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## Empirical Analysis on Determinants of Child labor and Associated Problems (The Case of Damot Gale District, Wolaita Zone, SNNPR, Ethiopia)

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EMPIRICAL ANALYSIS ON DETERMINANTS OF CHILD LABOR AND ASSOCIATED PROBLEMS THE CASE OF DAMOT GALE DISTRICT, WOLAITA ZONE, SNNPR, ETHIOPIA

*Strictly as per the compliance and regulations of:*



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# Empirical Analysis on Determinants of Child labor and Associated Problems (The Case of Damot Gale District, Wolaita Zone, SNNPR, Ethiopia)

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## I. INTRODUCTION

### a) Back ground of the study

According to the ILO, child labor is "work that deprives children of their childhood, their potential and their dignity, and that is harmful to physical and mental development." The ILO classifies work conducted by children into three categories: children in employment, child labor, and hazardous work. The ILO condemns both child labor and hazardous work with the goal of eliminating hazardous child labor by 2016.

Child labor is often characterized as pernicious and evil, something that has to be unequivocally rejected. Around 60% of all exploitative child labor takes place in agriculture, the (labor) dominant sector in LDCs. Children in rural regions of LDCs are often the only available "means" for producing agricultural goods and

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sustaining a livelihood. There are at least three reasons why agricultural production based on fair trade schemes can better tackle the problem of exploitative child labor. Firstly, control mechanisms are much more elaborated. Secondly, the shorter supply chain allows traceability, an important precondition for an efficient control system. Thirdly, a guaranteed minimum price prevents absolute poverty a major cause of child labor – while the fair trade premium can be used to overcome long-term structural barriers, thus addressing the root causes of exploitative child labor (Etzensperger, 2012).

Of all children engaged in economic activities outside the house or household work, about 88 percent reside in rural areas. The highest rates of child labor are to be found in SNNP and Oromia (88.8 percent in each). The agriculture sector accounts the largest portion, which is 75 percent and service sector 12 percent and four percent in manufacturing (Guarcello & Rosati, 2007). This ranks the country among one of the countries with highest rates of child labor in the world. Poverty, lack of educational opportunity parent's choice, children's choice and societal attitudes are main factors in the Ethiopia (Habtamu, 2011). Since studies done in Ethiopia on child labor are far from adequate, and almost all of them were conducted in the major urban settings of the country, the rural community where high prevalence of the problem is expected is not yet studied. Therefore this particular study was done with the objective of determining the magnitude of child labor and associated problems in Damot Gale district.

### b) Objectives

#### i. General Objective

The main objective of the study is to assess the magnitude of child labor and associated problems in the case of Damot Gale district.

#### ii. Specific Objectives

The study has the following specific objectives:

- To assess the challenges and abusive practices that these working children face
- To investigate the causes for the involvement of children in the labor market;

## II. METHODOLOGY

### a) Description of the Study Area

Damot Gale is one of 12 districts in Wolaita zone of SNNPR of Ethiopia. It is located at 139km southwest of the Hawassa town which is the capital of southern regional state and 365km from Addis Ababa in the southern direction. Geographically, it is located between 6° 53'- 7° 6' 30" north latitude and 37° 46' – 37° 58' 40" east longitude. It has an altitude ranging from 1501- 2950 meters above mean sea level. Mount Damota is the highest peak in the area. The study area covers an area of 24285.861 hectare. Damot Gale district is divided into three basic traditional agro-climatic zones such as *Dega* or highland (25.3%), *Woina dega* or midland (61.2%) and *Kola* or lowland (13%) (WARD office, 2014). *Woina dega* dominates the study area which has bimodal distribution of rainfall. Mean annual rainfall ranges between 1001-1400 mm (RFEDB, 2013) as cited in

The study area is bordered on the south west by Sodo zuria, on the northwest by Boloso sore and Damot Pulassa, on the north by Hadiya zone, on the east by Duguna Fango, and on the south east by Damot woyde. Based on the CSA (2011) estimation and district finance and economy development office report, Damot Gale has a population of 177,570 out of this 103,011 are male and 74,559 are female. The total households of the district are 30,767 male households 26,417 and female 4,350 and has a total of 31 rural kebele. Children's age less than 15 year in the four kebele is 3148. Like other parts of the region agriculture is the main means of livelihood for the population both in terms of crop production and livestock.

### b) Data Type and Source

The research work was mainly used a primary data which was collected from the study area. Information on the demographic and socio economic condition of the children's and their family data was

collected through structured questionnaires having a close ended elicitation format with open ended follow up questions. The structured questionnaires were posted to the children's and to their parents with face to face interviews. The purpose of the study was explained to the study subjects and their willingness to participate in the study asked before conducting interviews. Interviews were conducted during late afternoons and evenings as these were found to be optimal time to find children at home. Child labor: economic exploitation and any other circumstance under which children perform paid or unpaid work that might be directly detrimental to their development, or that might prevent them from exercising their education, health and leisure in the study area.

Secondary data was used to supplement the primary data and obtained from different published and unpublished documents. Both quantitative and qualitative methods were employed about because these two types of data complement each other. Since the main aim of this research was mainly investigating statically the relation between dependant variable *i.e.* child labor and explanatory (independent) variables that determine child labor in the study area. In addition to statistical investigation key informant and focus group discussion were taken place.

### c) Sample Size Determination

The sample size in this study was determined by using the minimum sample size formula of Fowler(2001) and then adjusted for the total population of the study area by Cochran's sample size formula (Cochran, 1977) as shown below.

Where,  $n$ =sample size,  $d$ =the level of risk the researcher has been decided to take that true margin of error may exceed the acceptable margin of error=0.06 (precision 6%) with confidence level 94%.

Therefore, the final sample size for the district becomes 94 which was the sum of four kebele as we can see in the table below.

Table 1: Sample size of the Kebeles

Name of kebele	Total Population	Total Children age < 15	Sample children age < 15
Damot Mokonissa	5212	834	25
Gacheno	3702	629	19
Wandara Gale	6073	971	29
Shasha Gale	4200	714	21
Total	19190	3148	94

### d) Sampling Technique

The study population constituted of children aged 5-15 years residing in Damot Gale district in four kebele during the study period. For this study, multistage sampling procedures was used. In the first stage, Damot Gale district was selected purposively because it was one of the densely populated districts in zone level as well as regional level. In the second stage

three kebele were selected from 31 kebele by simple random sampling. At the third stage, Systematic sampling technique was employed to identify the study subjects. The first household was selected by lottery method; a child from every 4th house was interviewed. If the number of children was above one in a household, only one child was selected by lottery method. If no child was found in the selected household, the next

household with a child was visited before going to the next fourth household. As the study was household based, homeless street children were not included in the study.

e) *Data Collection Techniques and Instruments*

The researcher used kebele agriculture development workers to collect primary source data. Before entering to survey, the development agents were given a training mainly focusing on the contents of the questionnaire and procedure of survey. Observation and discussion with district as well as kebele governmental officials and expertise was held by the researcher. The key points were prepared for discussion with key informant, employers and governmental officials. Structured and semi-structured interview questionnaires were designed to collect quantitative data.

f) *Method of Data Analysis*

To achieve the objectives of this study, different methods of data analysis were used. The study used both descriptive and econometric analysis. The descriptive analysis uses percentages, graphs, tabulations and multiple linear regression analysis was used to identify the effect of determinants of child labor. Tools and statistics used in descriptive and econometric are generated with the help of econometric software STATA version 11.

i. *Binary Logit Model*

In order to identify the determinants of child labor in the study area a binary response model is specified to be estimated by logit regression technique. The logit specification is designed to analyze qualitative data reflecting a choice between two alternatives, which in this case<sup>1</sup> for being in child labor and 0 otherwise. The parameters of this model will be estimated by using the maximum likelihood estimation rather than the movement estimation in which OLS regression technique rely on. The logit method gives parameter estimates that are asymptotically efficient, and consistent. Indeed, the logit approach is known to produce statistically sound results (Gujarati & porter, 2009) Probability of being in child labor is specified as the value of the cumulative distribution function which is specified as function of the explanatory variables. The equation is of the form:

Where,

Y= probability of being in child labor or not in child labor

*Coefficient of the explanatory variables.*

$X_i$ = Explanatory variable.

For the case of a single independent variable, the logistic regression model can be written as

*Or equivalently*

Where,  $\beta_0$  and  $\beta_1$  are coefficients to be estimated from data,  $X_i$  is the independent variable  $e$  is the base of the natural logarithm.

For ease of exposition the model can be written as (for more than one independent variables)

*Or equivalently*

This particular study was deal about the probability of being in child labor or not and this expression expressed in mathematical form as follows:

The probability of a child being in labor market (an event occurring) as the form:

*Note: The error term also follows logistic distribution*

For a non-event (not in child labor) cumulative logistic distribution, representing the probability is just  $(1-p)$  i.e.

Therefore, by dividing equation (2.5) by equation (2.7) we can result in the odds-ratio in binary response, which is as stated below:

Equation (2.8) is simply the odd-ratio in favor of a children is falling labor exploitation. This is the ratio of the probability of a children will be in labor market to the probability that it will not be in child labor.

When we take the natural logarism of odd-ratio of equation (2.8) will result in logit model as we can see below.

*Assumptions of Logistic Model*

1. Assumes a linear relationship between the logit of the independent variable and dependant variables, however, does not assume a linear relationship between the actual dependant and independent variable
2. Independent variables were not linear functions of each other, i.e. perfect multicollinearity makes estimation impossible.
3. The model was correctly specified i.e.
  - ❖ The true conditional probabilities are a logistic function of the independent variables;
  - ❖ No important variables are omitted;
  - ❖ No extraneous variables are included; and
  - ❖ The independent variables are measured without error.

Based on the above justification, we specified the logit model for probability of a children being child labor exploitation and determinants of child labor

Therefore  $Y_i = 1$  if child is involved in child labor and  $=0$  if children is not in labor market, is regression parameters, is the error term and the explanatory variables defined in table 2.1 below. The regression was estimated by Maximum likelihood technique.



Table 1.1: Expected signs of Explanatory variables

No.	Variables	Measurement	Expected Signs
1	Occupation of parents (Ocu)	Dummy (takes= 1 if parent has occup; otherwise 0)	-
2	Dependancy Ratio (DR)	Continues	+
3	Distance from School (DitSch)	Continues	+
4	Loss of Parents/ Broken Marriages/ Divorsce (Los Pa)	Dummy (takes= 1 if broken/lost parent; otherwise 0)	+
5	Family Size (FS)	Continues	+
6	Sex	Categorical (1 stands for Male; 0 for Female)	-/+
7	Age (Ag)	Continues	+
8	Parents Education (Edu)	Continues	-

### III. RESULTS AND DISCUSSIONS

This chapter deals with the results of descriptive statistics and binary logistic regression results of the causes for the involvement of children in the labor market; The analysis was done in light of the objectives of the study. Section 3.1 deals with descriptive analysis and section 3.2 presents the results of the econometric analysis.

#### a) Descriptive Analysis

In this study a total of 94 children's family or their parents were interviewed concerning child labor and associated factors that lead to exploitation of child labor. Majority of the head of the household were male

71(76%) and the remaining 23(24%) were female parents of the children who were sampled for this study. 86(91.4%) of respondents were farmers, 2(2.1%) government employee, 3(3.1%), Daily laborers 1(1.06%) andmerchants2(2.1%).From the number of children's engaged in different activities children whose parents occupation was agriculture ranked first in number, followed by merchants and daily laborers and less in parents whose occupation was government employee. This is due to the fact that the government employees' access to participate/ easily understanding of different child related laws either by reading or attending in meeting than the rest of parents whose occupation was farming, merchant and daily laborers.

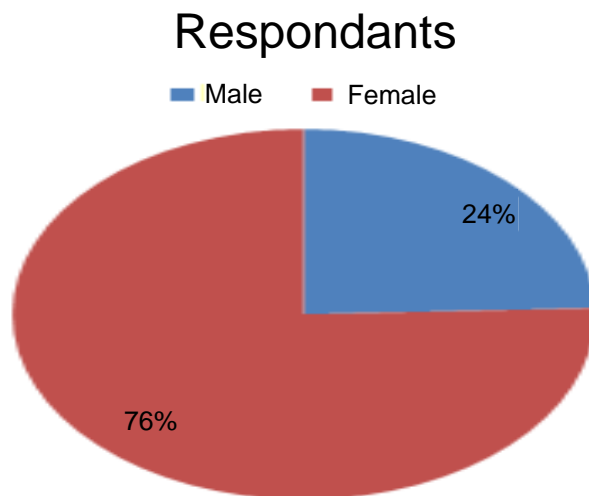


Figure 1

#### i. Age and child labor

The table 3.1 below shows that the number of children in age category 5-8 accounts 27 (28.7%) and, age 9-11 the number of children 38 (40.5%) and age category 12-15 the number of children 29 (30.8%). Accordingly, the age category 9-11ranked first in working which was 29 (42%), followed by age category 12-15 the number of children who were responded as working were 24 (35%) and the remaining 16 (23%) were

from the age category 5-8. The survey result revealed that from different age category a total of 69 (73%) of the children's were engaged in different activity and the remaining 25 (27%) responded as not working. Most children started working below the age of 8 and major sectors of work are unpaid family work such as agriculture (58% M & 7.24 % F) ,Home service (7.3% F & 22% M) agriculture and home services were activates that children's were practicing.

Table 3.1: Age and child labor

No.	Age	No,	%	Working		Not Working	
				No.	%	No.	%
1	5-8	27	28.7	16	23	11	44
2	9-11	38	40.5	29	42	9	36
3	12-15	29	30.8	24	35	5	20
	Total	94	100	69	100	24	100

ii. *Schooling of the Children's*

The educational status of the children's was one of the variables under consideration of this study. The result of the survey shows that 68 (73%) of the children's were currently in the school, 22 (23%) never went to school and 4 (4%) students dropout in order to support their parents with different activities. As the focus group

discussion members confirmed that the two major reasons for not attending school and for dropping were the need to work and financial problem to cover school expenses and those children's who were attending school were also working different activities before and after school.

Table 3.2: Educational status of the children's

No.	Schooling	No.	%	Working		Not Working	
				No.	%	No.	%
1	Currently in school	68	73	53	77	15	60
2	Never went to school	22	23	12	17.2	10	40
3	Drop Out	4	4	4	5.8	0	0
	Total	94	100	69	100	25	100

b) *Model Analysis*

To identify the major determinants of child labor in the study area dependent variable i.e. Probability of being in child labor was regressed against various explanatory variables. The regression table revealed that binary logistic model managed to predict 69 percent of the responses correctly. Apart from percent correct predictions, the model Chi-Square with "n" degrees of freedom and Hosmer and Lemeshow's were used to test goodness-of-fit test. Accordingly, p-values associated the Chi-Square with 8 degrees of freedom. The value of .0000 indicates that the model as a whole is statistically significant that shows the model fit the data well (see table 3.3 below)

coefficient and variance inflation factor were used for multi-collinearity test of discrete and continuous variables, respectively. Contingency coefficient value ranges between 0 and 1, and as a rule of thumb variable with contingency coefficient below 0.75 shows weak association and value above it indicates strong association of variables. The contingency coefficient for the discrete variables included in the model was less than 0.75 that didn't suggest multi-collinearity to be a serious concern. As a common practice continuous variable having variance inflation factor of less than 10 believed to have no multi-collinearity and those with VIF of above 10 are subjected to the problem and should be excluded from the model (Gujarati, 2009).

The variables included in the model were tested for the existence of multi-co linearity, if any. Contingency

Table 3.3: Logistic regression result

Prb. Of being in child labour	Coefficient	Std. Err.	z	P >  z
Sex of parents	.8604187	1.298265	0.66	0.507
Age of the Households	.0131227	.0283364	0.46	0.643
Family Size	.8290725	.3150063	2.63	0.008***
Dependency Ratio	.7416148	.4888516	1.52	0.129
Head Eqations	-.1986955	.0379914	-5.23	0.001***
Occupation of parents	4.285659	1.599432	-2.68	0.007***
Distance from school	0.067724	.0279624	0.24	0.809
Loss of parents	3.829672	2.057537	1.86	0.063*
cons	5.185204	3.1686	-1.64	0.102
Number of obs = 94 Log likelihood = -19.87 LR chi2(8) = 90.40 Prob > chi2 = 0.0000 Pseudo R2 = 0.6946				

NB: \* significant at 1%, \*\* significant at % and \*\*\* significant at 10%

Source: Survey result using STATA, 2017

In logistic regression analyses the variables that were positively related with the probability of being in child labor were household head sex, age, family size, dependency ratio, distance from school and loss of parents. The variables that were negatively correlated with the probability of being in child labor were head education and occupation of parents.

In the table above 8 explanatory variables were included in the model , 4 of the variables: household family size, distance from school, parents educational status and occupation have a significant effect on children's failing in to child labor at the significance level at 1 percent, 5 percent and 10 percent. The negative values of explanatory variables in the table above indicate that when the unit change in independent variable lead to decrease in probability of being in child labor.

i. *Marginal Effect for Logit Regression*

In order to identify the factors of child labor in the study area this study employed the logit model. Since the model used is not linear, the marginal effect of each independent variable on the dependant variable is not constant but it depends on the value of the independent variables. Thus, marginal effects can be a

means for summarizing how change in a response is related to change in a covariate. For dummy variables, the effects of discrete changes are computed, i.e., the marginal effects for dummy variables show how  $P(Y = 1)$  is predicted to change as  $X_k$  changes from 0 to 1 holding all other  $X_s$  equal.

Whereas for continuous independent variables, the marginal effect measures the instantaneous rate of change, i.e. we compute them for a variable while all other variables are held constant that means in this study change in the probability of being in child labor with a unit change in continuous independent variable (Greene, 1993). Thus, opposed to linear regression case, it is not possible to interpret the estimated parameters as the effect of the independent variable up on being in child labor. However, it is possible to compute the marginal effects at some interesting values of the significant explanatory variables. As we can see in table 3.4 below:

*mfx*

Marginal effects after logit

$$y = \text{Pr}(\text{prb ChildLabor}) (\text{predict}) = .31073238$$

Table 3.4: Marginal effects result

Prb. Of being in Child labour	dy/dx	Std.Err.	Z	p>  z
Sex of Parents*	.1635031	.20486	0.80	0.425
Age of the Households	.0028106	.00604	0.47	0.642
Family size	.1775689	.06877	2.58	0.010**
Dependency Ratio	-.1588374	.11334	1.40	0.161
Head education	-.0425562	.00801	-5.31	0.000***
Occupation of Parents*	-.6764956	.13494	-5.01	0.000***
Distance from school	.0014505	.00606	0.24	0.811
Loss of Parents*	.5893056	.15177	3.88	0.000***

(\*) *dy/dx* is for discrete change of dummy variable from 0 to 1

NB: \* \*\*significant at 1%, \*\* and significant at less than 5%

Source: Survey result using STATA, 2017

a. *Family Size and child labor*

The size of household was found positive in this finding and the coefficient is statistically significant at 5percent level. Other things remain constant, as it was expected that household family size increase by a unit, the probability of a child to be included in child labor increase by about 17.75 percent. This is due to the fact that additional household member shares the limited resources that lead the household to become poor and expose the children's of that family to child labor in order to fill their consumption short fall.

b. *Loss of Parents/ divorce and Child labor*

One of the determinants of child labor in the study area was loss of parents by different reason i.e by death, divorce etc. The variable is positively related with the probability of the child to be in child labor and the coefficient is statistically significant at 1 percent level. Holding all the model variables at their mean value,

change from *having parent status to no parents' status* the probability of a children being in child labor increase by 58.9 percent. The possible explanation for this finding was Children who have broken family and those who lost parents early were forced to work for survival. A family with complain (mother and father), dysfunctional family, unproductive family, divorce, inability of mother or father or both by natural and artificial cases, and death of either father or mother or both by any cases increase the vulnerability of children to work.

c. *Education level of the households and child labor*

The level of education is negatively correlated to the probability of a children being in child labor and the coefficient was statistically different from zero at 1 percent significance level. As it was expected, other things remain constant when the education level of parents increased by one unites the probability of children to fail in to the child labor decrease by 4.2

percent. This is due to the fact that educated parents can capture easily any awareness creation to child labor and related problems and protect their children from child labor.

#### d. Occupation of parents and child labor

Occupation of parents is one of the factors determining child labor in the study area. The variable is negatively related to the probability of a children being in child labor and the coefficient was statistically significant at 1 percent level. Holding other variables constant change from no occupation status to occupation status of parents the probability of a children being in child labor decrease by about 67.64 percent.

This may be the case that the parents who have access to occupation that can feed their family have better chance of keeping their children's from child labor exploitation than those who were dependant on others(it may be relatives, government etc)

## IV. CONCLUSION AND RECOMMENDATIONS

### a) Conclusion

This study analyzed the child labor and factors affecting child in the study area. The study used 94 sample parents of the children were included and which was collected from four kebeles i.e. Damot Mokonisa, Gacheno, Shasha Gale and Wandara Gale. To attain the stated objectives of the study we used both descriptive and Econometric model analysis i.e. binary logit model.

Despite several limitations like exclusion of homeless street children who were expected to encounter the worst forms of child labor, lack of uniformity in the definition of various forms of child labor and limited sample size, this study has tried to show the magnitude of child labor in a rural community setting.

The study showed that nearly 73% of the interviewed children were working and only 27% were not working. Result of this findings shows that most of the children were started working below the age of 8 and major sectors of working were unpaid family work such as agriculture(58% M&7.24 % F ) ,Home service (7.3% F & 22% M)agriculture and home services were activates that children's were practicing.

The binary logit regression result shows that out of 8 variables included in this study to determine the influence of explanatory variable on probability of child to be failed in child labor4 variables were found significant at 1 percent, 5 percent and 10 percent level. Among the significant variables family size and loss of parents by different reason positively affect the probability of a child to be in child labor. On the other hand parent's occupational status and educational level affects negatively the probability of a child being in labor market.

### b) Recommendation

- Child labor is serious negative phenomenon of our world that requires joint contributions of all societies. The desired areas of intervention stated by the subjects included family support education to children, raising community awareness about child labor, family planning, legislation, and implementation of law enforcement on child labor.
- Implementation of family planning and related measures should be taken to limit household family size.
- Creating job opportunity for parents can reduce child labor, large government infra structure construction such as rural roads, water, building constructions and others one way of creating job opportunities.
- In this study educational status of parents have negatively correlated to child labor exploitation. Education may be the most important tool to reduce child labor exploitation and it needs the close follow up of parents education implementation in rural area in order to hand over the problems related with child labor.

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