

# Determinants of Child Labor and Schooling in Damot Gale Woreda, Wolaita Zone, Ethiopia

Hailu Sodana Teka    Temesgen Wudineh Selfako  
Department of Economics, Wolaita Sodo University, PO Box 138, Wolaita Sodo, Ethiopia

## Abstract

Child labor becomes a usual problem in developing countries to affect the schooling performances of most of children as they miss important lessons and fall behind academically. The objective of this study was to examine the determinant factors of child labor and schooling in Damot Gale Woreda, Wolaita Zone, Ethiopia. The study employed both primary and secondary data sources. Primary data was collected from 203 respondent households through interview schedules. Various documents were reviewed to collect the secondary data in order to supplement primary data. Multi-stage sampling technique was used to select the sampled households. Data was analyzed using both descriptive statistics and econometric model analysis. Multinomial logistic regression model result revealed that the relative probability of a child being in child labor is significantly and positively determined by factors such as sex of a child being male, having larger number of pre-school-aged children in the household, larger family size, holding larger farm size, owning large number of livestock, and travelling long distance to fetch pipe water but it is negatively affected by having larger number of school-aged children in the household and higher level of household head education. So, the researchers recommend Government and Non-governmental organizations to play an important role on creating awareness on issues like promoting adult education through formal and informal means, developing programs that target poor households for elimination of child labor and empowering their economic status, and strengthening of social programs that help in fighting against child labor.

**Keywords:** Child labor, schooling, factors, Multinomial logistic model

**DOI:** 10.7176/DCS/10-10-01

**Publication date:** October 31<sup>st</sup> 2020

## INTRODUCTION

Although the term childhood varies from society to society, a child is defined as a person under the age of 18 years. But child labor shall be defined as labor activities engaged by children below 18 years for the purpose of exploitation of economic gains (ILO, 2012). The sub-Saharan Africa accounts for the highest incidence of child labor, with several African countries recording over 50% of children aged 5–14 working (UNICEF, 2012).

Child labor is especially prevalent in rural areas where the capacity to enforce minimum age requirements for schooling and work is lacking. Children in developing countries are commonly involved in fetching water, firewood, and doing both for household usage and for sale to supplement family income. Apart from engaging in tedious work that takes much of their energy, children's work exposes them to danger as walking being unaccompanied far from the home has the potential of exposing them to violence and sexual abuse (Ampomah, F. 2012). Furthermore, child labor destroys children's potential, robbing them of opportunities and perpetuating a cycle of poverty and marginalization. It degrades not only its victims but also those that sanctions or ignores its existence (Assefa, A. 2000). Therefore; the ILO condemns both child labor and hazardous work with the goal of eliminating hazardous child labor. Despite the fact that international labor conventions and different nation's legislations to protect children from economic exploitation, the practice still continues to prevail and becoming a structural part of many economies in both formal and informal sectors throughout the world especially in developing countries (Gebremedhin, 2013). In these countries around 150 million child ages between 5-14 years are exposing to child work. Around 60% of all exploitative child labor takes place in agriculture, the (labor) dominant sector in LDCs (Bisrat Abebe 2014).

Child work is a serious problem for Ethiopia that has a population size of over 100 million, limited employment opportunities and the economy is highly dependent on subsistence agriculture. Consequently, a better understanding of the nature and diversity of gender in labor force participation at early ages could be essential to mitigate the impact of child work. It has long been recognized that promoting and ensuring universal basic education is crucial to get rid of poverty. Moreover, having access to education is part of the basic rights of humanity. This has been formally stipulated in the Millenium Development Goals (MDGs) that achieving universal primary education is a priority (Dawit, S., 2010). As part of the international community Ethiopia has placed significant value on the multi-faceted role that education can have in efforts to bring about development. In the past policies and strategies were devised to expand access to education to the rural children which are the main subject of this study. In spite of these efforts the vast majority of them are out of school owing to different demand side and supply side factors (Tseganesh Wubale, 2011).

However, there are a number of features which make the present study different from the existing empirical studies in that it might fill the gap that exists in terms of determinants of child labor and schooling in rural

households: first, though a few number of the studies (Zegeye P., 2016) addressed the issue by estimating only the probability of children involve in work but not addressed the determinants of children participation in different activities related to child schooling and sex-disaggregated data on children work. Second, in the econometric analysis, this study employed Multinomial Logistic regression analysis to unravel the issue of child labor and schooling in rural households. This study, therefore, aims to fill the gap by identifying determinant factors affecting child labor in Damot Gale Woreda, Wolaita Zone, Ethiopia. The specific objectives of the study are: (1) to investigate the determining factors of child labor exploitation in Damot Gale Woreda, Wolaita Zone; and (2) to analyze extent of gender and age bias in the study area.

**MATERIALS AND METHODS**

**Description of the Study Area**

This research was conducted in Damot Gale Woreda, Wolaita Zone, Ethiopia. Geographically, it is located between 6° 53'- 7° 6' 30" north latitude and 37° 46'-37° 58' 40" east longitude. Mixed farming system which involves crop production and livestock rearing is the main stay of rural households in the Woreda. According to CSA, 2016, in Damot Gale Woreda, the total population of children aged from five to fourteen are 55,377 from this 27,079 and 28,298 are male and female respectively. The total number of rural households in the woreda is 29,930 out of which 93.6% are male headed and 6.4% are female headed households.

**Research design:** The study employed mixed research design meaning both qualitative and quantitative research approaches were used. It provides the opportunity for presenting a greater diversity of divergent views (John Creswell, 2014).

**Data Sources and Methods of data collection**

The data for this study was obtained from both primary and secondary sources. The primary data was collected through interview schedules from 203 randomly selected rural farming households. The primary data is supplemented by secondary data that was gathered from published and unpublished documents.

**Sample size determination**

The total sample size was determined by using simplified formula provided by (Yamane, 1967) with 95% confidence interval, and 7% precision level:

$$n = \frac{N}{1 + N(e^2)} \dots \dots \dots (1)$$

Where: Where, n = sample size, N=Total no of household e = the level of risk that the researchers has been decided to take the true margin of error may exceed the acceptable margin of error = 0.07 (precision 7%).

$$n = \frac{29,930}{1 + 29,930(0.0049)} = 203 \dots \dots \dots (2)$$

Based on the number of the total households in the sampling frame (29,930), the formula equated and reached a minimum of **203** respondent households that were selected and interviewed.

**Sampling Design**

Multi-stage (purposive, & probability) sampling technique was employed to obtain necessary information on the proposed topic. In the first stage, out of 26 rural kebeles, six were purposively selected based on the information on incidences of child labor. In the second stage, total number of household heads was selected using simple random sampling technique.

**Econometric Model specification**

This study involved “analyzing the determining factors of child labor and schooling”. Based on the nature of the response variable “child labor and schooling” which is discrete, Multinomial Logistic model was applied. Multinomial logit model has S possible states or categories – that is s = 1, 2, 3 ...S. (Gujarati, D. 2004). If there is a random sample of farmers, i = 1, 2, 3.....N. Here, given three choice categories, s = 1, 2, 3, the multinomial logit model assigns probabilities P<sub>is</sub> to events characterized as “i<sup>th</sup> child s<sup>th</sup> category”. To estimate this model, we need to normalize in one category, which is referred to as the “reference state”. Based on this, the reference state chosen for this study was “not working” and “not schooling” option which is the least desirable option. The estimate coefficients indicate the independent log odds or chances of an independent variable being in the dependent variable category of interest, versus being in the base (or contrast) category of the dependent variable. The study further predicted the marginal effect to be able to determine the change in probability of being in the dependent variable category of interest versus being elsewhere (Nkamleu, 2009). For an overview of the size of effects, marginal effects were developed on the basis of the multinomial logit model of being in each of the three categories or outcomes. These marginal effects can help to evaluate these magnitudes and show the impact of a

marginal change in the explanatory variables on the different estimated probabilities.

The standard Multinomial Logistic model for choice across S states (s=1, 2, 3) and with several determining variables is commonly written as:

$$P(Y = S) = \frac{e^{\beta_j Z}}{1 + \sum_{j=2}^S e^{\beta_j Z}} \dots \dots \dots (3)$$

The parameters  $\beta_j$  were estimated. An iterative maximum likelihood algorithm was used to estimate the empirical models in order to obtain asymptotically efficient parameter estimates (Gujarati, D. 2004). The log-likelihood function for the multinomial logit model is given:

$$\ln L = \sum_i \sum_j d_{ij} \ln P_{ij} \dots \dots \dots (4)$$

$P_{ij}$  is the probability of individual  $i$  in state 'j',  $d_{ij} = 1$  if  $y_i = j$ , 0 otherwise,  $j = 0 \dots J$

The Multinomial Logit Models (MNL) model of this study was specified as follows:

$$\text{CHLS} = \beta_0 + \beta_1 \text{SCH}_i + \beta_2 \text{AGC}_i - \beta_3 \text{BICH}_i + \beta_4 \text{PSAC}_i + \beta_5 \text{FSZ}_i - \beta_6 \text{SAC}_i - \beta_7 \text{EHH}_i + \beta_8 \text{LSZ}_i + \beta_9 \text{CRED}_i + \beta_{10} \text{LVH}_i + \beta_{11} \text{DS}_i + \beta_{12} \text{DSPW}_i + \varepsilon_i \dots \dots \dots (4)$$

Where  $\varepsilon_i$  is the disturbance term of equation which is iid gumble distributed i.e.,  $\varepsilon_i \sim \text{Gumble}(0, \lambda)$

### Description of Study Variables

Child labor and schooling (CHLS): it is treated as discrete variable that takes 1 for the probability of a child being in school only, 2 for the probability of a child being in both school and work, and 3 for the probability of a child being in work only.

Determining variables: in this study, different variables were introduced in to the model as determining variables of child labor and schooling. They were treated according to their nature i.e. sex of child (SCH) treated as a dummy variable [0 if a child is female, 1 if the child is male], age of child (AGC) treated as a continue variable in year, relationship of a child to the household head (BICH) treated as a dummy variable (1 for biological child, 0 otherwise), number of pre-school-aged children in the household (PSAC) treated as a continue variable measured in number, number of school-aged children in the household (SAC) treated as a continue variable measured in number, family size (FSZ) treated as a continue variable measured in number, education of household head (SHH) treated as a continue variable measured in number years of schooling, landholding size (LSZ) treated as a continue variable measured in hectare, access to credit service (CRED) treated as a dummy variable (0 for no access, 1 for better access), livestock holding (LVH) treated as a continue variable measured in number, distance to school (DS) treated as a continue variable in hours, and distance from water sources (DSPW) treated as a continue variable in hours.

## RESULTS AND DISCUSSION

### DESCRIPTIVE ANALYSIS

**Demographic characteristics:** - out of 203 children considered in this study, 102 (50.2%) of them are male and 101(49.8%) are females. Accordingly, 57 (28%) were categorized in school only, 47 (23%) were in the category of work only, and 99 (49%) were in both school and work. To see this on gender basis, 21 (36.8%) of male children are engaged in school only, 38(81%) of them are in work only, and 43(43%) of them are engaged in both schooling and work whereas 36(63.2%) of female children are engaged in school only, 9(19%) of them are engaged in work only and 56(57%) of them are engaged in both schooling and work (Table 1). In general, the results indicate that male children are more likely to participate in child labor than female children and there is gender bias in both schooling and child labor in the study area.

**Table 1: Child Labor and Schooling Status by sex of child**

Categories	School only		School and work		Work only		Total	
	Freq.	%	Freq.	%	Freq.	%	Freq	%
<b>Boys</b>	21	36.8	43	43	38	81	102	50.2
<b>Girls</b>	36	63.2	56	57	9	19	101	49.8
<b>Total</b>	57	100	99	100	47	100	203	100

Source: Field Survey, August, 2020

Relationship of a child to the household head: - Regarding their relationship to the household head, 156(76.85%) of the children are biological child and 47 (23.2 %) are others (home workers or relatives). Accordingly, 57(28%) of them are engaged in school only, 47(23%) of them are in work only and 99(49%) of them are in both school and work. To see this on the relationship to the household head, 54(34.6%) of biological children are engaged in school only, 6(3.9%) of them are in work only, and 96(61.5%) of them are engaged in both schooling and work whereas 3(6.4%) of non-biological children are engaged in school only, 41(87.2%) of them are engaged in work only and 3(6.4%) of them are engaged in both schooling and work (Table 2). In general, this result tells us that biological children are less participating on child labor than non-biological children in the study area.

**Table 2: Child Labor and Schooling Status with relationship to household head**

Child Labor and Schooling Status	R/ship to household head		Total
	Biological child	Otherwise	
School only	54(34.6%)	3(6.4%)	57(28%)
Work & school	96(61.5%)	3(6.4%)	99(49%)
Work only	6(3.9%)	41(87.2%)	47(23%)
Total	156(100%)	47(100%)	203

Source: Field Survey, August, 2020

### ECONOMETRIC RESULTS OF THE STUDY

Before estimation of parameters, explanatory variables were checked for the existence of multicollinearity, heteroscedasticity and normality problems. Accordingly, after checking and assuring for their no existence, parameters of the model were estimated.

Informed by these test results, Multinomial logistic model was carried out and variables such as sex of child, number of pre-school-aged children in the household, family size, number of school aged-children, education level of household head, landholding size, number of livestock owned, and distance from water sources were found to be significantly determining child labor and schooling in Damot Gale woreda, Wolaita Zone, Ethiopia (Table 3).

**Table 3: The summarized Multinomial logistic regression results of child schooling-child labor**

Prob. of being in child labor	Coef.	Std. Err.	Z	P>z	[95% Conf. Interval]	
sch	6.422758***	1.911834	3.36	0.001	2.675633	10.16988
agc	-.1342819	.1637593	-0.82	0.412	-.4552443	.1866804
bich	-2.29515	1.47075	-1.56	0.119	-5.177767	.5874672
psac	1.513358**	.623904	2.43	0.015	-2.736187	-.2905282
fsz	1.259579**	.6194149	2.03	0.042	.0455484	2.47361
sac	-1.491756**	.6344654	-2.35	0.019	-2.735285	-.2482266
ehh	-.3597247***	.0938188	3.83	0.000	.1758432	.5436062
lsz	1.262294**	.5759846	2.19	0.028	2.391203	.1333851
cred	.7348458	.743677	0.99	0.323	-.7227342	2.192426
lvh	.6518234***	.244303	2.67	0.008	.1729983	1.130648
ds	.0097537	.0245371	0.40	0.691	-.0383381	.0578455
dspw	.0526138**	.0248013	2.12	0.034	.1012234	.0040041
cons	-5.084879	3.483036	-1.46	0.144	-11.9115	1.741746
Number of obs = 203 LR chi2(24) = 321.46			Prob > chi2 = 0.0000 Pseudo R2 = 0.7573			

Source: own survey result, August, 2020

**Table 4: Multinomial logistic regression estimates of child schooling- child labor based on average marginal effect results**

Prob. of being in child labor	dy/dx	Std. Err.	Z	P>z	[95% Conf. Interval]	
Sch	.3614561***	.0843933	4.28	0.000	.1960482	.5268639
Agc	-.0110191	.0087152	-1.26	0.206	-.0281006	.0060624
Bich	-.1014467	.0736972	-1.38	0.169	-.2458906	.0429972
Psac	.0827956***	.0310997	2.66	0.008	.1437498	.0218414
Fsz	.0754139**	.0320971	2.35	0.019	.0125047	.1383231
Sac	-.0851774***	.0319043	-2.67	0.008	-.1477087	-.0226461
Ehh	-.0182065***	.0036907	-4.93	0.000	-.0109729	-.0254401
Lsz	.0626914**	.0287331	2.18	0.029	.1190072	.0063756
Cred	.0419702	.039279	1.07	0.285	-.0350151	.1189556
Lvh	.0342094***	.0115648	2.96	0.003	.0115427	.0568761
Ds	.000337	.0013065	0.26	0.796	-.0022236	.0028976
Dspw	.0027785**	.0012211	2.28	0.023	.0051718	.0003852

Source: own survey result, August, 2020

Sex of child (SCH): -Multinomial Logistic regression result revealed that sex of child was significantly and positively determining child labor at 1 percent significance level. That is, odd of being in child labor of male child is 6.422758 times higher than that of female child (Table 3). This tells that male children are more likely labored than female children in the study area. Therefore, this result is similar with the finding of Tseganesh (2011) in rural Ethiopia, the extent of child labor was found to be higher for boys' than girls' may be due to current policies

which give priority for girls such as in education.

**Number of pre-school-aged children (PSAC):** The allocation of child time will be determined by his/her age before school time. In this study, number of pre-school-aged child in the household is treated as a continue variable that is measured in number of children before school age and takes any value. This specific study result revealed that the number of pre-school aged children in the household was significantly and positively determining child labor at 1% level of significance. That is, a unit increase in number of pre-school-aged children in a household leads to 8.3% increase of relative probability of a child being in child labor. This finding is also reflected by Crivello and van der Gaag (2016).

**Family size (FSZ):** According to the survey result, family size was positively and significantly determining the relative probability of a child being in child labor and statistically significant at 5% level of significance. For this study, a one more household size increase leads to 7.5% increase in the probability of a child being in only working by implying children in larger sized family are highly susceptible to child labor than those in smaller sized family. It has been argued that high fertility rate is positively correlated with the incidence of child labor, high fertility increase the chance that children from the large families to do work to support house hold income. As (Partinos, H.A. and Psacharopoulos, G. 1997) in reality, in poor households, when the total number of children increases, they send some of them to school and more of them are sent to the labor market, usually boys.

**Number of School-aged-children (SAC):** the study result revealed that number of school-aged-children in the household was significantly and negatively determining the relative odds of a child being in child labor at 1% level of significance. That is, a unit increase in number of school-aged children in a given household leads to 8.5% decrease in its odd of being in child labor implying more aged children at school time are less susceptible to child labor. Therefore, this result is similar with Kruger and Berthelon (2007) in Brazil.

**Education level of household head (EHH):** The level of education of the household head is expected to have an important implication for child schooling-child work decision. In reality, better education background of parents is likely to favor child schooling as the decision makers become more aware of the benefits of investing in human capital. In this specific study, education level of household head was significantly and negatively determining the relative probability of a child being in child labor at 1% level of significance. Based on the odd value, the relative probability of a child being in child labor in which a head attend higher classes is .3597247 times lower than that of child in household in which a head is illiterate implying children whose heads attend higher education are less susceptible to child labor. This is a fundamental result that shows the importance of education of the household head in the explanation of child labor. It is logical that better educated household head would be well informed about the detrimental impacts of child labor on the overall development of children and takes into account the child's future well-being. Therefore, this result is similar with the findings of Hsin (2005), rural Indonesia: Parental education positively affects school attendance, and negative affects child labor.

**Land holding size (LSZ):** In this study, the regression result revealed that landholding size was significantly and positively determining the relative odds of a child being in child labor at 5% level of significance. That is, a one hectare increase in the landholding size leads to 6.3% increase in the relative probability of a child being in child labor in the farming household implying children who born in households with large landholding size are more susceptible to child labor than those born in households with smaller land size. This owes to the fact that holding large land size increases the relative probability of boys' specialization on the farm activities with the greater impact on schooling as households assign more children on their farm to expand their production than sending them to school. Therefore, this result is still similar with the findings of Kruger et al. (2007) in Brazil.

**Number of livestock owned (LVH):** It is likely that more livestock demands more children to herd. It is evident that the vast majority of the rural community employs ox-plow system of agriculture. Hence, we found it important to see the impact of the number of livestock a household owns. In this specific study, number of livestock owned was significantly and positively determining the relative probability of a child being in child labor at 1% level of significance. That is, for a unit increase in the number of livestock that the household owns, the relative probability of a child being in work only rises by 3.4%, holding other things constant. Broadly speaking, the more number of livestock owned by the household, the less likely a child is to attend school only and the more likely to work only. Therefore, this result is similar with the findings of others such as Tseganesh (2011) and Getinet and Beliyou (2007).

**Distance from water source (DSPW):** In this study, the regression result revealed that distance from water source was significantly and positively determining the relative odds of a child being in child labor at 5% level of significance. That is, a one hour increase in the distance from water source leads to about 0.28% increase in the relative probability of a child being in child labor implies that travelling long distance to fetch water in rural households reduces the probability of a child being in school and increases it for a child being in child labor.

## CONCLUSION AND POLICY IMPLICATIONS

The objective of this study was to analyze factors that affect child labor and schooling in Damot Gale Woreda, Wolaita Zone, Ethiopia. The descriptive statistical analysis result revealed that 21 (36.8%) of male children are

engaged in school only, 38(81%) of them are in work only, and 43(43%) are engaged in both schooling and work whereas 36(63.2%) of female children are engaged in school only, 9(19%) of them are engaged in work only and 56(57%) are engaged in both schooling and work. Accordingly, male children are more likely to participate in child labor than female children in the study area.

On other side, 54(34.6%) of biological children are engaged in school only, 6(3.9%) of them are in work only, and 96(61.5%) are engaged in both schooling and work whereas 3(6.4%) of non-biological children are engaged in school only, 41(87.2%) engaged in work only and 3(6.4%) are engaged in both schooling and work. Accordingly, biological children are less participating on child labor than non-biological children in the study area.

Based on the multinomial logistic regression result, sex of a child being male, having larger number of pre-school-aged children in the household, living in larger family size, holding larger farm size, owning large number of livestock, and travelling long distance to fetch pipe water were positively determining the relative probability of a child being in child labor whereas it is negatively influenced by having larger number of school-aged children in the household and higher level of household head education.

Accordingly, the authors strongly recommend that government and concerned NGOs (1) should intervene in creation of awareness on issues such as promoting family planning (birth spacing), helping individuals to combat ignorance and develop their own judgment, and creating opportunities to the households to improve their living standard. Parents should be motivated to increase the quality of child instead of quantity, which relates to the decrease in the tendency of child labor. (2) It has been found that education level of the household head and average schooling level of the community have interesting implications for the child time allocation decision. Adult training through formal and informal means can be a potential area to focus on in order to mitigate child labor and build human capital via investment in education of children. (3) Establish and develop programs that can target poor households for elimination of child labor, empower their economic status, and expand necessary education up to a certain level. (4) Encourage different NGOs to participate in activities that contribute for the reduction of child labor and promoting of child schooling.

## REFERNCES

- Ampomah F. 2012. Child labor in pottery Trading (Hawking Business) In Ghana: A case study of Madina and Abokobi Areas in GA East District. University of Bergen, Ghana.
- Assefa A. 2000. The Incidence of Child Labor in Africa with Empirical Evidence From Rural Ethiopia.ZEF (Center for Development Research) Discussion Papers on Development Policy. Bonn, Germany.
- Bisrat Abebe 2014. What Determine Child Labor in Rural Ethiopia? (Panel DataAnalysis).An MSc Thesis Presented to the School of Graduate Studies of Addis Ababa University, Ethiopia.
- CSA. "Central Statistical Agency." *Demographic and Health Surveys Report*. Addis Ababa, October 2016.
- Dawit, S. 2010. Determinants of Child Labor versus Schooling in Rural Ethiopia. Department of Economics ,Bloomsburg University of Pennsylvania.
- Gebremedhin Hagos Desta 2013. Determinants of Child labor and Its Effects on the Children's Schooling: the Case of Mekelle city, Tigray, Ethiopia. An MA Thesis Presented to the School of Graduate Studies of Mekelle University, Ethiopia.
- Getinet, H. and Beliyou, H. 2007. Child Labor and Child Schooling in Rural Ethiopia: Natureand Trade-off. Department of economics, Columbia University.
- Gujarati, D. 2004. Basic Economics 4rd.McGraw- Hill, Inc, Singapore
- ILO (International Labor Organization), 2012. Child labor statistics. The 18<sup>th</sup> International Conference of Labor Statisticians Geneva.
- John W. Creswell, (2014). Research Design, Qualitative, Quantitative and Mixed Methods Approaches; Fourth Edition; University of Nebraska-Lincoln;
- Partinos, H.A. and Psacharopoulos, G. 1997. Family size, schooling and child Labor in Peru: An Empirical Analysis. *Journal of Population Economics*, Vol. 10: 387-405.
- TseganeshWubale 2011. Determinants of Child Labor and Schooling in Rural Households of Ethiopia. An MSc Thesis Presented to the School of Graduate Studies of Addis Ababa University, Ethiopia.
- UNICEF (United Nations International Children's Emergency Fund). 2012. Annual report. WB (World Bank). 2009. World Development Indicators. World Bank,
- Yemane T. (1967). Statistics, an Introductory Analysis, 2nd Ed., New York, Harper
- Zegeye Paulos Borko. 2016. Child Labor and Associated Problems (The Case of Damot Gale District in Wolaita Zone, Ethiopia). *Int J Econ ManagSci6: 450. doi:10.4172/2162 6359.1000450.*