Dynamics of Multi-Dimensional Poverty Among Children in Ethiopia:
Evidence Using Longitudinal Data of Children from the Young Lives Study

April 2017, Addis Ababa, Ethiopia

Tassew Woldehanna, Adiam Hagos and Yisak Tafere
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Ethiopian Centre for Child Research (ECCR) at Ethiopian Development Research Institute (EDRI), Addis Ababa, Ethiopia
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Abstract

Recognizing the many aspects of children's well-being, this study assesses the extent of multiple, overlapping deprivations and explores how the different dimensions interact to affect the overall well-being of children. The study builds on the multidimensional nature of children's well-being to develop an indicator for the dynamics of poverty. It investigates the different aspects of poverty and its transitions.

The study adopts the Multiple Overlapping Deprivations Analysis (MODA) method to develop a multidimensional well-being indicator using the four rounds of data from the Young Lives study collected from 3,000 children from 2002 to 2013 in four regions and Addis Ababa. The study uses econometric methods and qualitative analysis to identify factors associated with the multiple overlapping deprivations of children. The results of the analysis show that the amount of education in a household decreased the deprivation of children. Children living in urban areas were found to be less deprived than children in rural areas. On the other hand, children whose households have experienced idiosyncratic shocks such as death of livestock or the loss of employment are worse off than children coming from households that have not had such an experience. Some of the household composition variables were also found to increase multiple overlapping deprivations. The size of land owned by households and credit also has an effect.

The study showed that a higher human capital endowment reduces the probability of transient poverty or chronic poverty. Moreover, children coming from a household that has experienced illness of a member were also found to have greater probability of being in the two poverty transition categories. The results of the study indicate there should be a focus on the household human capital endowment, particularly education, which is found to reduce children's experience of overlapping deprivations and the persistence of poverty. A long term plan to increase the education endowment of households will help improve children's well-being. The effect of socio-economic shocks on children's deprivations and poverty transitions also calls for increased access to insurance schemes to shield children from declines in well-being.
1. Background and Empirical Evidence

1.1. Background

In the face of widespread poverty and daunting evils such as famine, war and plagues at the beginning of this century, many developing countries recognized the need for a coordinated effort to tackle these challenges. In light of this, 189 countries gathered to identify the most critical predicaments and set the eight Millennium Development Goals (MDGs) which focused on poverty reduction, education, health and access to services. The integrated efforts made by governments, local and international organizations, and aid agencies have resulted in the achievement of most of the ambitious MDGs. In the final year of the plan period, hunger and extreme poverty have been reduced by half. The success extends to child-related goals such as child enrolment in school and infant mortality which have substantially improved over the plan period (UNDP, 2015).

Building on the successes of the MDGs, the countries have developed a new plan with more goals for the coming 15 years. Although there are many new aspects to the Sustainable Development Goals (SDGs), especially on the channels linking human beings to their planet, substantial focus is still given to challenges that affect the well-being of people, especially children. For instance, the second SDG targets (SDG 2.2) improved nutrition, which is particularly crucial for the physical and cognitive development of children. Similarly, the third SDG (SDG 1.3) focuses on the improvement in health. Among the targets under this SDG is the further reduction of both child and maternal mortality through better access to health services, medicine and vaccination. The SDGs also aim to improve access to education (SDG 1.4). The fourth SDG aims to increase the quality of education, universal secondary education and affordable vocational training. Among the SDGs, these three goals are directly related to the well-being of children. However, it is to be noted that there are several others, such as ending poverty in all of its forms, ending hunger, achieving food security and promoting sustainable agriculture, access to water and sanitation services that affect child well-being even though child outcomes are not explicitly stated for these goals (UNDP, 2015). One of the key elements of SDG 1 is to reduce at least by half the proportion of men, women and children of all ages living in poverty in all its dimensions, according to national definitions.

As is the case in many developing countries, Ethiopia experienced a substantial reduction in poverty rates in the MDG period (2000–2015) (UNDP, 2015). The proportion of the population living below 1.25 PPP fell from 56 per cent in 2000 to 31 per cent in 2011. However, reduction is not smoothly distributed between adults and children. The share of children that are poor is greater than that of the adults (UNICEF and MOFEC, 2015). While the national average for poverty rates based on the national poverty line was 30 per cent, the one for children below the age of 14 was 32 per cent. On the other hand, a significant gain in school enrolment has been achieved within this period. Between 2005 and 2011, the proportion of primary school age children not enrolled in school declined from 83 per cent to 58 per cent in rural areas and from 26 per cent to 16 per cent in urban areas. The same trend is observed in the child health dimension. The number of under five children that have had episodes of acute respiratory infection, fever and diarrhoea decreased from 45 per cent to 27 per cent. (UNICEF and MOFEC, 2015). Nevertheless, there are substantial gaps that have yet to be narrowed with regards to school attendance, access to safe water and improved sanitation and access to information which are all integral parts of children’s physical and cognitive development (World Bank, 2014).

Given the variation in the improvements of the different dimensions of child well-being, it is crucial to take a multidimensional approach to study childhood poverty. This proves even more essential in light of the interaction among the various dimensions of child well-being and the incremental contributions thereof. In recognition of this, the current study takes a multidimensional approach to identify the determinants of child well-being and the dynamics of childhood poverty.
Dynamics of Multi-Dimensional Poverty Among Children in Ethiopia:

1.2. Multidimensional approach towards the dynamics of child poverty

Although income deprivation has long been used as the primary indicator of poverty, in the last decade there has been a growing emphasis by poverty studies that poverty is essentially a complex phenomenon requiring multidimensional approaches. Therefore, the traditional poverty assessment that mainly uses income-based measures is deemed incomplete as it disregards some non-income based measures that are equally vital for improving the design and effectiveness of poverty reduction policies (Ballon and Krishnakumar, 2010).

According to the World Development Report (2001), among these dimensions are: material deprivation measured by an appropriate concept of income or consumption; low capabilities reflected in smaller life achievements in aspects such as education and health; vulnerability measured in exposure to risk or low level of security and being voiceless. This is further illuminated in recent economic literature where the assessment of poverty is increasingly shifting to a multidimensional approach to account for the multifaceted nature of human deprivation (Bourguignon and Chakravarty, 2003; Chakravarty, Deutsch and Silber, 2008; Chakravarty, Mukherjee and Ranade, 1998; Maasoumi and Lugo, 2008; Tsui, 2002 and UNDP, 1997).

The introduction of the capabilities approach by Amartya Sen, which views poverty from a multidimensional perspective built the theoretical basis for multidimensional poverty analysis (Sen, 1980, 1985a, 1985b, 1992 and 1999). Sen (2000) stresses that this approach is not a theory to explain poverty, inequality, or well-being, although it provides concepts and frameworks within which to conceptualize, measure, and evaluate poverty as well as the institutions and policies that affect it (Sen, 2000; Robeyns, 2003; Crocker and Robeyns, 2010). The capability approach focuses “on the real opportunities that people face (capability sets) … and has opened the ground of a novel line of research on the space of capabilities” (Ballon and Krishnakumar, 2010). The approach evaluates policies in terms of their impact on people’s capabilities as well as their actual functioning (Robeyns, 2003).

The approach proposes a broad view of human well-being and pays a great deal of attention to the links between material, mental, and social well-being, or to the economic, social, political, and cultural dimensions of life (Robeyns, 2003). The capability approach combines economic well-being, capability, and social exclusion to produce more wide ranging and accurate aggregate measurement outcomes than that of a unidimensional approach (Wagle, 2005).

The concept of capability has been extremely influential at both academic and institutional level. Some of UNDP’s and World Bank’s recent publications, such as the Human Development Report and the World Development Report, have been largely influenced by this approach. The concept of capability has resulted in the construction of a number of multidimensional human development indices that probably have had the largest impact on policy making (Robeyns, 2003).

Among such approaches is the Multiple Overlapping Deprivations Analysis (MODA) developed with a particular focus on childhood deprivations and which adopt the child as main unit of analysis (De Neubourg et al., 2012 and Bitew et al., 2013). This approach provides a platform to look into child well-being in a holistic manner by focusing on children’s access to the goods and services vital to their development.

The MODA is motivated by the Multi-Dimensional Poverty Index (MDPI) designed by the Oxford Poverty and Human Development Initiative (OPHI) and calculated for the overall population regardless of age groups. The MDPI has three dimensions with sub-indicators selected on the basis of targets set in the MDGs. The dimensions are health, education and living conditions (Alkire and Foster, 2010; Calderon and Kovacevic, 2015). Building on the MDPI, the MODA was developed by UNICEF in a way that sheds more light on children’s deprivations. It has four broad dimensions, namely: Survival, Development, Protection and Participation (De Neubourg et al., 2012a). The dimensions of the MODA and the targets of the sub-indicators are based on international standards such as the Convention of the Rights of the Child (1989), World Summit on Social Development (1995) and the Millennium Development Goals (De Neubourg et al., 2012a) and can be modified based on country specificities.
Adopting MODA for analysis of child well-being enriches the study in four ways. First, given the fact that children experience poverty differently from adults, MODA keeps, as previously mentioned, the child as the unit of analysis instead of the household. This allows studies to capture deprivations in certain aspects of children’s livelihoods, for instance, failure in meeting developmental needs, whose repercussions could be experienced throughout the child’s lifetime.

Second, MODA addresses the heterogeneity of children’s needs across age groups and adopts a life-cycle approach. Accordingly, the analysis is normally done for three different childhood age groups – early childhood, primary childhood and adolescence. Third, MODA illuminates child poverty by accounting for deprivations experienced simultaneously across sectors. Moreover, one can decompose the index and observe the extent of deprivations in each sector and design policies that will address these deprivations as effectively as possible. Last, but not least, MODA allows one to capture the extent of the deprivations in different social and geographical profiles. This is a crucial aspect as it would account for the stronger effect overlapping deprivations would have on the socio-economically disadvantaged. This gives an insight on the variation in the extent of deprivations across groups’ socio-economic profiles (De Neubourg et al., 2012). Table 1 below shows the different dimensions used to compute MODA for different age groups.

With the advantages of using a MODA approach to identifying the determinants of children’s deprivations in mind, the study will adopt this method to investigate the determinants and dynamics of the status of poverty of children.

Table 1: Dimensions of the lifecycle approach

<table>
<thead>
<tr>
<th>Age (0-4)</th>
<th>Age (5-17)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nutrition</td>
<td>Education</td>
</tr>
<tr>
<td>Health</td>
<td>Information</td>
</tr>
<tr>
<td>Water</td>
<td>Water</td>
</tr>
<tr>
<td>Sanitation</td>
<td>Sanitation</td>
</tr>
<tr>
<td>Housing</td>
<td>Housing</td>
</tr>
<tr>
<td>Protection from Violence</td>
<td>Protection from Violence</td>
</tr>
</tbody>
</table>

Source: (De Neubourg et al. 2012)

After accounting for the multidimensionality of children’s deprivations using MODA, the study will build on the literature on chronic child poverty to investigate its persistence and dynamics. The work conducted by Chronic Poverty Research (CPR) highlighted the need to conduct poverty analysis that focuses on duration and dynamics of chronic poverty and produces a differentiated policy response. The research results show the need for an analysis that disaggregates the severity and duration of poverty by age, gender and socio-economic status. Duration is a particular important aspect of poverty as the most severely poor people are also chronically poor, which implies that the issue is structural in nature. This is even stronger among children, as the effects of poverty at a young age are long-lasting. In particular, the deprivation of education, nutrition and health can have a strong negative effect in their human capital endowment, significantly reducing their lifetime earning capacity. In addition, understanding the dynamics of poverty (the persistence or the transition into poverty status) sheds further light on poverty traps. An exploration of the drivers of the dynamics of poverty in its multidimensional sense should lead to a differentiated policy response to address the various causes of chronic poverty and so assisting poor children to escape poverty traps (CPRC, 2009).
1.3. Empirical Evidence from Ethiopia

A few studies have adopted a multidimensional approach to poverty in exploring status of deprivation in Ethiopia. Using the DHS data from Ethiopia, the MDPI was computed by the OPHI. The results showed that 87.3 per cent of the population is MDPI poor, while the average intensity of deprivation was 64.6 per cent. However, the source of the larger proportion of the MDPI is the extent of deprivation in the living standards dimension (OPHI, 2013). Despite the high MDPI, the study conducted by Ambel, Mehta and Yigezu (2015) found that overlapping deprivations have declined in the country. This study used the data from the Household Consumption and Expenditure and Welfare Monitoring surveys conducted in 2000, 2005 and 2011 and observed the performance of the country in terms of education, health and living standards.

Our study builds on the existing literature on multiple overlapping deprivations analysis on Ethiopia, particularly on Bitew et al. (2013) who have used the DHS data from 2000, 2005 and 2011 for under 5 children. The study found that despite the significant reduction in the incidence of deprivations among children between 2000 and 2011, the proportion of children experiencing multiple deprivations at the same time decreased only marginally.

Our study will follow a similar approach of adopting the multiple overlapping deprivation analysis. However, it does so to capture the multidimensionality of child poverty over time with the objective of generating an indicator for poverty dynamics. Accordingly, it will compute the deprivations in each sector and conduct a deprivations count. The deprivations count will be the main variable used to develop an indicator for poverty dynamics.

The study utilizes a unique panel dataset that follows 3,000 children over 16 years. The Young Lives has collected four rounds of data on children’s physical and mental growth over time, their school progress and time use, their food consumption and health condition, household assets and socio-economic conditions as well as access to services, access to social protection programmes and experience of socio-economic shocks. The data is collected from two cohorts, with the first round of children from the first cohort of children aging 1 year-old and the second cohort, 8 years-old.

This gives the opportunity to track the change in the number of deprivations over the study period 2001–2013 and reduces the variability that may have otherwise been caused by using data from different pools of children over survey rounds. Moreover, it gives the opportunity to add multiple age groups in the same dataset, particularly, in the second and third survey rounds. This would allow the study to capture both the nutrition and health dimensions of under 5 children and education and information variables that apply to children between age 5-17.

Drawing on the MODA to identify the deprivation status of children, the study categorizes children as chronically poor, transient poor and non-poor in trying to investigate the dynamics of childhood deprivations across the four survey rounds. Building on studies of chronic poverty (CPRC, 2009; Hulme & Sen, 2004), the study categorizes children that have been classified as deprived for four rounds of Young Lives surveys are chronic poor, those that have been deprived for one or two rounds as transient poor and those that have never been in poverty as never deprived.

Accordingly, the objectives of the study are to:

- Construct a dynamic multidimensional deprivation index based on the application of the capability approach
- Conduct a sector by sector analysis of deprivations
- Divide children for each period into MOD non-poor, MOD moderately poor and MOD severely poor
- Identify the transition of children across the poverty categories (chronically poor, transient poor and never poor) and explore the determinants of poverty dynamics
- Analyse poverty trajectories of children (the different types of poverty and movement between categories) through the gender of child and location-based disaggregation
2. Developing MODA

2.1. Identification of dimensions, indicators and deprivation thresholds

Aiming to holistically capture children’s deprivation, the MODA uses multiple indicators to designate a child as deprived in each dimension. There are five dimensions that are taken into account for each child. The water, sanitation and housing dimensions are common for both age groups, the 0-5 years and 5-17 years. The nutrition and health dimensions are considered only for children in the 0-5 age group. The education and information dimensions are unique to the 5-17 age group. The indicators and thresholds used to capture the deprivation status of children are discussed below.

2.1.1. Age group 0-5

*Nutrition*

The first group of indicators for the nutrition dimension are the number of feedings per day and the diversity of their diet. This indicator is based on the standards of the WHO. The deprivation threshold for the first of the two indicators is whether the child has eaten three times in a day. Children that have eaten less than three times per day would then be considered deprived. Of those, the ones that have eaten from less than three food items per day are considered deprived in terms of dietary diversity.

The second group of indicators are weight-for-age and weight-for-height (wasting) z-scores. Children that are below the standard deviations from the median of the population are considered deprived in this dimension. The weight-for-height indicator of nutritional status is based on the MDG standard. Due to data constraints on child age in months of the second round of Young Lives, we are using the median of the population instead of the international median of the WHO standard to designate a child as underweight.

The two groups of indicators for deprivation in nutrition complement each other as the first group of indicators are direct indicators, while the latter reflect the outcome of the nutrition status of the child (De Neubourg et al., 2012b).

The Young Lives study does not have data on the number of meals and dietary diversity in its first round, hence, we will be relying on the second group of indicators only for the first round.
### Table 2: Deprivation indicators by survey round and child cohort

<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td><strong>Dimension/Age</strong></td>
<td>YC - 1 year</td>
<td>OC - 8 years</td>
<td>YC - 5 years</td>
<td>OC - 12 years</td>
</tr>
<tr>
<td><strong>Nutrition</strong></td>
<td>Underweight, wasting</td>
<td>Underweight, wasting, Number of meals per day, Number of food items consumed per day</td>
<td>Underweight, wasting, Number of meals per day, Number of food items consumed per day</td>
<td>Underweight, wasting, Number of meals per day, Number of food items consumed per day</td>
</tr>
<tr>
<td><strong>Health</strong></td>
<td>Skilled birth attendant, BCG vaccination, Measles vaccination</td>
<td>Skilled birth attendant, DPT vaccination</td>
<td>Skilled birth attendant, DPT vaccination</td>
<td>Skilled birth attendant, DPT vaccination</td>
</tr>
<tr>
<td><strong>Education</strong></td>
<td>Access to information</td>
<td>Access to information</td>
<td>Access to information</td>
<td>Access to information</td>
</tr>
<tr>
<td><strong>Information</strong></td>
<td>Access to information</td>
<td>Access to information</td>
<td>Access to information</td>
<td>Access to information</td>
</tr>
<tr>
<td><strong>Shelter</strong></td>
<td>Overcrowding</td>
<td>Overcrowding</td>
<td>Overcrowding</td>
<td>Overcrowding</td>
</tr>
<tr>
<td><strong>Water</strong></td>
<td>Access to improved water source</td>
<td>Access to improved water source</td>
<td>Access to improved water source</td>
<td>Access to improved water source</td>
</tr>
<tr>
<td><strong>Sanitation</strong></td>
<td>Access to improved water source</td>
<td>Access to improved water source</td>
<td>Access to improved water source</td>
<td>Access to improved water source</td>
</tr>
</tbody>
</table>

### Table 3: Dimensions, Indicators and Threshold

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>Indicators</th>
<th>Deprivation Thresholds</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Nutrition</strong></td>
<td>Underweight</td>
<td>Deprived if children are two standard deviations below the median of the reference population</td>
</tr>
<tr>
<td><strong>Health</strong></td>
<td>Skilled birth attendant</td>
<td>Deprived if child was not born with a skilled birth attendant</td>
</tr>
<tr>
<td><strong>Education</strong></td>
<td>School enrolment</td>
<td>Deprived if child is not enrolled in school</td>
</tr>
<tr>
<td><strong>Information</strong></td>
<td>Access to information</td>
<td>Deprived if child does not have access to one of these items – radio, television, phone or a computer</td>
</tr>
<tr>
<td><strong>Shelter</strong></td>
<td>Overcrowding</td>
<td>Deprived if living with more than four household members per room</td>
</tr>
<tr>
<td><strong>Water</strong></td>
<td>Access to improved water source</td>
<td>Deprived if no access to protected water</td>
</tr>
</tbody>
</table>
Health
The health deprivation status of children also relies on a set of indicators. The standard indicator is whether a child between the age of 1 and 5 has received Diphtheria, Tetanus, and Pertussis (DPT) immunization, according to WHO and UNICEF’s standards. The Young Lives data set only has immunization data for measles and the Bacillus Calmette–Guérin (BCG) tuberculosis vaccination in its first round. Hence, we use these two forms of vaccinations to replace the DPT immunization indicator.

The second indicator is skilled birth attendance. Children born with a skilled birth attendant are considered not deprived in this sub-dimension. This indicator is added as a proxy to access to health care for children below the age of 5 by cross-country MODA studies (De Neubourg et al., 2012a). This variable is only available for the first round of the Young Lives surveys since it is the only round from which data is collected from children below the age of 5.

2.1.2. Age Group 5-17

Education
There are two indicators that form the education dimension. The first is compulsory school attendance measured for children of compulsory school age as per UNESCO’s standards. The compulsory school age in Ethiopia is 7 to 18 years.

The second indicator is education attainment, which is measured by primary school completion for children beyond the primary school age. The primary school completion age in Ethiopia is 14 years. This indicator is used to account for the formation of human capital and the quality and efficiency of school systems.

Both indicators are available in the Young Lives survey for the relevant age group. Children that are not enrolled in school while they are in the 7-18 years age category will be considered deprived in the compulsory school attendance component. The second indicator applies to children that are above 14-years-old but have still not finished primary school.

Information
Access to information is also one of the dimensions of child development. This indicator is based on a child’s access to a set of sources of information. A child is considered deprived in this dimension when he/she does not have an access to either a phone, a radio, a television or a computer. This is one of the dimensions for which the intersectionist approach is used for aggregation.

2.1.3. All Age Groups

Water
Different cross country MODA studies have adopted two indicators to capture access to water. The first is whether a child has access to a protected water source as per the guidelines of the WHO. The second indicator has to do with the distance one would have to travel to reach the water source. A child would be considered deprived in this dimension if the nearest safe water source is beyond 30 minutes walk. The Young Lives dataset does not contain information on the distance, however, so we depend only on the first indicator to capture this dimension.

Sanitation
Access to sanitation is based only on one indicator. A child is considered deprived in this dimension when the child does not have access to improved sanitation such as flush toilets or pit latrines. This indicator is based on the seventh MDG that targets better access to clean sanitation to help reduce diseases.
Shelter/Housing
Among the two indicators used to capture deprivation in shelter is UNHABITAT’s indicator for overcrowding. Children from households that have four or more members per room would be considered to live in an overcrowded house. The second indicator is related to the material used to build the shelter. Children living in a household whose floor and roof are made from natural materials that are unsustainable are considered deprived in this dimension. As stated by the WHO, the materials used to build the roof and floor of the house determine the level of protection against weather extremes such as heat, cold, wind and rain.

Protection and Participation
Although there is not sufficient data to discuss children’s exploitation through child labour which is one of the dimensions in the protection category, this dimension will be explored using qualitative data collected from children in the Young Lives survey. The same will be done for the social exclusion dimension of the participation category of MODA.

2.2. Aggregation, Weighing & Missing Values
All of the indicators used to conduct multiple overlapping deprivations analysis are based on the basic rights of children. Given the necessity of these dimensions for the physical and cognitive development of children, equal weight is attached to each of the dimensions in the analysis.

The study explores the extent of the variation in the deprivation indicators. Those indicators that do not have enough variation will be dropped from the analysis. In addition, deprivation indicators that have too many missing values are dropped. In cases where the missing values are not too many, the study considers these observations as non-deprived.

2.3. Thresholds
After aggregation, the study resorts to Alkire & Foster (2010) to frame thresholds for levels of deprivation. Children that are deprived in more than 30 per cent of the dimensions are considered moderately poor while children deprived in more than 50 per cent of the dimensions are considered severely poor.

Building up on studies on chronic poverty (CPRC, 2009; Hulme & Sen, 2004) and drawing on the MODA to identify the deprivation status of children, the study categorizes children as never poor, poor only once in four rounds, transient poor (poor in two or three rounds) and chronically poor (poor in all four rounds) in trying to investigate the dynamics and transition of childhood deprivations across the four survey rounds. However, it must be noted that in the case of poverty dynamics and transitions analysis, only the 30 per cent deprivations threshold of Alkire & Foster (2010) is used to categorize children as MODA poor in each of the survey rounds.
3. Data and Model Specification

3.1. Data

3.1.1. Quantitative data

The surveys were undertaken in 20 sentinel sites located in Addis Ababa, Oromia, Amhara, SNNP and Tigray regions. The regions were selected because 90 per cent of the population lived in these areas at the beginning of the first round. The Young Lives survey was conducted for four rounds, in the years 2002, 2006, 2009 and 2013. The data was collected from two cohorts of children. The younger cohort comprised of 1,999 children between the ages of 6 to 18 months in the first round. The older cohort was composed of 1,000 children between the ages of 7 1/2 and 8 1/2 years-old. The selection of the sample is gender neutral. In terms of location of residence, 60 per cent of the children live in rural areas while the remaining 40 per cent live in urban areas. The total attrition rate over eight years is 2.15 per cent for the younger cohort and 2.10 per cent for the older cohort indicating an annual attrition rate of 0.27 per cent, which is extremely small.

The household questionnaires of the last three rounds of surveys contained questions on livelihood and asset framework, household food and non-food expenditure and economic changes and recent life history. The data used for the analysis are mostly obtained from this part of the questionnaire in addition to the household demography variables.

3.1.2. Qualitative data

The qualitative study was conducted in five (two urban and three rural) of the 20 Young Lives study sites involving 60 children and their households. The sample comprised equal percentages of children in each cohort and gender group. The urban sites are: Bertukan from Addis Ababa, Leku from Hawassa, the capital city of Southern Nations, Nationalities and Peoples’ Region (SNNPR). Both are very poor neighbourhoods, characterized by poor housing and inadequate services. Tach-Meret from Amhara region, Leki from Oromia and Zeytuni from Tigray constitute the rural study sites. All the rural communities are prone to poor economic situations and many of the households are dependent on productive safety net transfers.

The qualitative study began in 2007 and continued in 2008, 2011 and 2014 involving four rounds of data collections. For this paper, we drew on data from the older cohort children and their households.

The data was collected using child-focused exercises such as Poverty Tree, group discussions and individual interviews. Throughout the four data collection rounds, both children and their caregivers were asked about the real-life experiences, including their economic situations, schooling, and activities including paid and unpaid work, aspirations, life opportunities and challenges. Much of the indicators are included in the MODA which seem to link to children's overall perception of well-being.

3.2. Model Specification and Estimation Methods

The literature directs to a set of explanatory variables that may affect children's status of deprivation. Among these are the education level of household heads (Alisjahbana and Yusuf, 2003; Hagos and Holden, 2003; and Quisumbing, 2007) and that of household members (Contreras et al., 2004; Dercon et al., 2011; Mills et al., 2004). Accordingly, the current study will add variables that show the average and maximum level of education within the household in estimating the determinants of childhood deprivations. The other variable of interest is the location of residence. Studies such as Bigsten and Shimeles (2007) and Contreras et al. (2004) have found that the

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1 Attrition rate is defined as the number of children who were untraceable or refused to answer the questionnaire divided by the total number of children. Attrition rate does not include death as death by itself is an outcome.
location of children’s residence does affect the level of deprivation they experience. Based on this evidence, the study will control for regional differences and variation in type of residence (rural/urban) to capture how these factors influence childhood deprivations. In addition, the size and composition of households were found to affect children’s well-being. The negative effects of household size on the well-being of children is documented in Baulch and McCulloch (1998); Kedir and McKay (2003) and Mills et al. (2004).

The effects of the composition of the household on children’s deprivation are also found in Alisjahbana and Yusuf (2003) and Kedir and McKay (2003). The study will, therefore, control for a set of household composition variables and household size in the estimation model. Idiosyncratic and covariate shocks have also been found to affect childhood poverty. Particularly, the illness of household members is found to deteriorate household and child well-being as evidenced by several studies (Contreras et al. (2004); Dercon (2002); Dercon, Hoddinott, and Woldehanna (2005); Quisumbing (2007); Woldehanna and Hagos (2014). Based on the empirical evidence in the literature, the current study will control for death/illness shocks in the estimation model. Similarly, experience of drought will be accounted for to control for the effect of covariate economic shocks. The gender of the household head and the child were also found to have an effect on children’s welfare (Bane and Ellwood, 1986; McKernan and Ratcliffe, 2005; Naifeh, 1998; Stevens, 1994).

Accordingly, the underlying model is

\[ D_i = a + b_1 H_i + b_2 E_i + b_3 G_i + b_4 S_i + b_5 L_i + e_i \] (1)

Where \( D \) is multiple overlapping deprivations, \( H \) is the vector of household composition variables, \( E \) is the vector of education variables, \( G \) is a vector of gender of the child and the gender of the head of the household, \( S \) is the vector of socio-economic shocks experienced by the household and \( L \) is the vector of location variables (type of residence and regional dummies), the subscript \( i \) denotes the individuals, which in our case are children.

The study will further extend this model to explore the effect of policy variables such as access to credit, land, irrigation and extension services on the dynamics of poverty. The extended model is

\[ D_{P2} = a + b_1 H_i + b_2 E_i + b_3 G_i + b_4 S_i + b_5 L_i + b_6 P + e_i \] (2)

Where \( DP \) is a categorical variable capturing poverty transitions and \( P \) is a vector of policy variables mentioned above.

**Pooled estimation** – To identify the determinants of multiple overlapping deprivations across children, the study will conduct a Poisson estimation using the pooled dataset from the four rounds of surveys. Poisson is chosen as an estimation model since the MODA is a count variable that only takes on values ranging from zero to five. Hence, the ordinary distributional assumptions of the OLS do not apply (Wooldridge, 2000). Therefore, one would need to resort to the Poisson estimation model to account for the count nature of the dependent variable. It is important to note that the pooled estimation does not control for time invariant unobservable characteristics that may bias the results.

**Fixed effects** – The study conducts a Poisson fixed effects estimation over the number of deprivations experienced by children. This allows the study to control for time invariant unobservable characteristics across survey rounds and provide more reliable results (Verbeek, 2004).

**State Dependence** – A Poisson estimation with lagged MOD is conducted to explore if there is state dependency between current level of MOD and past level of MOD which shows the existence of convergence in the long run. In addition, it helps control for any autocorrelation effect across survey rounds in the case of the pooled sample and increase the robustness of results.

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2 The variable takes on the value 0 if the child has never had derivations in more than 30 per cent of the dimensions; 1 if the child experienced deprivations in more than 30 per cent of the dimensions in only one round; 2 if the child experienced deprivations in more than 30 per cent of the dimensions in two or three rounds and 4 if the child has experienced deprivations in more than 30 per cent of the dimensions in all 4 rounds.
Multinomial Logit – The study also conducts a multinomial logit estimation of the dynamics of multiple overlapping deprivations of children. After categorizing children into chronic poor, transient poor, poor once and never poor, the study estimates the model to identify the drivers of the dynamics of childhood deprivation. Since the dependent variable is generated based on the change in MOD status of children across survey rounds in the fourth round, the estimation is conducted using only the data from the fourth round for all explanatory variables.

Prior to the econometric analysis, however, a detailed discussion of the trend in the sector-by-sector deprivation experienced by the children is presented. The section includes a discussion of single deprivations experienced by children in the overall sample followed with a presentation of single deprivation analysis results disaggregated by gender of child and type of residence. The analysis results are presented as the proportion/percentage of children that have experienced deprivation in each of the relevant dimensions for their age group.

In addition, a discussion of the trend in deprivation counts, the number of dimensions in which a child is deprived, is included. This gives a holistic view towards the extent of multi-faceted deprivations children experience. As it is the case for the sector-by-sector analysis, the results for the disaggregated samples by gender of child and type of residence is also discussed. Moreover, the results are presented as the percentage of children in any of the six possible categories of deprivation counts ranging from zero to five. Children that are not deprived in any of the dimensions would be in the first category, while those that are deprived in all dimensions would fall in the last category.

Lastly, based on the deprivations count of the MODA, children are categorized as not poor, moderately poor and severely poor, adopting the 30 per cent and 50 per cent deprivation thresholds respectively as introduced by Alkire and Foster (2010). The resulting tabulations are presented for the overall sample and the gender and location disaggregated outcomes.

Prior to the presentation of the estimation results, the following section discusses the sector by sector deprivation results and the deprivation count results along with the percentage distribution of the children across poverty categories. This is followed by a presentation of the qualitative study to enrich the results discussed in the descriptive statistics section.
4. Descriptive Statistics

4.1. Status of Deprivations – Overall sample

4.1.1. Deprivation by dimension

As discussed earlier, while the shelter, access to safe water and sanitation dimensions of the MODA are common to children of all age groups, the health and nutrition dimensions apply only to children below the age of 5. When children are above the age of 5, the education and information dimensions substitute the health and nutrition dimensions. This difference in the dimensions taken into consideration across age groups of children is made in light of the change in the relative importance of each of the dimensions as the children grow up (De Neubourg et al., 2012a).

The children in the younger cohort of the Young Lives study were 1 year-olds in the first round and 5-year-olds in the second round. Accordingly, the deprivation in health and nutrition are accounted for in the first and second rounds while the education and information dimensions are taken in for the third and fourth rounds, at which point the children in the younger cohort were 8 and 12 years old respectively.

As can be observed from Figure 1(a), the percentage of children that are deprived in the health dimension declined significantly in round two from close to half of the children being deprived in the dimension to less than 20 per cent. In contrast, the nutrition dimension saw a sharp increase from a very small 0.25 per cent in round one to 22 per cent in round two. The rise is triggered by the introduction of the dietary diversity indicator to the nutrition dimension, which was not included in round one because the children in the younger cohort were only 1 year-olds in the first round and hence the dietary diversity indicator did not apply to them. While the requirements for a child to be deprived in the nutrition dimension were either weight-for-age or weight-for-height z-scores to be two standard deviations below the sample mean in round one, we added the requirement of having at least three meals a day and having at least three food items per day in round two.

Similarly, the percentage of children in the younger cohort that are deprived in the education dimension declined from round three to round four. The same was found to be true for the information dimension although the reduction is modest when compared to the education dimension. Moreover, the proportion of children that are deprived in their access to safe water declined progressively across the four rounds from 53 per cent in the first round to 11 per cent in the final round.

For the shelter dimension, the percentage of children that are deprived fluctuated across survey rounds. The percentage of younger cohort children that are deprived in the shelter dimension decreased across the first three rounds while it increased by 5 per cent in round four. This can be explained by the rise in household size in round four, raising the number of children that are living in overcrowded households, which is one of the components determining the shelter dimension.

The proportion of children in the younger cohort that are deprived in the sanitation dimension decreased progressively across the four survey rounds. The number of children that are deprived in this dimension made up 62 per cent of the sample in the first round, in contrast to only 23 per cent in round four.

When we come to the children in the older cohort, in the first round of the Young Lives surveys, the children in this group were 8 years-old. Hence, unlike the case for the younger cohort, we do not need to substitute the health and nutrition dimensions with the education and information dimensions across the survey rounds. Given the age group of the children in the older cohort, we use the education and information dimensions in all four rounds.
The percentage of children in the older cohort that are deprived in the education dimension declined from the first round to the second. However, it increased significantly in round three, even beyond the level it was in round one. Although it declined in round four, it remained above the percentage of children that were deprived in the education dimension in round one. The substantial increase in the percentage of children that are deprived in the education dimension is due to the introduction of a primary education completion requirement. The children in the older cohort were 15-years-old in round three. This is beyond the primary school age designated by the Ministry of Education, which spans the ages of 7 and 14. The primary education completion component of the education dimension was added in round three for the school enrolment indicator. The substantial rise in the percentage of children that are deprived in this dimension can, therefore, be explained by the large number of children beyond the primary school age that have not completed primary school.

Unlike the education dimension, the percentage of children in the older cohort that are deprived in the information dimension declined consistently across the four survey rounds from 58 per cent in the first round to 13 per cent in the last round. The same trend is observed for the access to safe water and sanitation dimensions. The percentage of children that are deprived in terms of their access to safe water declined from 55.6 per cent in the first round to only 10.8 per cent in round four. Similarly, the percentage of children that are deprived in the sanitation dimension decreased from 63.1 per cent in the first round to 23 per cent in the last round. This trend resonates with that of the younger cohort which also showed a consistent decline in the proportion of children that are deprived in the dimension of the access to safe water.

In contrast, a fluctuation was observed in the percentage of children deprived in the shelter dimension. Despite the consistent decline in the proportion of deprived children in the first three rounds, there was a rise in the last round. The same trend was observed for the younger cohort. The increase in round four is likely to have resulted from the rise in household size leading to an increase in overcrowding in children’s households. Figure 1 below depicts the extent of overlapping deprivations experienced by both cohorts of children.

*The children in the younger cohort were 1 year-olds in the first round and 5 year-olds in the second round. The dimensions measured for these age groups are health and nutrition. These are replaced with education and information for round three and four as the children grow out of the 0 to 5 years range.
4.1.2. Multiple Overlapping Deprivations – Deprivation Count

Looking at the distribution of the children in the younger cohort across different levels of deprivation in Figure 2(a), it can be observed that the concentration of the children to the left of the distribution has progressively increased across the survey rounds. This is reflected in the increase in the proportion of children that are not deprived in any of the dimensions from only 1.5 per cent in the first round to 27 per cent in the last round. However, the proportion of children that are deprived in one or more dimensions was found to fluctuate across survey rounds. In rounds one and two, the number of deprivations were concentrated in two dimensions, while the concentration shifted to just one dimension in rounds three and four. Although the largest proportion of children could be found in this category in both rounds three and round four, the percentage was much higher in round four (38.4 per cent) than round three (26.4 per cent). In the last round, children that are deprived in one dimension formed the largest proportion with 38.4 per cent of the children to be found in that category. The percentage of children that are deprived in two, three or four dimensions continuously declined over the four survey rounds. In contrast, there was a consistent increase in the proportion of children that are deprived in just one dimension. The same trend is observed in the proportion of children that are not deprived in any of the dimensions. Figure 2 below shows the distribution the number of deprivations experienced by children.

Figure 2: Trend in deprivation count

As can be observed from Figure 2(b), the distribution of children in the older cohort across the different deprivation categories was concentrated in the centre. The majority of the children were deprived in three or four dimensions in the first round. The concentration shifted into deprivation in just one or two dimensions in round two. The largest proportion of children that are not deprived in any of the dimensions was also observed in round two with 21.7 per cent of the children to be found in this category. The largest proportion of children were deprived in two or one dimensions.
The percentage of children that are not deprived in any dimension declined significantly to 7.5 per cent in round three. The likely reason for the reduction is the significant increase in the percentage of children in the older cohort that were deprived in the education dimension in the same round. This resulted from the introduction of the primary education completion requirement to the education dimension for children beyond primary school age of 14 years-old in round three.

Although the majority of the children were concentrated in the deprivation in one and two dimension categories, the proportion of children that are deprived in either three, four or five categories also declined in round four. In contrast, the proportion of children that are deprived in zero dimensions, increased to 18 per cent in round four from 7.5 per cent in round three.

4.2. Deprivations by gender of child

4.2.1. Deprivation by dimension

Disaggregating the data by the gender of the child, we have been able to see the difference in the incidence of deprivation in the different dimensions. As can be observed from Figure 3 (a and b), the statistics for children in the younger cohort show that the proportion of boys that are deprived in the health dimension are smaller than that of the girls in both round one and round two.

Unlike the health and nutrition dimensions, the proportion of boys that are deprived in the education dimension are greater than girls in both round three and round four. However, a decline of the same degree is observed for both boys and girls. As for the information dimension, although a decline is observed, the extent of the change is not as large as the education dimension.

The difference in the extent of deprivation among boys and girls in the shelter dimension shows that although the proportion of boys that are deprived was slightly smaller in round one, the reverse was observed in the following two rounds. The proportion of boys that are deprived in the access to safe water dimension was smaller than that of girls in round one while the opposite was true in round two. While the proportion of children with deprivation in safe water is similar for both groups in round three, the percentage of boys that do not have access to safe water was smaller than the same group of girls in round four.

With regards to the sanitation, the proportion of boys that are deprived in this dimension was found to be larger than the same group of girls in the first three rounds. However, in round four, the two groups had the same proportion of children deprived in sanitation.

As it is the case for the younger cohort, the proportion of boys in the older cohort that are deprived in the education dimension is larger than girls in the same group in all survey rounds except the third round (see Figure 3c and 3d). As for the information dimension, the percentage of deprived boys was greater than girls in round one. While the percentage of deprived children was identical in both groups in round two, a greater share of girls were deprived in this dimension than boys in rounds three and four.

In terms of the shelter dimension, boys were more deprived in the first round while the reverse was true in round two. In round three, there was no significant difference between the two groups. In the last round, however, the proportion of girls that are deprived in the shelter dimension were greater than the same group of boys by close to 7 per cent. The same trend was observed for sanitation. As for the case of the access to safe water, boys consistently have better access than girls. In contrast, a smaller proportion of girls were deprived in the sanitation in round one and round three than boys. The opposite is true for round two and four.
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**Figure 3: Deprivation dimensions by gender of child**

*The children in the younger cohort were 1 year-olds in the first round and 5 year-olds in the second round. The dimensions measured for these age groups are health and nutrition. These are replaced with education and information for round three and four as the children grow out of the 0 to 5 years range.*

4.2.2. Multiple overlapping deprivations – Deprivations count

Considering the children in the younger cohort, the proportion of boys that have no deprivation was smaller than girls in round two while the opposite was true in the last round. The proportions were almost identical for both groups in round three. The percentage of girls that are deprived in one dimension was smaller than boys in this category in all rounds except for the first. The same trend is observed among children that are deprived in two dimensions.
With regards to children that are deprived in three dimensions, no stark difference is observed between boys and girls in all rounds. As for the children that are deprived in four dimensions, the proportion of girls was slightly smaller in the first three rounds although the reverse was true in last round.

As for the older cohort, the proportion of girls that have no deprivations were greater than the percentage of boys in the same category in round two. The reverse is true in all other rounds. With regards to the proportion of children that are deprived in one dimension the proportion of girls in this category were smaller than boys in the first two rounds. However, the opposite is true for the subsequent two rounds. The proportion of girls that are deprived in two dimensions were more than boys in the same category in the first and last rounds. While boys formed a greater proportion than girls in round two, no significant difference is observed in round three.

Figure 4 below presents the percentage distribution in the number of deprivations experienced by boys and girls.

**Figure 4: Deprivation count by gender**
4.3. Deprivation by location

4.3.1. Deprivation by dimension

The study also explored the difference in the level of deprivations experienced by children living in the rural areas in comparison to children in urban areas. As can be observed from Figure 5 (a and b) below, the proportion of the younger cohort children that were deprived in the health dimension are greater in the rural areas when compared to children in urban areas in round one and two of the Young Lives survey. The same was found to be true for the nutrition dimension. Nonetheless, the extent of the difference narrowed down in round two for both the health and nutrition dimensions.

The education and information dimensions are substituted for the health and nutrition dimensions in round three and four as the children in the younger cohort were older than 5 years in these later rounds. Similar to the health and nutrition dimensions, however, the proportion of rural children that are deprived in the education and information dimensions were found to be higher than those of the urban children in rounds three and four. Nevertheless, the extent of the decline over the last two rounds in these two dimensions was much larger for rural children than urban children.

As for deprivations in the shelter dimension, although the percentage of rural children that are deprived in this dimension declined consistently over the four rounds, the number is observed to increase in round four among urban children. It is to be noted that, despite the continuous reduction in the percentage of rural children that are deprived in the shelter dimension, two-thirds of the rural children still fall in this category.

With regards to the sanitation and access to safe water dimensions, a large difference is observed between rural and urban children. A much greater proportion of children in the rural areas are deprived in these dimensions than their urban counterparts. The difference in the proportion of deprivations between the two groups, nonetheless, declined over the four rounds. The extent of deprivations in the education, information, shelter, safe water and sanitation dimensions among children in the older cohort show that the proportion of rural children that are deprived are greater than children in urban areas in all four rounds.

For instance, in the education dimension, the proportion of children that are deprived in the education dimension are much larger in rural areas than in urban areas despite the fluctuation in the trend across the four rounds. The same is true for the information dimension. Despite the consistent decline in the proportion of children that are deprived in the information dimension regardless of where they live, the percentage of older cohort children that are deprived in the information dimension was always higher among rural children than urban children. However, the extent of the reduction is much greater for rural areas. As can be observed from Figure 5 (c and d), the proportion of rural children that are deprived in the information dimension decreased from 73 per cent in the first round to 21 per cent in the last round.

With regards to the shelter dimension, although a consistent decline was observed in the first three rounds among both rural and urban children, the proportion was found to increase in the last round. Despite the similarity in the trend across the four rounds, the level of deprivation was found to be much higher among rural children than urban children. Similar to the case for the younger cohort, the proportion of children that are deprived in the access to safe water and sanitation dimensions is much greater among rural areas than urban areas in all rounds. Nevertheless, the degree of the decline in the proportion of deprived children is faster in rural areas than urban areas. Figure 5 presents the extent to which the different dimensions of deprivation are experienced by children in rural and urban areas.
The children in the younger cohort were 1 year-olds in the first round and 5 year-olds in the second round. The dimensions measured for these age groups are health and nutrition. These are replaced with education and information for round three and four as the children grow out of the 0 to 5 years range.
4.3.2. Multiple overlapping deprivations – Deprivations Count

The distribution of rural and urban children across different levels of deprivations show that, in round one, the majority of the urban children were concentrated in the two dimension category while the majority of the rural children fell in the three dimension category (see Figure 6). This shows that rural children were worse off in terms of the number of deprivations they experience in the first round. In round two, a shift in the distribution is observed for both the rural and urban children. Unlike the case in round one, the majority of the children are in the one dimension category regardless of where they live. More interestingly, one third of the children in the urban areas were not deprived in any of the dimensions.

In round three the distribution shifted further to the left among urban children, with 47 per cent of them found to have no deprivation in any of the dimensions. Moreover, there was no urban child that has experienced deprivation in five dimensions. However, among rural children, there has been a reduction in the proportion of children deprived in just one dimension and a rise in the proportion of children deprived in all other categories. This indicates the deterioration of rural children’s position in terms of overlapping deprivations.

Although the majority of urban children experienced deprivation in at least one dimension category in round four, more than 80 per cent of the children experienced deprivation in either none or just one dimension. This shows a significant improvement from round one which accounted for only 20 per cent of urban children in this category. Similarly, there has been a significant increase in the proportion of rural children deprived in one or no dimensions. Around 50 per cent of rural children fell in this category in the last round in contrast to just 6 per cent in round one. The remaining 50 per cent of the rural children, however, still experience deprivation in at least three dimensions.

In the first round of Young Lives survey, the distribution of the children in the older cohort who live in urban areas across different levels of deprivation showed that they are evenly distributed except for a slight concentration in the two dimensions category. In contrast, the majority of the children in the rural areas were concentrated in the four dimensions category. This shows the seriousness in the level of deprivations experienced by rural children in the first round. The extent of the problems seems to have been alleviated in round two with the majority of the rural children experiencing a maximum of two dimensions. The situation is even better for children in urban areas with close to 70 per cent of the children experiencing deprivations in just one or no dimensions.

In round three, the distribution shifted to the right showing the worsening in the deprivation status of the children. For instance, the majority of the rural children now fall into the three dimensions category. The level of the decline is, however, not as large among urban children, with close to 56 per cent of the children still experiencing deprivations in just one or zero dimensions.

In the last round the majority of the children from rural areas experienced deprivations in two dimensions while for the majority of the urban children, it was only one dimension. The children in urban areas that are deprived in zero, one or two dimensions form 85 per cent of the children in contrast to 70 per cent among rural areas. Figure 6 below presents the distribution of the deprivation dimensions of children in urban and rural children.
Figure 6: Deprivations count by type of residence

Younger cohort

![Graph showing deprivations count by type of residence for younger cohort in rural and urban areas across different rounds.]

Older cohort

![Graph showing deprivations count by type of residence for older cohort in rural and urban areas across different rounds.]

4.4. Status of Poverty – Overall Sample

The percentage of younger cohort children that are not MOD poor (have less than 30 per cent deprivations) significantly increased over the survey rounds. The proportion of children in this category increased from close to 18 per cent in the first round to 65 per cent in the last round. Contrastingly, the share of moderately poor household members declined consistently over the four rounds. The reduction is, however, much greater for the share of severely poor children. The proportion of children in this category declined from 45 per cent in the first round of the Young Lives survey to 12.5 per cent in the last round. Figure 7 presents the percentage distribution of the children across the poverty status categories in each survey round.

Unlike the younger cohort, the proportion of children in the older cohort that are not poor fluctuated over the survey rounds. It initially showed significant increase in the second round. Nonetheless, the number declined in the third round. As has been explained in the previous sub section, this is due to the introduction of the primary education completion component to the education dimension triggered by the fact that children in the older cohort turned 15 years old in the third round. However, the last round did see an increase in the percentage of children that are not MOD poor.

Although the same fluctuation is observed, a significant overall decline in the percentage of children that are severely poor has been observed over the four rounds. The proportion of children in this group declined from 61 per cent in the first round to 23 per cent in the last round. In contrast, there has been a consistent increase in the proportion of children in the moderately poor category.

Figure 7: Status of poverty

4.5. Status of Poverty – Gender Disaggregated

The gender disaggregated results show that although the proportion of boys in the younger cohort that are not MOD poor was greater than girls in the first two rounds, the reverse was found to be true in the third and fourth rounds. For the moderately poor and severely poor categories, however, the proportions are evenly distributed between the two gender groups and the different categories of poverty status. Figure 8 presents the gender disaggregated percentages of children in the three poverty status categories.

With regards to the older cohort, the distribution shows that the proportion of girls that are not MOD poor are much greater than boys. However, the situation was reversed in the following rounds. The percentage of boys in this category were larger than girls in rounds two, three and four. In contrast, the proportion of girls that are
severely poor was smaller than their boy counterparts in the first round. Nonetheless, the opposite was true for following two rounds. As for the moderately poor category, the proportion of male children was consistently greater than the proportion of female children in all rounds except for the third round. Figure 8 (c and d) presents the gender disaggregated results for poverty status of older cohort children.

Figure 8: Status of poverty by gender

4.6. Status of Poverty – Type of residence disaggregated results

Children's status of poverty as disaggregated by the nature of their residence shows that the percentage of younger cohort children that are not MOD poor is greater in urban areas than rural areas in all rounds of the Young Lives survey. However, there is a fluctuation in the extent of the difference in the proportions of the two groups. The difference in the percentage of children that are not MOD poor between rural and urban areas increased significantly in round two followed with a slight decline in the following rounds. In contrast, the proportion of urban children that are severely poor was much smaller than that of their rural counterparts in all four
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rounds. As for the moderately poor category, the proportion of urban children that fell into this category was greater than the same type of children in rural areas in the first round. Nonetheless, the opposite is observed for remaining rounds. Figure 9 (a and b) presents the status of poverty of younger cohort children disaggregated by residence.

A similar trend is observed among older cohort children. The percentage of urban children that are not MOD poor is much higher than the same children in rural areas in all four rounds. As it is the case for the younger cohort, although the proportion of rural children that are moderately deprived was smaller than the same type of children in urban areas in the first round, the opposite is true for the following rounds. The percentage of rural children that are in the severely poor category was found to be higher than urban children in the same category in all four rounds. Figure 9 below depicts the distribution of children across different poverty categories by residence.

Figure 9: Status of poverty by type of residence
5. Qualitative Evidence

Children living in poverty are best placed to give information on what poverty means for them. In light of this, the Young Lives study has conducted four rounds of qualitative studies to learn what drives children’s poverty from a normative point of view and to obtain contextual information to better understand the results obtained from quantitative studies conducted using Young Lives data. It also explains the processes of moving in and out of poverty.

In this study, we will draw on this qualitative dataset to enrich the descriptive statistics that show the trend of the different dimensions and the deprivations count. Although an overlap analysis was not conducted due to the scope of the study, the qualitative evidence shows how the multiple dimensions of the deprivations overlap to worsen the poverty of the children. In addition, it provides some qualitative evidence on the exploitation and participation categories of the MODA which could not be analysed quantitatively due to the lack of data. This section will also present a case study on the intergenerational nature of poverty.

5.1 Children’s perception of poverty

As part of the qualitative research, the children in the older cohort were asked to list what it means for them to be living in poverty. This was done to understand how these poor children perceive the situation they are in. Figure 10 presents a snapshot of the definitions of poverty given by 17 year-olds in the study. As indicated in the figure, children drew and discussed what poverty means to them. The roots of the tree (in green) show the causes of poverty, the stems (in orange) highlight the indicators and the branches (in yellow) represent the consequences of poverty. The complete list from all five communities divided by gender and location is illustrated in Table 4.

Figure 10: Children’s depiction of Poverty Indicators through the Poverty Tree (Zeytuni Site, Tigray, 2011).
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Table 4: Children Perception of Poverty, FGD, 2011

<table>
<thead>
<tr>
<th>Poverty indicators</th>
<th>Causes of poverty</th>
<th>Consequences of poverty</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Urban boys</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not enough food</td>
<td>Unemployment</td>
<td>Poor health</td>
</tr>
<tr>
<td>Wearing torn clothes</td>
<td>Lack of available jobs</td>
<td>Quit school to work</td>
</tr>
<tr>
<td>Living in crowded housing</td>
<td>Poor income management (extravagance/lack of saving habits)</td>
<td>Family conflict</td>
</tr>
<tr>
<td>Earning a living with aid</td>
<td>Laziness</td>
<td>Hopelessness</td>
</tr>
<tr>
<td>No materials for learning, and not</td>
<td>Lack of start-up capital for business</td>
<td>Become street child and addicted to bad habits</td>
</tr>
<tr>
<td>going to school at all</td>
<td>Being uneducated (to work or run business)</td>
<td>Becoming a burden to a nation</td>
</tr>
<tr>
<td>Very low income</td>
<td>Having large family size (many children)</td>
<td>Having a worse future</td>
</tr>
<tr>
<td>Working as wage labourer</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Urban girls</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not enough food</td>
<td>Lack of job opportunities</td>
<td>Not going to school</td>
</tr>
<tr>
<td>Wearing tattered clothes</td>
<td>Illiteracy/not being educated</td>
<td>Being worried about life</td>
</tr>
<tr>
<td>Living in confined and rented houses</td>
<td>Lack of interest to do any kind of work</td>
<td>Feeling inferiority or low self-esteem</td>
</tr>
<tr>
<td>Not going to school or not having</td>
<td>Extravagance – poor management</td>
<td>Exclusion</td>
</tr>
<tr>
<td>necessary school materials</td>
<td>Family conflict</td>
<td></td>
</tr>
<tr>
<td>Lack of regular income/ unemployed</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Rural boys</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not having enough food</td>
<td>Lack of preferred job opportunities/ laziness/ dependency on aid</td>
<td>Hunger</td>
</tr>
<tr>
<td>Not having enough clothes</td>
<td>Having many children – big family size</td>
<td>Drop out of school to work</td>
</tr>
<tr>
<td>Living in poor housing</td>
<td>Extravagance (fathers)</td>
<td>Always worried</td>
</tr>
<tr>
<td>Lacking school materials</td>
<td>Shocks (drought, death of animals)</td>
<td>Being insulted/seen inferior</td>
</tr>
<tr>
<td>Not having enough farm/irrigation</td>
<td>Lack of farmland/irrigation and livestock</td>
<td>Hopelessness/stress</td>
</tr>
<tr>
<td>land and livestock</td>
<td></td>
<td>Poor school performance</td>
</tr>
<tr>
<td>Working as wage labourer</td>
<td></td>
<td>Being unhealthy</td>
</tr>
<tr>
<td><strong>Rural girls</strong></td>
<td></td>
<td>Migration</td>
</tr>
<tr>
<td>Lack of enough/variety of food</td>
<td>Early marriage</td>
<td>No time for play</td>
</tr>
<tr>
<td>Wearing torn clothes/no shoes</td>
<td>Not being educated</td>
<td></td>
</tr>
<tr>
<td>Not having enough farmland / livestock</td>
<td>Poor job opportunities</td>
<td></td>
</tr>
<tr>
<td>Living in poor housing</td>
<td>Big family (many children)</td>
<td></td>
</tr>
<tr>
<td>Not attending school or lack of</td>
<td>Landlessness</td>
<td></td>
</tr>
<tr>
<td>necessary school materials</td>
<td>Laziness</td>
<td></td>
</tr>
<tr>
<td>Poor health/skinny</td>
<td>Extravagance</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Shocks (illness/death of family head, drought, Death of livestock)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: FGD (2011)
Although they differ by gender and location (see Table 4), the indicators of poverty as identified by the children themselves could be summarized as follows:

1. **Food**: insufficient amount or variety of food
2. **Housing**: living in an overcrowded house or poorly constructed house; living in rented house
3. **Clothing**: wearing tattered clothes
4. **Education**: not attending school, attending irregularly, quitting school, not having school materials
5. **Lack of resources**: lack of regular income (urban) or lack of farmland or livestock (rural).

The poverty indicators identified by children resemble the dimensions identified for the MODA. They relate poverty to their overall well-being including their physical well-being, developmental needs, migration, family conflict, early marriage (for girls), experiences of bad habits and social exclusions. The majority of children included in this study have experienced many of these and some illustrative examples are presented below.

### 5.1.1. Shelter

Observations and data from interviews show how children faced overlapping dimensions of poverty. Housing remains a critical problem for children living in poor households. For example, during our visit in 2011, Denbel’s family, from Leku, had one room divided with a curtain into two sub-rooms with one serving as a bedroom and the other as a cooking room. The wall was built from mud, which was cracking. The roof was very old which exposed the family to leakages when it rained. There were some school materials like books, exercise books and pens placed in a big box. There was no TV, radio or computer. The child sits either on the box or on the bed when he studies (see picture below).

![Image of a room](image_url)

Many other children expressed the view that housing was a major challenge in their lives. There were not enough rooms for sleeping, studying or getting other services. Fatuma from Bertukan, Addis Ababa, said, in the evening we prepare the mattress to sleep on but in the mornings we have to roll it and move it outside as there is not enough space in the room (2011).

Similarly, Tsega, from Leku, Hawassa had the same problem of housing. Five family members live in a single room where her mother and two siblings sleep on the single-bed while Tsega and her sister sleep on the floor. Both rural and urban children face different dimensions of poverty. Defar lived with his six family members in a compound in Tach-meret which had only one hut. The compound had a toilet hole with no walls. The single room in the hut is used for cooking and sleeping for his parents and younger siblings. There was no chair or table. They sit on a mud ledge. Defar and his elder sibling sleep on one side of open compound where the cattle lived.
The family is dependent on safety net for their food needs. Defar and his father also collected stones in the area to be sold in the town nearby. Working in the sun and sleeping in the cold exposed Defar to health problems. He said, when I carry stones in the sun, I faint and become unconscious. My parents took me to the holy water but it did not help (Defar, Tach-meret, 2007).

Defar’s family was too poor to offer basic needs such as proper shelter, food, clothing, health care and above all relieve him from having to do paid work that affected his health and schooling.

In urban communities, families may not have their own house; instead they live in rented or shared houses. Poor families who migrated from rural areas may find it hard to find sufficient shelter and that may impact the life of their children. Tagessech is a case in point. Tagessech, her brother and her mother migrated to Hawassa from a rural area in southern Ethiopia following her mother’s divorce. Given that the mother married at younger age, she had complications during delivery and she opted to divorce and move to town. They had to settle in her uncle’s house in Hawassa but life was not easy for the family. Tagessech explains how housing problem and overall poverty affected her schooling and other life aspects over the years as follows:

“When my mother feels well, she sells roasted beans (qolo) in the street. She gets the beans on credit. I also sell qolo, during the half day when I do not have school. … Because of the long illness of my mother we remained dependent on her uncle. I remember when I was nine, we quarrelled with her uncle and he kicked us out of the house. We had to spend two nights in two different neighbours’ houses. People begged him and we returned. … I sometimes think I wouldn’t have to go through all these problems if I had my parents been together.” (2007)

Poverty was observed to persist for Tagessech as the data from subsequent interview showed. In 2008, she said:

“As I am poor, I may not wear the clothes that the rich wear and I may not have the shoes that they have. I may not eat the food like other children. But I eat what I can get at home and there is shortage of food.”

Aged 17 she reported that her educational performance was affected because she could not study at home as she still continued to live in an overcrowded house. This is a case where the overlapping impacts of poverty on shelter, clothing, and schooling is highly evident.

5.1.2. Education and Nutrition

Children across the study sites stated that shortage of food was prevalent among the poor. For example, boys who participated in group discussion stated that in school classrooms, children from poor families “think of food to be eaten when they return home” (2008). Another girl said, “I do not attend school well. I think about food. I usually go to school without breakfast. Sometimes I may not have food for lunch or dinner.” (Tsega, Leku, 2011). “Children from poorer families will have less attention in classrooms because such children are mostly thinking of food to be eaten at home and family problems” (Boys FGD, Leku, 2011).

5.2. Exploitation and Participation

In addition to the dimensions for which there is sufficient data to quantify, this study has conducted a qualitative analysis to shed light on the child labour and social exclusion categories of the multiple overlapping dimensions analysis. The results of qualitative analysis are discussed as follows.
5.2.1. Exploitation of Child Labour

Many children who find it hard to attend school without food and enough school materials opt for paid work to survive. As a result, school attendance for these children becomes irregular, impacting their progress. Except for one rural boy, all children included in the qualitative study attended some school at various grade levels. Owing to late entry, interruptions, repetitions and dropouts, by age 17 only four children (all girls) were able to finish primary school. Those in school were attending grades between two and eight. This suggests that the educational outcomes were extremely low, demonstrating one dimension of child poverty.

The reasons given for dropping out of school included economic problems, paid work and marriage (for girls). All children reported to have been engaged in some type of non-school activities, with half of them doing paid work to subsidize their families and earn a living. In rural areas, poverty forced them to work for wages in stone crushing plants and haricot bean picking, while urban children washed cars, tended shops, worked as taxi attendants or street vendors.

Child labour disrupts their schooling and affects their health. Defar who dropped out of fifth grade explained how poverty forced him to leave school and exposed him to hunger and health problems:

"When my poor parents failed to provide me with school materials and enough food, I discontinued my education and I moved to a nearby town and began earning a living by carrying things for people at the bus station. … I sleep on the veranda and am cold which makes me very thin. … I feel inferior to my friends who are attending school" (Tach-Meret, Amhara, 2011).

Beletech, from Leki, who at 17-year-old was just in fifth grade, experienced school interruptions to do paid work in irrigation fields in her community. She had to sponsor her schooling through paid work:

"As I am poor, I do paid work for half-day to earn money for basic needs and school materials."

Tufa, 17, from the same community said:

"I am just in grade two. Every year, I get enrolled but it is soon interrupted because my family is too poor to afford my schooling … My family sharecropped our farmland because we do not have oxen. I catch fish in the nearby lake for sale and do paid work to subsidize my poor family" (Leki, 2011).

Bereket, from Bertukan who has been washing cars since age 11 was injured when fixing a flat tire in 2009 and had to be hospitalized for some weeks. The injury not only affected him economically, requiring high medical costs and preventing him from working, but also meant he had to interrupt his education for one year. All of these specific cases illustrate how the different dimensions of children’s lives including education, health, nutrition and child labour are heavily interlinked and related to poverty.

5.2.2. Social Exclusion

The data also strongly indicate that poverty exposes children to psycho-social problems and exclusions, which is one dimension of the participation category of the MODA that is explored through qualitative data. Children who experienced generally lower self-perceptions felt excluded by their peers and communities at large. Across the sites of the Young Lives survey, children stated that poor children felt lower self-esteem and self-efficacy. Poor children "feel shy in front of their [non-poor] friends because they don't wear clothes and shoes like them" (Girls FGD, Bertukan, 2011). Children from poor families segregate themselves from others since they "lack self-confidence" (Denbel, Leku, 2011). According to Tsega, one of the children interviewed in Leku area, “being
poor results in undermining oneself or feeling inferior, getting mad!” (Leku, 2011). Poverty is so stressful and as Fatuma from Bertunkan puts it: “poverty kills *hilina* (conscience)!” Low self-perception forces poor children to distance themselves from non-poor peers. As the boys from Tach-meret described it:

> “Nobody looks at the poor child as equal to the rich child. Nobody may care about the poor child. Thus, the poor child thinks that he is not an equal person to the other children” (boys FGD, Tach-meret, 2011).

Exclusion is not just a social phenomenon but it also entails economic consequences. Children from Bertukan, Addis said:

> “a boy’s clothing condition makes him appear like a thief. If he is not dressed well, the people would not trust the man. Even when they hire him, they tell others to have a good look over him, because they do not trust him” (Boys FGD of Bertukan, 2011).

Among the FGD participants, Bereket, who washes cars, said:

> “If he is not dressed well, they will suspect him. They might say that he has come to spy or to steal. I take this as one obstacle for work” (Bertukan 2011).

Bereket’s perception was based on his real experience while working for others. This suggests that lack of clothing is not just a material deprivation that affects health or schooling, but contributes to social exclusion and so creates an obstacle to employment. The key issue worth noting is that poor children who do not wear proper clothing find it hard to obtain work to gain income to change their life because of the stigma associated with their dress.

### 5.3. Intergenerational Poverty – The Case of Haymanot

The qualitative data also reflect the intergenerational aspects of poverty. There are many children whose developmental needs are not being met as they lack resources to carry them through to adulthood. For instance, uneducated children are more likely to end up poor as adults with possible contribution to the overall national poverty.

The same applies to overlapping deprivation. It all starts from childhood and continues through young adulthood. One of the many cases is presented below. It is a story of Haymanot from Zeytuni, Tigray, who grew up in poor households facing multiple shocks that dictated the course of her life. Her parents divorced when she was just 7 years-old. Since her mother was unable to afford to raise her, Haymanot had to move to her aunt’s to attend school. After three years, she had to return home to care for her ailing mother. She attended school with the social safety net support her mother obtained. However, the food support became increasingly insufficient mainly due to the drought affecting the crop yields from their small farms. Haymanot quit school in fifth grade and began working in a stone crushing plant for wages. She faced multiple injuries at work and the job was very difficult for her. Pressured by her mother, she married at 16, ending her educational hopes. Unfortunately, the poor economic situation of her husband led to their divorce after a year. Haymanot returned to her mother’s house with her baby girl and resumed working as a daily labourer. Below is a figure that presents the timeline of the major incidents in Haymanot’s life reflecting the intergenerational aspects of poverty.

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Dynamics of Multi-Dimensional Poverty Among Children in Ethiopia:
This case illustrates two points. First, different aspects of child poverty not only overlap but also reveal themselves more significantly at certain stages of a child’s life. This is in line with the lifecycle approach followed by the MODA to address the varying needs of children at different points of their childhood. Second, child poverty does not end at childhood. It is lasting and has intergenerational aspects.
6. Results and Discussion

6.1. Determinants of Multiple Overlapping Deprivations of children

To identify the determinants of Multiple Overlapping Deprivations among children, the study conducted Poisson estimations on the pooled sample without accounting for the rounds of the surveys. The pooled regressions were conducted on two estimation models with the first one not accounting for the lagged value of MOD in contrast to the other one which controls for lagged effects. In addition, fixed effects Poisson estimation was conducted to control for time invariant unobservable characteristics that affect multiple overlapping deprivations by accounting for the survey rounds. The results are discussed in the following subsections.

6.1.1. Pooled Regressions

The estimation accounted for the household composition variables that capture the number of children below the age of 7, between 7 and 17 years, adults between 17 and 65 and elderly above 65 for both male and female household members. Among these household composition variables, the number of boys and the number of girls below the age of 7 were found to have a statistically significant effect on MOD of children. The number of household members in this age group was found to have a positive relationship with the number of deprivations experienced by children. This is true for both male and female household members. Similarly, the number of male household members above the age of 65 was found to have an increasing effect on the dependent variable.

On the other hand, the number of female household members between the age of 17 and 65 was found to reduce the number of deprivations experienced by children. This result is expected considering their possible participation in the labour force. In addition, given the fact that children below the age 7 and the elderly are part of the less productive section of the household and they contribute more to the household’s consumption than the income, this result is anticipated.

The average education of household members was also found to have a statistically significant effect on children’s experience of deprivations. This explanatory variable was found to decrease the number of deprivations experienced by children. This is in line with the premise that households with more human capital endowment would have higher earning capacity and, thus, can afford to pay for different goods and services that would prevent children from experiencing the different sources of deprivations.

A set of dummy variables that represent households’ experience of idiosyncratic and covariate socio-economic shocks were accounted for in the estimation. The results show that both dummy variables that capture household’s experience of shocks are statistically significant. One of the idiosyncratic shocks, a household’s experience of employment loss, was found to have a positive relationship with the number of deprivations experienced by children. Children that live in a household that has undergone a loss of employment experience deprivations in more dimensions than children that have never experienced such a shock. Similarly, households’ experience of death of livestock also increased number of deprivations. Given the significant reduction in income that may result from the loss of employment or the loss of productive asset such as livestock, the higher number of deprivations associated with the experience of these shocks is expected. The same applies for households’ experience of crop failure.

Children’s experience of multiple deprivations was also found to be affected by the location of residence. Children that come from rural households experience deprivations in more dimensions than children that come from urban households. Hence, the location dummy variable for urban households was found to have a negative relationship with MOD. One of the region dummy variables also has a statistically significant effect. Children coming from Oromia region were found to have smaller MOD than children coming from other regions. These results show that location plays a key role in determining the extent of children’s exposure to overlapping deprivations.
To test for the existence of state dependence in overlapping deprivations across rounds, an alternative model was estimated with all the explanatory variables in the original model and the lagged value of overlapping deprivations. Controlling for lagged value of MOD also contributes to the robustness of results as it deals with the bias that may be introduced due to autocorrelation.

The estimation results show that the coefficient of lagged MOD is statistically insignificant, showing the absence of state dependence. However, all of the variables that were found to be statistically significant in the original model specification remained significant in the estimation that accounted for lagged dependent variables. Table 5 presents the Poisson estimation results conducted using the pooled data from the four rounds of the Young Lives data.

Table 5: Determinants of MOD among children (Pooled Sample - Poisson Estimates)

<table>
<thead>
<tr>
<th>Deprivations Count</th>
<th>Coef./t</th>
<th>Coef./t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lagged MOD</td>
<td></td>
<td>0.003</td>
</tr>
<tr>
<td>Household Characteristic variables</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of boys below 7</td>
<td>0.044***</td>
<td>0.044***</td>
</tr>
<tr>
<td></td>
<td>(3.728)</td>
<td>(3.745)</td>
</tr>
<tr>
<td>Number of boys between 7 and 17 years</td>
<td>0.005</td>
<td>0.005</td>
</tr>
<tr>
<td></td>
<td>(0.558)</td>
<td>(0.552)</td>
</tr>
<tr>
<td>Number of male household members between 17 and 65 years-old</td>
<td>-0.008</td>
<td>-0.008</td>
</tr>
<tr>
<td></td>
<td>(-0.952)</td>
<td>(-0.924)</td>
</tr>
<tr>
<td>Number of male elderly above 65 years</td>
<td>0.118***</td>
<td>0.118***</td>
</tr>
<tr>
<td></td>
<td>(3.388)</td>
<td>(3.391)</td>
</tr>
<tr>
<td>Number of girls below 7</td>
<td>0.041***</td>
<td>0.041***</td>
</tr>
<tr>
<td></td>
<td>(3.549)</td>
<td>(3.518)</td>
</tr>
<tr>
<td>Number of girls between 7 and 17 years</td>
<td>-0.005</td>
<td>-0.005</td>
</tr>
<tr>
<td></td>
<td>(-0.517)</td>
<td>(-0.533)</td>
</tr>
<tr>
<td>Number of female household members between 17 and 65 years-old</td>
<td>-0.019**</td>
<td>-0.020**</td>
</tr>
<tr>
<td></td>
<td>(-2.050)</td>
<td>(-2.068)</td>
</tr>
<tr>
<td>Number of female elderly above 65 years</td>
<td>-0.081**</td>
<td>-0.080**</td>
</tr>
<tr>
<td></td>
<td>(-2.189)</td>
<td>(-2.179)</td>
</tr>
<tr>
<td>Sex of head of household</td>
<td>-0.032</td>
<td>-0.033</td>
</tr>
<tr>
<td></td>
<td>(-1.481)</td>
<td>(-1.518)</td>
</tr>
<tr>
<td>Household's average education</td>
<td>-0.035***</td>
<td>-0.036***</td>
</tr>
<tr>
<td></td>
<td>(-14.456)</td>
<td>(-14.459)</td>
</tr>
<tr>
<td>Land Size</td>
<td>-0.012</td>
<td>-0.012</td>
</tr>
<tr>
<td></td>
<td>(-1.129)</td>
<td>(-1.131)</td>
</tr>
<tr>
<td>Socio-economic shocks</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dummy for household's experience of death or illness</td>
<td>0.009</td>
<td>0.009</td>
</tr>
<tr>
<td></td>
<td>(0.497)</td>
<td>(0.506)</td>
</tr>
<tr>
<td>Dummy for household's experience of crop failure</td>
<td>0.044**</td>
<td>0.044**</td>
</tr>
<tr>
<td></td>
<td>(2.251)</td>
<td>(2.230)</td>
</tr>
<tr>
<td>Dummy for household's experience of job loss</td>
<td>0.199***</td>
<td>0.199***</td>
</tr>
</tbody>
</table>
6.1.2. Gender and Location Disaggregation

The study also conducted estimations on the gender of the child and type of residence in disaggregated samples of the Young Lives data to observe how the determinants of multiple overlapping deprivations vary across the groups.

6.1.2.1. Gender of child disaggregated results

The results of the estimations conducted on the children's gender disaggregated samples show that, the household composition variables that were found to have a statistically significant effect in the overall sample continue to have an effect on boy and girl samples. Although the number of boys below the age of 7 was found to have a statistically significant effect on the number of deprivations experienced by both boys and girls, boys are affected more strongly. The level of statistical significance is also stronger for the boys sub-sample. The same is found to be true for the number of male elderly above the age of 65.

The opposite is observed for the number of girls below the age of 7. The number of girls in this category is found to increase the number of deprivations experienced by girls more strongly than boys. As for the number of female household members between the age of 17 and 65, which was found to have a statistically significant effect in the overall sample, it continues to have a negative effect on the number of deprivations experienced by boys. However, the relationship is not maintained for the girls sub-sample.
As is the case for the overall sample, the dummy variable for male-headed households has a negative relationship with number of deprivations experienced by girls. The results showed that girls coming from male-headed households have smaller MOD than girls coming from female-headed households. Similarly, the average education of the household is found to have a negative effect on the number of deprivations experienced by both boys and girls. This result is also in alignment with the results of the overall sample.

With regards to idiosyncratic and covariate shocks, the estimations show that the dummy variables for household’s experience of loss of employment and death of livestock was found to positively relate with MOD among both girls and boys. Children coming from households that have experienced such shocks have higher MOD compared to children whose households did not face such a shock. Even though the relationship between these shock variables and MOD are the same for both boys and girls, the extent of the effect is different between the two groups. The extent of the effect is bigger among boys than girls.

Both boys and girls coming from households that have experienced the death of livestock were found to have greater number of deprivations. In contrast to household’s experience of job loss or source of income, the effect of the death of livestock is stronger among girls than boys.

Whether a child comes from a rural or an urban household was also found to affect the extent of MOD. Children coming from urban households have smaller MOD compared to their rural counterparts among both boys and girls. All region dummy variables are statistically significant regardless of the gender of the child, except for Amhara region which was only found to be significant among boys. Keeping Addis Ababa as a base region, children in the four other regions experience more deprivations.

### 6.1.2. Location disaggregated results

The estimation results using the location disaggregated data showed that household composition variables remain to be important determinants of MOD. The number of boys and girls below the age of 7 were found to increase the number of overlapping deprivations for both rural and urban children. On the other hand, the number of male household members between the age of 17 and 65 was found to have a negative effect on the number of deprivations experienced by rural children while the number of female household members in the same age group were found to have the same effect on urban children.

As has been the case for the overall sample and the gender of child disaggregated estimations, the gender of the head of households was found to have a statistically significant relationship with MOD in both rural and urban areas. Children coming from male-headed households were found to have smaller deprivations than children coming from female-headed households in urban areas. Interestingly, however, the estimation results show that children coming from male-headed households have higher number of deprivations than children living in female-headed households in rural areas.

Similar to the overall and gender disaggregated results, average education was found to have statistically significant effect on MOD in both urban and rural areas. The effect of education on the number of deprivations experienced by children is stronger in urban areas than rural areas. Moreover, job loss and death of livestock were found to have a statistically significant effect on MOD in both urban and rural areas.

Some of the region dummy variables were also found to have a statistically significant effect. Children coming from rural areas in Oromia, Tigray and SNNPR regions were found to have smaller MOD compared to children living in rural parts of the Amhara region. In contrast, children coming from the urban areas of Amhara and Tigray are found to have higher number of deprivations than children in Addis Ababa.
6.1.3 Fixed Effects Estimation Results

To control for time invariant child specific unobservable factors, the study conducted a Fixed Effects Poisson estimation using the variables that were found to vary over time. As can be seen in Table 6, the results of the Fixed Effect estimation are in alignment with the results from the pooled estimation.

As is the case for the results of the pooled regression, the average education of the household is found have a negative and statistically significant effect on the number deprivations experienced by children.

Household’s experience of socio-economic shocks was also found to have a statistically significant effect on MOD. Children from a household that have experienced the death of livestock have deprivations in more dimensions than children who come from households that have not experienced such a shock. Similarly, children whose households have experienced the loss of employment were found to have more deprivations. The same is true for children whose households have experienced crop failure although at a 10 per cent significance level.

The study also controlled for the gender of the household head to explore how children’s experience of MOD vary between female-headed and male-headed households. Unlike the results of the pooled regressions, the Fixed Effects estimation results show that children from female-headed households experience deprivations in more dimensions than children in male-headed households. The effect was found to be statistically significant at a 1 per cent significance level. This results resonates with the literature on gender gaps that show that female-headed households have less access to productive resources and information, leading to a more severe experience of poverty among household members. The effect would be even stronger among children given their special survival and development needs that are strongly linked to their lifetime earning outcomes (De Neubourg et al., 2012a).

<table>
<thead>
<tr>
<th>Table 6: Determinants of MOD (Fixed Effects Estimates)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Household characteristic variables</td>
</tr>
<tr>
<td>Number of boys below 7</td>
</tr>
<tr>
<td>Number of boys between 7 and 17 years</td>
</tr>
<tr>
<td>Number of male household members between 17 and 65 years-old</td>
</tr>
<tr>
<td>Number of male elderly above 65 years</td>
</tr>
<tr>
<td>Number of girls below 7</td>
</tr>
<tr>
<td>Number of girls between 7 and 17 years</td>
</tr>
<tr>
<td>Number of female household members between 17 and 65 years-old</td>
</tr>
<tr>
<td>Number of female elderly above 65 years</td>
</tr>
<tr>
<td>Sex of head of household</td>
</tr>
<tr>
<td>Household’s average education</td>
</tr>
</tbody>
</table>
### Evidence Using Longitudinal Data of Children from the Young Lives Study

#### 6.2. Children’s experience of chronic poverty

#### 6.2.1. Overall Sample

In this section, the determinants of the transition in the status of poverty of children will be discussed. The estimation method adopted is multinomial logit which shows the change in the probability of being in one category in comparison to the base outcome category. The poverty transition variable has four categories with a base outcome of being never MOD poor, and three alternative outcomes of being in chronic poverty (MOD poor in all four rounds), in transient poverty (MOD poor in two or three rounds) and MOD poor in just one round.

Among the socio-economic shock variables, the illness of a household member is found to have a statistically significant effect. Children who come from a household that has experienced illness of a member are found to have a greater probability of being in transient poverty or chronic poverty than children in a household that has not experienced such a shock.

Unlike the deprivation count model specification, we have added three more policy variables in our analysis. These variables are access to credit, size of irrigated land and access to extension. The results of the estimations show that access to credit has a negative effect on the probability of being in transient poverty or the chronic poverty category. However, the size of the effect is very small. The size of land owned by households is also found to have a negative effect on the probability of being in chronic poverty.

Some of the location variables were also found to have statistically significant effect on the probability of being in different statuses of poverty. Children coming from urban households were found to have smaller probability of being in either transient or chronic poverty in contrast to their rural counterparts. In addition, children coming from Oromia region have smaller probability of being in transient poverty in contrast to children in other regions. The relationship of the location variables with the poverty status indicators resonate with the results found from the estimation of the determinants of the MODA. Table 7 presents the multinomial logit estimates of the determinants of poverty transition.

#### Table 7: Multinomial Logit Estimates of Determinants of Poverty Transition

<table>
<thead>
<tr>
<th></th>
<th>Coef./t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Socio-economic shocks</td>
<td></td>
</tr>
<tr>
<td>Dummy for household’s experience of death or illness</td>
<td>-0.023 (-1.115)</td>
</tr>
<tr>
<td>Dummy for household’s experience of crop failure</td>
<td>0.042* (1.859)</td>
</tr>
<tr>
<td>Dummy for household’s experience of job loss</td>
<td>0.197*** (7.895)</td>
</tr>
<tr>
<td>Dummy for death of livestock</td>
<td>0.085*** (3.440)</td>
</tr>
<tr>
<td>Land Size</td>
<td>-0.014 (-1.036)</td>
</tr>
<tr>
<td>Number of observations</td>
<td>5621</td>
</tr>
</tbody>
</table>

Note: *p-value = 0.1, **p-value=0.05, ***p-value==0.01
Table 7: Determinants of poverty transition (Multinomial Logit Estimates)

<table>
<thead>
<tr>
<th>Household Characteristic variables</th>
<th>Poor once over four rounds</th>
<th>Transient Poor (two or three times)</th>
<th>Chronic Poor (Poor in all four rounds)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of boys below 7</td>
<td>0.332</td>
<td>0.038</td>
<td>0.120</td>
</tr>
<tr>
<td></td>
<td>(1.555)</td>
<td>(0.181)</td>
<td>(0.545)</td>
</tr>
<tr>
<td>Number of boys between 7 and 17 years</td>
<td>0.122</td>
<td>0.127</td>
<td>0.139</td>
</tr>
<tr>
<td></td>
<td>(0.703)</td>
<td>(0.764)</td>
<td>(0.798)</td>
</tr>
<tr>
<td>Number of male household members between 17 and 65 years-old</td>
<td>0.145</td>
<td>0.148</td>
<td>0.084</td>
</tr>
<tr>
<td></td>
<td>(1.336)</td>
<td>(1.446)</td>
<td>(0.766)</td>
</tr>
<tr>
<td>Number of male elderly above 65 years</td>
<td>0.484</td>
<td>0.681</td>
<td>0.898</td>
</tr>
<tr>
<td></td>
<td>(0.753)</td>
<td>(1.120)</td>
<td>(1.435)</td>
</tr>
<tr>
<td>Number of girls below 7</td>
<td>-0.009</td>
<td>0.163</td>
<td>0.065</td>
</tr>
<tr>
<td></td>
<td>(-0.043)</td>
<td>(0.818)</td>
<td>(0.310)</td>
</tr>
<tr>
<td>Number of girls between 7 and 17 years</td>
<td>0.247</td>
<td>0.259</td>
<td>0.127</td>
</tr>
<tr>
<td></td>
<td>(1.421)</td>
<td>(1.573)</td>
<td>(0.725)</td>
</tr>
<tr>
<td>Number of female household members between 17 and 65 years-old</td>
<td>-0.020</td>
<td>-0.019</td>
<td>-0.039</td>
</tr>
<tr>
<td></td>
<td>(-0.188)</td>
<td>(-0.191)</td>
<td>(-0.366)</td>
</tr>
<tr>
<td>Number of female elderly above 65 years</td>
<td>0.132</td>
<td>0.359</td>
<td>-0.125</td>
</tr>
<tr>
<td></td>
<td>(0.234)</td>
<td>(0.673)</td>
<td>(-0.218)</td>
</tr>
<tr>
<td>Sex of head of household</td>
<td>-0.221</td>
<td>-0.528</td>
<td>-0.595</td>
</tr>
<tr>
<td></td>
<td>(-0.580)</td>
<td>(-1.460)</td>
<td>(-1.529)</td>
</tr>
<tr>
<td>Household's average education</td>
<td>0.040</td>
<td>0.014</td>
<td>-0.008</td>
</tr>
<tr>
<td></td>
<td>(1.350)</td>
<td>(0.497)</td>
<td>(-0.256)</td>
</tr>
<tr>
<td>Socio-economic shocks</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dummy for household's experience of death or illness</td>
<td>0.603</td>
<td>0.737***</td>
<td>0.726*</td>
</tr>
<tr>
<td></td>
<td>(1.606)</td>
<td>(2.047)</td>
<td>(1.933)</td>
</tr>
<tr>
<td>Dummy for household's experience of crop failure</td>
<td>0.222</td>
<td>0.347</td>
<td>0.392</td>
</tr>
<tr>
<td></td>
<td>(0.448)</td>
<td>(0.739)</td>
<td>(0.817)</td>
</tr>
<tr>
<td>Dummy for household's experience of job loss</td>
<td>-0.465</td>
<td>-0.221</td>
<td>-0.239</td>
</tr>
<tr>
<td></td>
<td>(-0.953)</td>
<td>(-0.482)</td>
<td>(-0.481)</td>
</tr>
<tr>
<td>Dummy for death of livestock</td>
<td>0.171</td>
<td>-0.063</td>
<td>-0.035</td>
</tr>
<tr>
<td></td>
<td>(0.424)</td>
<td>(-0.164)</td>
<td>(-0.088)</td>
</tr>
<tr>
<td>Policy variables</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Land size</td>
<td>-0.261</td>
<td>-0.257</td>
<td>-0.491***</td>
</tr>
<tr>
<td></td>
<td>(-1.440)</td>
<td>(-1.490)</td>
<td>(-2.590)</td>
</tr>
<tr>
<td>Credit</td>
<td>0.760</td>
<td>1.260***</td>
<td>1.416***</td>
</tr>
<tr>
<td></td>
<td>(1.607)</td>
<td>(2.842)</td>
<td>(3.075)</td>
</tr>
<tr>
<td>Irrigated land</td>
<td>-0.000**</td>
<td>-0.000***</td>
<td>-0.000***</td>
</tr>
<tr>
<td></td>
<td>(-2.055)</td>
<td>(-2.771)</td>
<td>(-3.761)</td>
</tr>
<tr>
<td>Dummy for extension services</td>
<td>1.535</td>
<td>2.220</td>
<td>2.992</td>
</tr>
<tr>
<td></td>
<td>(0.563)</td>
<td>(0.837)</td>
<td>(1.125)</td>
</tr>
</tbody>
</table>
### Evidence Using Longitudinal Data of Children from the Young Lives Study

#### 6.2.2. Gender of child disaggregated results

#### 6.2.2.1. Determinants of being in transient poverty

Among the household composition variables, the number of boys below the age of 7 are found to positively affect the probability of being in transient poverty among boys. Nonetheless, the relationship does not hold for the girls sub-sample. In contrast, the number of male household members between the age of 17 and 65 is found to positively affect the probability of being in transient poverty among girls.

The sex of the household head is also found to have a statistically significant effect on the probability of being in transient poverty among girls, with a smaller probability of being in transient poverty. Among the socio-economic shock variables, household’s experience of illness is found to have a statistically significant effect on transient poverty in the girl sub-sample. Children living in households that have experienced an illness shock have a higher probability of being in transient poverty. It is to be noted that this result resonates with the outputs of the Poisson estimation.

A household’s access to credit was also found to have a statistically significant effect on the probability of being in transient poverty among boys. Nonetheless, the size of the effect is very small.

Some of the location variables were also found to be statistically significant. For instance, children coming from urban areas were found to have smaller probability of being in transient poverty compared to children that come from rural areas. This was found to be true for both boys and girls. Among the region dummy variables, boys coming from Oromia region were found to have smaller probability of being in transient poverty compared to boys in other regions. However, this relationship did not hold for girls. These results resonate with what was obtained from the Poisson estimations on the overall sample.

### Table: Determinants of Being in Transient Poverty

<table>
<thead>
<tr>
<th>Variable</th>
<th>Poor once over four rounds</th>
<th>Transient Poor (two or three times)</th>
<th>Chronic Poor (Poor in all four rounds)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dummy for younger cohort</td>
<td>0.273 (0.680)</td>
<td>-0.593 (-1.557)</td>
<td>-1.215*** (-2.947)</td>
</tr>
<tr>
<td>Dummy for urban household</td>
<td>-0.592 (-1.380)</td>
<td>-2.157*** (-5.323)</td>
<td>-2.936*** (-6.674)</td>
</tr>
<tr>
<td>Dummy for male child</td>
<td>0.212 (0.666)</td>
<td>-0.019 (-0.063)</td>
<td>-0.081 (-0.250)</td>
</tr>
<tr>
<td>Dummy for Amhara region</td>
<td>-1.156 (-1.160)</td>
<td>-0.595 (-0.586)</td>
<td>13.955</td>
</tr>
<tr>
<td>Dummy for Oromia region</td>
<td>-1.614* (-1.918)</td>
<td>-1.530* (-1.734)</td>
<td>12.001</td>
</tr>
<tr>
<td>Dummy for SNNP region</td>
<td>-1.725** (-2.118)</td>
<td>-0.927 (-1.089)</td>
<td>13.119</td>
</tr>
<tr>
<td>Dummy for Tigray region</td>
<td>-1.299 (-1.498)</td>
<td>0.066 (0.074)</td>
<td>14.356</td>
</tr>
<tr>
<td>Constant</td>
<td>1.388 (1.275)</td>
<td>3.328*** (3.049)</td>
<td>-9.924</td>
</tr>
</tbody>
</table>

Note: *p-value = 0.1, **p-value=0.05, ***p-value==0.01

### Table: Determinants of Being in Transient Poverty

<table>
<thead>
<tr>
<th>Region dummies</th>
<th>Poor once over four rounds</th>
<th>Transient Poor (two or three times)</th>
<th>Chronic Poor (Poor in all four rounds)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amhara region</td>
<td>-1.156 (-1.160)</td>
<td>-0.595 (-0.586)</td>
<td>13.955</td>
</tr>
<tr>
<td>Oromia region</td>
<td>-1.614* (-1.918)</td>
<td>-1.530* (-1.734)</td>
<td>12.001</td>
</tr>
<tr>
<td>SNNP region</td>
<td>-1.725** (-2.118)</td>
<td>-0.927 (-1.089)</td>
<td>13.119</td>
</tr>
<tr>
<td>Tigray region</td>
<td>-1.299 (-1.498)</td>
<td>0.066 (0.074)</td>
<td>14.356</td>
</tr>
<tr>
<td>Constant</td>
<td>1.388 (1.275)</td>
<td>3.328*** (3.049)</td>
<td>-9.924</td>
</tr>
</tbody>
</table>

Number of observations: 1,242
6.2.2.2. Determinants of being in chronic poverty

As is the case for the transient poverty determinants, two household composition variables were found to be statistically significant. The number of boys below the age of 7 is found to increase the probability of being in chronic poverty for boys, relative to the base outcome of never being poor. In addition, the number of male household members in the 17 to 65 age groups was found to have a positive effect on the probability of being in chronic poverty of girls.

The sex of the household head was also found to have a statistically significant relationship with the probability of being in chronic poverty among girls. Girls that come from male-headed households are found to have a smaller probability of being in chronic poverty in comparison to girls from female-headed households. It is to be noted that the same relationship held with the probability of being in transient poverty.

None of the socio-economic shocks under consideration were found to have a statistically significant effect on the probability of being in chronic poverty except for the illness of household members. Girls coming from households that have experienced an illness shock were found to have greater probability of being chronically poor than girls whose households have not experienced such a shock. However, this effect did not hold for boys.

With regards to the location variables, the dummy variable for the type of residence and all of the region dummy variables were found to have a statistically significant effect in the girl sub-sample. Both boys and girls coming from urban households have a smaller probability of being chronically poor compared to their counterparts in rural areas. Moreover, girls coming from all regions were found to have higher probability of being in chronic poverty compared to children coming from Addis Ababa.

6.2.3. Location disaggregated results

6.2.3.1. Determinants of transient poverty

The number of female household members in the 7 to 17 years and 17 to 65 years age categories are both found to increase the probability of being in transient poverty among children in rural areas. The number of male elderly above the age of 7 were also found to increase the probability of being in transient poverty in urban areas.

Although most of the variables that were found to be statistically significant in the estimation of the overall sample were no longer statistically significant after the location based disaggregation is made, the sex of the household head is still found to have a statistically significant effect on the probability of being in transient poverty in urban areas.

One of the region dummy variables was found to be statistically significant among urban children although this did not hold for rural households. Children coming from SNNPR were found to have smaller probability of being in transient poverty compared to other regions.

6.2.3.2. Determinants of chronic poverty

The number of female household members between the ages of 17 and 65 increased the chances of chronic poverty in both urban and rural settings and the effect is statistically significant.

The average education of the household was also found to have a negative effect on the probability of being in chronic poverty among urban children. Similarly, urban children living in male-headed households were found to have a smaller probability of being in chronic poverty when compared to children living in female-headed households. Also boys living in urban areas were found to have smaller probability of being in the chronic poverty category than girls.
In light of the multifaceted nature of the well-being of human beings, a multidimensional approach towards poverty assessment is increasingly becoming the norm. This study assesses the extent of deprivation in the many dimensions of children’s lives and explores how they interact to affect their overall well-being. In addition, the study develops an indicator for the dynamics of poverty and investigates the determinants of the different aspects of poverty and its transitions.

The results of the analysis show that the human capital of a household, particularly its average education endowment, has a negative effect on multiple overlapping deprivations of children. Children living in urban areas were found to be deprived in less areas than children in rural areas. Children whose households have experienced idiosyncratic shocks such as the death of livestock or the loss of employment have greater deprivations than children coming from households that have not had such experiences. Some of the household composition variables were also found to increase multiple overlapping deprivations. The size of land owned by households and credit were also found to have an effect, though only a marginal one. Lastly, children living in the Oromia region were found to face less deprivations than children in other regions.

With regards to the determinants of poverty transitions, the results of the study showed that higher human capital endowment reduces the probability of being in transient or chronic poverty. The number of children below the age of 7 was found to increase the probability of being in transient or chronic poverty. There were also cases where the number of adult household members between the age of 17 and 65 decreased the chance of being in the transient and chronic poverty categories. Moreover, children coming from a household that has experienced illness of a member were also found to have greater probability of being in the two poverty transition categories. Similar to the case for the multiple overlapping deprivations estimation, the results showed that children living in the Oromia region have lower probability of being transient or chronic poor than children in other regions. The same was found to be true for children living urban areas.

The results of the study indicate the emphasis that needs to be given to household human capital endowment, particularly education, which is found to reduce children’s experience of overlapping deprivations and the persistence of poverty. A long term plan to increase the education endowment of households will help improve children’s well-being. In addition, it is important to note the negative effects of the concentration of household members in the below 17 years age category. The effect of socio-economic shocks on children’s deprivations and poverty transitions also call for increased access to insurance schemes to shield children from worsening well-being.
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