Individual, household, and community level factors of child labor in rural Ethiopia

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Abstract: This study was aimed to develop the frameworks (cause effect relationship), which distinguish three levels of factors namely individual, household, and community level factors. Child labor was influenced by number of factors arise from child themselves, household, and community level impediments. The data were collected from nationally evocative household surveys that were conducted in 2004, 2011, and 2016 by central statistical agency from 35,827 children living in rural Ethiopia. The data were analyzed via Logit model. The result indicates that child labor as a combined product of individual, household, and community factors. At individual level the gender of child and biological relationship to the children are significant determinants of child labor. Female child engaged more in child labor than male in rural Ethiopia. At the household level, resources such as (income, agricultural land, literacy of the head) and household size influence the child labor. Better income and literacy of the household head lower the likelihood of child to be

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PUBLIC INTEREST STATEMENT

Children will be the owner of giant talent and the coming hot generation of the country. Study on three level determinants of child labor and identifying causes of child labor in rural Ethiopia would significantly aid local government, child care workers and other humanity workers in supporting the needs to reverse the situation of child labor. The findings of this research will also create awareness for families to save their children from exploitation and schemes of improving childcare and efficiency of children in any activities via reducing utilization of child labor.

1 Frameworks
engaged in child labor. With regard to community level factor availability of primary school reduces the likelihood of child to be engaged in child labor. Child has less likelihood to engage in child labor if there is primary education close to their residence. Therefore, the government monitoring, providing primary education and awareness creation would be appropriate in minimizing child labor in rural Ethiopia.

Subjects: Environmental Studies; Environment & Gender; Environment & Society; Education - Social Sciences; Sociology & Social Policy; Gender & Development; Health & Development; Population & Development; Culture & Development; Rural Development

Keywords: child labor; Logit model; rural Ethiopia; three level factors

1. Introduction
Up to 1990 Human capital have been considered as basic indicator of development (Todaro & Smith, 2011). Children are the vital bases for future human resource endowment, but children face many challenge that potentially harm their social, economic and behavioral activities. Over exploitation of child labor has been the potentially problem all over the world. Child labor is exploitation of children through any form of work that deprives children of their childhood, interferes with their ability to attend regular school and is mentally, physically, socially, or morally harmful (Ahmed, 2013).

Child labor is everywhere in the world (Ahmed, 2013). During the last decade government and donor organization have done major efforts to reduce child labor all over the world (Webbink et al., 2013). Despite these efforts, estimation indicates that still 152 million children are in child labor, of which 73 million were in hazardous work around the world (ILO, 2019). Moreover, of 4.3 million children are subjected to forced labour. Regionally for about 19.6% of children were in child labor in Africa (ILO, 2019).

Ethiopia has made moderate advancement in effort to eliminate child labor (UNICEF by Cuninghame, C., Azel A., Martinez and Rayment, ca. 2018). In spite of these efforts, According to the results of in a 2015 national child labor survey published in 2018, almost 16 million children from the ages of 5 to 17 engaged in child labor. Child labor reinforces intergenerational poverty, threatens national economies, and undercuts rights (ILO and UN, 2020). So decreasing the incidence of child labor is about sustainable socio-economic development. To improve the situation of child labor, it is a fundamental importance of identifying the factor influencing in engagement of child labor. The child is not up to them to decide either to work or school (Maoyong Fan et al., 2014), so there are factors that influence child labor. The influence could be individual factor, household factor and community factors.

The literature analyzed the determinants of child labor in different countries. For instance, Cockburn et al., (2004), Getinet and Belyou (2007), Webbink et al. (2008), and Ahmed (2013), Maoyong Fan et al. (2014), Murrieta (2016) indicate that household income, family structure and size, parent education level are the main determinants of child labor. The household with better income and employment have negative impact on child labor. Large family size and age of the child increase the likelihood of child labor (Terefe & Surajit, 2018). Study by Rickey (2009), Mudzongo and Whitsel (2013) indicate that access to education, drinking water and electricity have negative impact on child labor. On the other hand market accesses have positive influence on child labor. Mudzongo and Whitsel (2013) and Latif et al. (2016) indicate that poor monitoring by the government are responsible for expansion of child labor. In general, from the literature the cause of child labor is not only from the household factor, but also individual and community level factor are critical determinants. Figure 1 describes the factors that influence child labor:

Figures 1 indicates that child labor as a combined product of individual, household factors, and community factors. But some child labor literature find out that individual factors are the main determinants of child labor (Webbink et al. (2008), Terefe and Surajit (2018)), while the other study
Figure 1. Conceptual framework.  

Source: own construction based on the literature, 2020

conclude the household factors are the main determinants of child labor (Cockburn et al., (2004), Getinet and Belyou (2007), Ahmed (2013), and Owusu and Kwartey (2014) and Maoyong Fan et al. (2014)). Moreover, other scholars also suggested that those community factors are also the driver of child labor (Rickey (2009), Mudzongo and Whit sel (2013), and Latif et al. (2016)). The study indicates that child labor was influenced by many factors from different direction. The parental decisions regarding child labor depend not only on characteristics of parents and their households, but also on the presence of job opportunities for children at the local labor market and on the characteristics of the available educational facilities (Webbink et al., 2013). But the literature has at least two gaps: the first they consider household or individual factor or community factor alone influencing child labor, which is inconclusive and incomplete. Child labor might not be only influenced by one factor rather it is the result of combined products. Hence, to obtain an encompassing understanding of the roots of child labor, the relevant factors at the different levels (individual, household, and community) should be studied simultaneously. The second one is none of the study addresses the issue of child labor in Ethiopia at the national level. The study at hand answers the research questions: what are the child-related (individual), household and the community level factors that affect child labor? The current study aims to address the gap by combining both three factors together. Therefore, the study was focused on the determinants of child labor in rural Ethiopia.

2. Literature review
Study of child labor has been the subject of research by many researchers in the past. They have concluded several factors affecting child labor in different regions of the world based upon analysis of cross sectional and panel data. The findings from some of recent studies and so far were presented hereunder.

Mudzongo and Whit sel (2013) indicate that access to primary education lower the chance of child to be in child labor, while market access increases a child’s likelihood of labor participation in Malawi and Tanzania. Webbink et al. (2008) studied the determinants of child labor using data from 150,000 children in developing countries and found that socio-economic factors to be still major determinants of child labor, with less child labor in households with more resources and in districts and countries that are more developed. In addition, first born children and child with missing parents are more vulnerable to child work. Similarly Maoyong Fan et al. (2014) find that the propensity for a family to have child laborers is a function of demographic and work-related characteristics of the parent in US. Murrieta (2016) stressed income of the household were a critical determents of child labor in Mexico. Other factors such as family structure and parents’ educational level exert influence as well. Latif et al. (2016) suggest that poor monitoring by the
government resulted in child labor in Pakistan. Similarly, study by Ahmed (2013) in Lahore Pakistani Factorize household-based determinants for child labor. Their factor model reveals that household-poverty-driven factors are the most serious while the household demography is the second most serious factor in the dynamics of child labor in Lahore. Patrinos and Psacharopoulos (1997) finds that family size and age structure of the household is important determinants of child employment in Peru. That is, having a greater number of younger siblings implies more age-grade distortion and a higher probability that the child works. Study by Rickey (2009) in Philippines indicates that access to drinking water, access to electricity, and better income reduce the likelihood of child work and increase school attendance, while poverty and low education level of the head increase the likelihood of child labor.

Owusu and Kwarteye (2014) investigated the factors which influence the farmers’ decision to use children on cocoa farms in Ghana using cross-sectional data collected among 100 cocoa-producing households. Logit model was used, and their result indicates that the level of education of the household head has negative impact against child labor. In addition, depending on the age structure of the household, household size has significant effect on the child labor. The household age structure above 18 years has negative effect on child labor and below 18 years of household age structure resulted in employment of child in cocoa farms.

Cockburny and Dostiez (2004) study in rural Ethiopia stressed that the returns to end demand for child work vary between households according to their asset profile and demographic composition. Getinet and Beliyou (2007) studied the trade-off between child labor and education attainment in Ethiopia. They used probit model for the data obtained from 5th round Ethiopian rural household survey from 1681 household. They find that household level factors such as household head education level and family sizes are important determinants of child labor. The household head with more education attainment decrease the likelihood of child labor, but large family size and availability of livestock increase the probability of child labor. Terefe and Surajit (2018) indicate that household size and age of child labor have positive influence on child labor hour, while household income decrease the child labor income in Jimma town, Ethiopia.

3. Research methodology

3.1. Study design
The quantitative research design was used to investigate the determinants of child labor in Ethiopia. Moreover, this research design was applied to determine the magnitude of child labor in relation to the demographic, socio-economic, and political factors.

3.2. Data source
The data were collected from nationally representative household surveys, which were conducted in (CSA, 2004, 2011 & 2016). The data are derived from Household Income and Consumption (HICE) and Welfare Monitoring Survey (WMS) were collected by Central Statistical Agency (CSA). Based on theoretical and empirical literature, conceptual framework (figure 1) has developed by including individual level, household level and community level factors that influence child labor. The framework were tested by unique data set, containing information of 35,827 children age of 5–14 years (of which 52% are females) and their families live in rural Ethiopia. The upper age 14 used by international Labor Organization (ILO) convention indicates that children above 14 years have green light to some work.

3.3. Data analysis
This study essentially utilized two steps for better understanding how individual, household, and community level factors influence the likelihood of child labor in rural Ethiopia. Descriptive statistics were used to describe the variables by using the mean and frequency. Secondly, Logit model was used to estimate factors influencing child labor. So, the study was aimed to find out the determinants of child labor in the study area. Children may go to work or not depend on the situation they face. Therefore, the dependent variable is nominal, and it takes the value 1 (for child
go to work) and 0 (otherwise). To deal with the dummy dependent variable \( Y \) given the explanatory variables \( X \), the possible model would be linear probability model (LPM), Logit model, and probit model Gujarati (2011).

\[
Y_i = \beta X_i + u_i
\]  

(1)

\( Y \): dependent variable with two categories i.e., 1 and 0, \( \beta \): denotes the parameters to be estimated, \( X \): explanatory variables, \( \mu \): error terms and finally “\( i \)” represents the number of effect & cause variables as well as unexpected error terms, respectively.

LPM from equation 1 indicates: the condition expectation of the child labor (dependent variable) given explanatory variable, i.e., conditional probability that the event (child labor) will occur or not. However, LPM has series limitation, first it assumes that the probability of smoking moves linearly with the value of the explanatory variable, no matter how small or large that value is. Secondly, by logic, the probability value must lie between 0 and 1. But there is no guarantee that the estimated probability values from the LPM will lie within these limits. This is because OLS does not take into account the restriction that the estimated probabilities must lie within the bounds of 0 and 1. Thirdly, the usual assumption that the error term is normally distributed cannot hold when the dependent variable takes only values of 0 and 1. Finally, the error term in the LPM is heteroscedasticity, making the traditional significance tests suspect. Due to the above-mentioned problems, the current study is not estimated using LPM. The alternatives discussed in the literature were Logit and Probit.

The determinants of child labor were studied in different countries using Logistic regression (Owusu & Kwartey, 2014; Webbink et al., 2008, 2013). The effect of household background characteristics, community factor, and individual factor on the participation in child labor is studied using Logistic regression analysis. Dependent variable in this analysis is a dummy variable indicating whether (1) or not (0) the child performed any economic activity. The analyses were restricted to children aged 5–14. The upper limit was chosen because of the ILO-conventions on child labor permit light work for over 14 year-olds in developing countries. So, the study employed Logit model to analyze the determinants of child labor.

### 3.4. Logit model specification

The child goes to work on not depend on unobservable index \( I^* \), which depends on explanatory variable such as child relationship to the head, sex of child, income of the household, head and gender of the household head, age of household head, education level of the head, access to market and access to primary education Gujarati (2011).

\[
I_i^* = \beta X_i + u_i
\]  

(2)

While \( i \) indicates individual child, assume \( Y_i = 1 \) (child goes to work) if \( I_i^* \geq 0 \), and \( Y_i = 0 \) (otherwise) \( I_i^* < 0 \), in order to make this choice in terms of probability of child go to work \( (Y_i = 1) \):

\[
Pr (Y_i = 1) = Pr (I_i^* \geq 0) = Pr (\beta X_i + u_i \geq 0)
\]  

(3)

Logit model assumes that the probability distribution of \( u_i \) follows logistic probability distribution (Gujarati, 2011).

Written as:

\[
Pi = \frac{1}{1 + e^{-\beta X_i}} = \frac{e^{\beta X_i}}{1 + e^{\beta X_i}}
\]  

(4)

Where \( Pi \), represents the probability of child goes to work \( (Y_i = 1) \) and \( Zi = \beta X + u_i \)

The probability that child does not go to work \( (Y_i = 0) \) is given by:

\[
1 - Pi = \frac{1}{1 + e^{\beta X_i}}
\]  

(5)
From equations 4 and 5, $\pi_i$ is non-linear with $Z_i$ and satisfies the requirement of $\pi_i$ between 0 and 1. Since the $\pi_i$ is not only non-linear with $X_i$ but also non-linear with the coefficient, which raises the problem of estimation. Take the ratio of equations 4 and 5:

\[
\frac{\pi_i}{1 - \pi_i} = e^{Z_i}
\]

Equation 6 denotes odds ratio in favor of child goes to work. Taking the natural log to the odds ratio resulted in:

\[
L_i = \ln\left(\frac{\pi_i}{1 - \pi_i}\right) = Z_i = \beta X_i + \epsilon_i
\]

Equation 7 is the log of odds ratio or Logit model, based on this specification all variables were written as follows:

\[
L_i = \ln\left(\frac{\pi_i}{1 - \pi_i}\right) = Z_i = f \text{ (child relationship to the head, sex of child, income of the household, head and gender of the household head, age of household head, education level of the head, access to market and access to primary education)} \]

The coefficient of each variable would be estimated by using method of maximum likelihood (ML) estimation technique. The variables that were used in this study are described in Table 1.

4. Results and discussion

4.1. Descriptive result

The objective of the study was to examine the determinants of child labor in rural Ethiopia in relation to individual, household, and community level factors. The data were derived from HIES and WMS by CSA in (2004, 2011 and 2016). A total of 35,827 sample child were used in this study, of which 52.58% are girls. Figure 2 presents the percentage of child engaged in child labor. The important finding from Figure 2 is 17.5% of the child engaged in child labor.

The second important finding is that, the child labor status in relation to gender, holder of agriculture and access to primary education. From total 17.5% child in child labor, boys and girls accounted for 50.06% and 49.94%, respectively, as indicated in Table 2. The result indicates that children in rural area are engaged in child labor regardless of their sex. The child belongs to the household with holder of agriculture engage more in child labor. Of the total of 17.5% child engaged in child labor, about 84% child engaged in child labor if the households are the holder of agriculture. Moreover, access to primary education has important implication for the child to be engaged in child labor. Only 4.04% of the child engages in child labor with access to primary education, but almost 96% of the child engaged in labor force has no access to primary education.

4.2. Empirical analysis

The logistic result of the probability of child engaged in child labor is presented in Table 3. The performance of the model was cheeked by Wald chi2, Log pseudo likelihood, and Pseudo R². The Wald chi-square employed the overall fitness of the model, and the result is statistically significant at 1%, which indicate the overall model estimate well. Despite Pseudo R² is the poor measure of the model in binary regression, according to Gujarati (2011) if the value of Pseudo R² is between 0.2 and 0.4, the model fits well. In this study, the value of Pseudo R² is 0.22, so we can conclude that logistic regression estimates well. Finally, the value of Log pseudo likelihood indicates the model with nine independent variables has minimum value compared with other variables. Akaike's information criterion and Bayesian information criterion were used for model selection. To ascertain that the model has a well-behaved residual, the White-test was employed to test for homoscedastic variance in the residual and robust standard error was employed. The study also employed the Variance Inflation Factor (VIF = 1.95) to cheek the presence of multi-Collinearity for continuous variables and found no problem.
| Abbrev. | Variable name | Description | Measurement | Expected sign |
|---------|---------------|-------------|-------------|---------------|
| D.V    | Child work    | The child between the age of 5–14 year 1 = if child engaged in child labor that deprive their rights, 0 otherwise | Nominal | Child work |

Child related(individual level) factors

| Gender | Gender of child | Gender of the child sex = 1, if the child is male, sex = 0, if the child is female | nominal | -ve |
|--------|----------------|---------------------------------------------------------------------------------|---------|-----|
| Biorel | Biological relationship to the head | Child relationship to the household head biorel = 1, if the child is son to the household head and 0 = other relative | nominal | -ve |

Household level factors

| Income | Income of the household | Income is considered as a living standard or the financial performance of the household to maintain their needs | In birr | -ve |
|--------|-------------------------|----------------------------------------------------------------------------------------------------------|--------|-----|
| Hsize  | Household size          | The numbers of person live on the same arrangement.                                                      | In person | +ve |
| Age    | Age of the household head | The age of the household head expected to affect the child participation in work in relation to the available labor force | In year | +ve |
| Edu    | Head education level    | Able to read and write of the household head, edu = 1, if household head able to read and write, edu = 0, otherwise | Nominal | -ve |
| Agri   | Holder of agricultural land | Household engage in agricultural activity required more labor force than other activities in rural area. Agri = 1, if household own agricultural land, agri = 0, otherwise | Nominal | +ve |

Community level factors

(Continued)
Except for biological relationship of child to the head, all the variables in the model had the correct a priori signs. As displayed in Table 3, out of nine variable seven were statistically significant to determine the child labor. Access to primary education is significant at 10%, sex of the child, child relation to the head, household size, income of the household, literacy of the household head, holder of agriculture are statistically significant at 1%.

Number of obs = 35,827 Wald chi2 (9) = 3917.81(0.000), Log pseudo likelihood = −10,547.863, Pseudo R² = 0.2285, VIF = 1.95, ***, ** and* indicate significance level at 1%, 5%, and 10%, respectively, source: own computation (2020).

As expected, the coefficient of gender/sex of child is negative and significant at 1%. The result indicates those males have less chance to engage in child labor than females. The marginal effect −0.0078 indicates that there is about 0.78% lower probability of male to engage in child labor. In other words, females are more participant in child labor, and the findings are in line with Terefe

### Table 1. (Continued)

| Abbrev. | Variable name | Description | Measurement | Expected sign |
|---------|---------------|-------------|-------------|---------------|
| Primary | Access to primary education | Availability of primary school locally, so the child can attend school without extra cost. Primary = 1, if primary education available, 0 = otherwise | Nominal | -ve |
| Mktdistance | Access to market | Distance from the market measured in minute. Market access may encourage child to participate in cash generating activities | Time | -ve |

Source: own construction, 2020

![Figure 2. Source: Own Computation, 2020](image-url)
Table 2. Descriptive statistics for child labor in relation with gender, holder of agriculture and access to primary education

| Child engaged in child labor(N = 6265) | Sex of the child | Frequency | Percentage |
|----------------------------------------|------------------|-----------|------------|
| Male                                   | 3,136            | 50.06     |
| Female                                 | 3,129            | 49.94     |
| Holder of agricultural land            |                  |           |
| Yes                                    | 5274             | 84.18     |
| No                                     | 991              | 15.81     |
| Primary school access                  |                  |           |
| Yes                                    | 253              | 4.04      |
| No                                     | 6,012            | 95.96     |

Source: own computation, 2020

Table 3. Logit estimates on the use of children labor in rural area

| Child related(individual level) factor | Marginal effect | Robust St.error | Z       | P>|z|  |
|---------------------------------------|-----------------|-----------------|---------|--------|
| Gender(m = 1)                         | -0.0078         | 0.035           | -4.54***| 0.000  |
| Biorel(son = 1)                       | 0.05            | 0.06            | 17.84***| 0.000  |
| Household level factor                |                 |                 |         |        |
| Income                                | -0.0001         | 0.000321        | -5.02***| 0.000  |
| Hhs size                              | 0.005           | 0.006           | 15.36***| 0.000  |
| Age                                   | -0.00003        | 0.01            | -0.04   | 0.969  |
| Edu(literate = 1)                     | -0.19           | 0.07            | 42.51***| 0.000  |
| Agri(yes = 1)                         | 0.007           | .05             | 3.13*** | 0.002  |
| Community level factors               |                 |                 |         |        |
| Primary(yes = 1)                      | -0.0086         | 0.005129        | -0.34*  | 0.079  |
| Mktdist                               | 2.41e-06        | 0.0001          | 0.69    | 0.492  |

and Surajit (2018) and Mudzongo and Whitsel (2013). The possible reason might be that females are more likely to engage in domestic activities. The community faith about female child pushes the child out of the school and engages in child labor. While the study by Getinet and Beliyou (2007) in rural Ethiopia, Webbink et al. (2008) in US, Mudzongo and Whitsel (2013). In Mexico indicate that being boys are more likely to engage in child labor than females.

The coefficient biological relation of the child with the household was positive and significant in favor of child labor, which is a surprise. It was expected that child to be son of the household head reduces the likelihood to engage in child labor. The marginal effect of 0.05 indicates that there is about 5% more chance of household head’s son to engage in child labor than other relatives. The finding suggested that there is no evidence for parent favor for their own children than foster children. This results in line with Webbink et al. (2008) in developing countries and Rickey (2009) finding in US biological children do not work less than non-biological children. On the other hand indicate that children with direct descendant of the household head are more likely to attend school and less likely to engage in child labor. Despite further investigation requires to figure out the reason, the possible reason might be the son of child labor to engage in child labor more than
other relative depend not only on biological relation, but also the socio-economic activities of the household.

Regarding the household level factors of child labor, income of the household was negative and significant. The household with more income, the likelihood of child to engage in child labor decreased. As the marginal effect indicates, additional income increased by 1000 Ethiopian birr, the likelihood of child to engage in child labor decreased by 10%. The result confirmed the finding of Rickey (2009), Mudzongo and Whitsel (2013), and Terefe and Surajit (2018). The child from richer family, significantly reduces the chance to engage in child labor. The reason would be the household with better income able to finance the schooling expenditure for their child and their lives.

The coefficient of household size was found positive and significant. The household with large family size increases the chance of employing child labor. Additional family members increase the likelihood of child labor engagement by about 0.5%. Consistent with the expectation and finding of Mudzongo and Whitsel (2013), child labor and household size have positive association. Despite the age structure of the household size matter, the likelihood of child to engage in child labor positively related to family size (Owusu & Kwarteye, 2014). This could be true due to the fact that, household with large family size parents is unable to finance all expenditure for their livelihood, so that they push their children to work.

Consistent with the expectation the coefficient of education was found negative and significant. The marginal effect of −0.19 indicate the child with literate household head, the likelihood of child to engage in child labor lower by 19%. Getinet and Beliyou (2007) and Latif et al. (2016) the likelihood that child will attend child labor decrease markedly with literacy of the household head. Literacy of the household head would help to identify the possible of consequence of child labor and consider the future investment in child has good return in the future. So that, the child from literate parent head would attend school than in child labor.

Holder of agricultural lands also other important determinants of child labor. The coefficient of holder of agriculture was found positive and significant. The marginal effect of 0.007 indicates that the household with holder of agricultural land, the probability of child to engage in child labor higher by 0.7%. The results are consistent with the expectation and finding of Rickey (2009), owning agricultural land strongly associated with child work. The reason might be the cultivation system has been traditional and always conducted by human being, and it requires more labor. This might push the children to work instead of schooling.

The community level factors of child labor also significantly affect the child labor. The coefficient of access to primary education was negative and significant at 10%. The marginal effect of −0.0086 indicates that the access to primary education decreases the probability of child to be engaged in child labor by about 0.86%. The finding was consistent with the pre-hypothesis and Owusu and Kwarteye (2014). Access to primary education decreases the education expenditure of the household for their child, so that the likelihood of child would be higher to attend school than attending in child labor.

5. Conclusion
The study was identified three level factors, which affect child labor. The result indicates that child labor was determined by combined products of individual, household and community level factors significantly. Male child engaged less in child labor than females. This is due to the cultural influence and attitude of the parents for girls to engage in child labor especially in domestic non-market activities. Moreover household level factors of child labor i.e., income, literacy of the head, household size, and holder of agricultural land significantly influenced child labor. Community level factors of child labor also significantly determine the child engagement in child labor. As a result child labor influenced by the number of factors arises from child themselves, household level, and
community level factors. Cultural influences like gender of the child, biological relationship to the head, less education access, need for extra money are the main reasons for child labor.

5.1. Recommendation

Therefore, local and national government and non-governmental originations have to monitor primary education and create appropriate educational opportunity for all children to minimizing child labor and training should be given for families of the children to reverse the situation in rural Ethiopia.

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Note

1 Framework in this study indicates: the relationship of child labor with three level determinants.

Limitation of the study

Determinants of child labor were tested by data set, which contains information of 35, 827 children with age 5–14 years and their families live in rural Ethiopia only urban children were not included for this study, and the sample size was 35, 827, which is small as compared with the total population of Ethiopia. Interested researchers will do by increasing sample size beyond this one and by including both rural & urban children as study unit.

Disclosure statement

There is no competing interest.

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