23.109
AR test p-val.	0.887	0.364	0.015	0.083	0.968
Mean of Dep. Var.	0.489	0.368	0.326	0.221	0.086
Panel B: Disaggregated Effects					
Shock	0.004	-0.014	0.009	0.017	-0.012
	(0.024)	(0.019)	(0.025)	(0.022)	(0.013)
Insurance coverage (TLU)	-0.001	0.001	-0.009	0.007	0.001
	(0.006)	(0.006)	(0.006)	(0.005)	(0.004)
Shock × Insurance coverage (TLU)	0.002	0.013	-0.012	0.002	-0.003
	(0.014)	(0.014)	(0.014)	(0.013)	(0.008)
Shock+Uptake × Shock (coef.)	0.010	0.003	-0.003	0.016	-0.016
Shock+Uptake × Shock (p-val.)	0.641	0.845	0.889	0.376	0.170
N	12058	12058	12058	12058	12065
K-P F-stat	12.105	12.105	12.105	12.105	12.115
AR test p-val.	0.976	0.468	0.040	0.238	0.934
Mean of Dep. Var.	0.489	0.368	0.326	0.221	0.086

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. Relevant periods for discount rate are the same as those of the 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 A12: Impact on Child Activities (Country × Year FE)

	Child Labor	Work FT	Work and School	School FT	No activity
	(1)	(2)	(3)	(4)	(5)
Panel A: Average Effects					
Insurance Uptake (Cum.)	0.026	0.047	-0.059	0.013	-0.001
	(0.038)	(0.041)	(0.036)	(0.029)	(0.024)
N	12082	12082	12082	12082	12089
F_{eff}	40.825	40.825	40.825	40.825	40.828
5% Critical Value	37.418	37.418	37.418	37.418	37.418
10% Critical Value	23.109	23.109	23.109	23.109	23.109
AR test p-val.	0.420	0.187	0.082	0.721	0.916
Mean of Dep. Var.	0.489	0.368	0.326	0.221	0.086
Panel B: Disaggregated Effects					
Shock	0.037	-0.003	0.052	-0.033	-0.015
	(0.036)	(0.031)	(0.037)	(0.034)	(0.020)
Insurance Uptake (Cum.)	0.038	0.040	-0.033	-0.008	0.002
	(0.047)	(0.049)	(0.045)	(0.033)	(0.031)
Shock × Insurance Uptake (Cum.)	-0.044	0.025	-0.088	0.073	-0.009
	(0.084)	(0.080)	(0.081)	(0.073)	(0.050)
Shock+Uptake × Shock (coef.)	-0.002	0.026	-0.035	0.035	-0.025
Shock+Uptake × Shock (p-val.)	0.969	0.661	0.524	0.480	0.508
N	12082	12082	12082	12082	12089
K-P F-stat	37.370	37.370	37.370	37.370	37.273
AR test p-val.	0.660	0.380	0.098	0.623	0.971
Mean of Dep. Var.	0.489	0.368	0.326	0.221	0.086

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 using Balanced Panel

	Child Labor	Work FT	Work and School	School FT	No activity
	(1)	(2)	(3)	(4)	(5)
Panel A: Average Effects					
Insurance Uptake (Cum.)	-0.020	0.020	-0.082**	0.058**	0.004
	(0.037)	(0.036)	(0.034)	(0.028)	(0.022)
N	10496	10496	10496	10496	10503
F_{eff}	43.017	43.017	43.017	43.017	43.060
5% Critical Value	37.418	37.418	37.418	37.418	37.418
10% Critical Value	23.109	23.109	23.109	23.109	23.109
AR test p-val.	0.670	0.459	0.009	0.055	0.810
Mean of Dep. Var.	0.501	0.372	0.329	0.222	0.077
Panel B: Disaggregated Effects					
Shock	0.006	-0.046	0.049	-0.011	0.008
	(0.037)	(0.032)	(0.039)	(0.036)	(0.020)
Insurance Uptake (Cum.)	-0.024	0.001	-0.069*	0.051*	0.016
	(0.044)	(0.044)	(0.040)	(0.030)	(0.027)
Shock $\times$ Insurance Uptake (Cum.)	0.010	0.087	-0.070	0.028	-0.043
	(0.087)	(0.083)	(0.087)	(0.080)	(0.051)
Shock+Uptake $\times$ Shock (coef.)	0.025	0.041	-0.012	0.009	-0.036
Shock+Uptake $\times$ Shock (p-val.)	0.697	0.499	0.836	0.869	0.345
N	10496	10496	10496	10496	10503
K-P F-stat	17.151	17.151	17.151	17.151	17.139
AR test p-val.	0.872	0.440	0.024	0.163	0.688
Mean of Dep. Var.	0.501	0.372	0.329	0.222	0.077

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. Relevant periods for discount rate are the same as those of the 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 A14: Impact on Child Activities with Children who were 5-17 at baseline

	Child Labor	Work FT	Work and School	School FT	No activity
	(1)	(2)	(3)	(4)	(5)
Panel A: Average Effects					
Insurance Uptake (Cum.)	-0.024	0.068	-0.117***	0.075**	-0.025
	(0.043)	(0.045)	(0.044)	(0.034)	(0.018)
N	8480	8480	8480	8480	8485
F_{eff}	39.951	39.951	39.951	39.951	39.979
5% Critical Value	37.418	37.418	37.418	37.418	37.418
10% Critical Value	23.109	23.109	23.109	23.109	23.109
AR test p-val.	0.654	0.132	0.009	0.034	0.147
Mean of Dep. Var.	0.529	0.394	0.348	0.227	0.031
Panel B: Disaggregated Effects					
Shock	0.013	-0.018	0.045	-0.023	-0.004
	(0.043)	(0.037)	(0.046)	(0.040)	(0.012)
Insurance Uptake (Cum.)	-0.024	0.066	-0.118**	0.080**	-0.028
	(0.050)	(0.051)	(0.052)	(0.036)	(0.022)
Shock × Insurance Uptake (Cum.)	-0.006	0.020	-0.025	-0.003	0.010
	(0.103)	(0.097)	(0.110)	(0.089)	(0.036)
Shock+Uptake × Shock (coef.)	0.025	0.009	0.029	-0.042	0.006
Shock+Uptake × Shock (p-val.)	0.737	0.896	0.705	0.480	0.832
N	8480	8480	8480	8480	8485
K-P F-stat	15.194	15.194	15.194	15.194	15.154
AR test p-val.	0.872	0.332	0.028	0.067	0.364
Mean of Dep. Var.	0.529	0.394	0.348	0.227	0.031

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. Relevant periods for discount rate are the same as those of the 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.