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Migration and remittances as a solution to child labor: The case of Nigeria

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Abstract
Remittances are one of the critical sources of income for lots of Nigerian families. The following paper studies the influence of migration and remittances on child labor. The research attempts to identify whether receiving remittances from migrated household members reduces the likelihood of a child engaged in domestic and non-household economic activities. To examine it, the study will apply binomial logistic regression, probabilistic regression, and instrumental variable techniques. The data for this econometric analysis comes from the Nigerian General Household Survey 2018-2019, Panel 4, conducted by the World Bank and the National Bureau of Statistics. The sample extracted from the abovementioned dataset comprises households with children 5-18 years old. Mainly, children start working when there is no income-generating parent or when their parents' money is insufficient to maintain necessities. The results from econometric estimations prove that migrant remittances have a negative effect on child labor participation. The findings explain that children from remittance-receiving households are less prone to start working than children from non-receiving families. Migrant remittances also loosen the gap in employment risks between urban and rural children. Rural household recipients have more opportunities to enroll their children in school since, with remittances, families have enough funds for living necessities and can afford their children's education. With this, regional child labor disparity also decreases. Overall, children have less chance to enter the labor market than their peers from non-recipient households.

Keywords: child labor, remittances, migration, development economics, Nigeria

Introduction

Child labor has been a global problem for a long time. Some people have always preferred hiring cheap labor like homeless or parentless children and adolescents. Even in the 21st century of globalization and technological advancements, child labor still exists. International Labor Organization (ILO) confirms that there are 218 million working children worldwide (ILO, no date). The highest concentration of child labor is prevalent in African countries. Each fifth African child is employed (ILO, no date). Laboring children work in hazardous conditions. Hilson (2012) [14] reveals that most children work in the agricultural and mining sectors. Agricultural work for these children consists of cultivating tobacco, which is toxic and harmful without proper protection. For mining, dishonest employers force youths to extract and carry granite and gold. They lamentably work 10-12 hours daily without proper medical help and protection (Hilson, 2012) [14].

Nigeria is one of the Sub-Saharan African countries with the most severe conditions for children (UNICEF, no date). The possible reason behind the current prevalence of child labor in Nigeria can be the attacks of the terroristic organization Boko Haram. From 2011 till 2018, this organization assaulted several hundred villages while kidnapping women and children (Council on Foreign Relations, no date). The delinquents forced the kidnapped boys to replace fallen soldiers. Children of murdered parents had to work to support themselves and their siblings. Hazardous military conflicts have worsened the Nigerian economy and increased poverty (Council on Foreign Relations, no date). However, in contrast to a similar situation in Sierra Leone, Nigeria has a fewer fraction of employed children; 43% of Nigerian children and adolescents are employed compared to 72% in Sierra Leone (UNICEF, no date). Some experts suppose that migrant remittances prevent child labor. Remittances loosen budget constraints on the household as additional income. Hence, there should be no need to send a child to work. Several economists have devoted their research to this topic. The authors have proved that remittances from abroad prevent children from early employment in countries like Egypt, Nepal, and Vietnam. Nigeria has the highest remittance inflows among African countries. The current experiment will try to check whether migration and remittances have the same effect on the prevalence of child labor in Nigeria. The paper will try to:

- Identify the relationship between receiving remittances and the prevalence of child labor
- Evaluate the significance of migrant remittances in regressing child labor
- Present and interpret other determinants of child labor participation

Literature review

Child labor is considered a severe violation of human rights. To fight child labor, the first thing to do is identify the problem's origins: what caused children to enter the labor market? International Labor Organization states that poverty is a core trigger stimulating child employment (ILO, no date). In countries where poverty is most hazardous, children are a source of money, the last resort for survival. It is especially noticeable for prominent families since parents' income is hardly enough to meet even basic needs (Basu, 1999) [10]. Some economists claim that financial transfers in remittances can solve these problems. Hence, receiving remittances increases the household's income level and reduces poverty. It may become a key in fighting child labor.

The research includes the following papers to understand if remittances can indirectly influence child labor by affecting household income level and poverty. Acosta *et al*. (2008) [1] are economists who examined the possible impact of remittances on poverty, household income, and consumption. In his study on Latin American and Caribbean households, the author estimates that remittances from migrated relatives increase the welfare of household recipients and reduce poverty. Indeed, this analysis proves the statistical efficiency of remittances in reducing poverty by increasing income. With more money, the budget loosens, and parents can send their children to schools (Acosta, 2008) [1]. Adams and Cuecuecha (2010) [4] have examined the impact of internal and international remittances on income, consumption, and education of households-recipients in Guatemala. With analyzed spending of families-recipients and non-recipients, economists insist that remittances raise income levels and change budg*et al*location: less spending on food and more funds for children's education. The same findings Randazzo and Piracha (2019) [19] concluded from their study on Senegalese families that remittances change the budg*et al*location and consumption basket of household recipients. Remittances are proven to increase the income of the household. Remittance-receiving households spend less share of their income on food and save more. Share for educational expenses also increases (Randazzo and Piracha, 2019) [19]. Arif and Chaudhry (2015) [7] statistically support the idea that migrant remittances succeed in increasing not only school enrollment rates but also the assessment marks of children.

On the other hand, Bang *et al*. (2016) [9] argue that remittances harm households' well-being. In Kenya, remittances benefit only lower-middle-income households, not poor-income households, and only in the long term. These households must pay migration fees in the short term, thus taking more burden and worsening poverty. The immediate response of poor-income families to migration is a decrease in health and education expenses and withdrawal from schools.

Some authors studied exactly the relationship between migrant remittances and child labor. According to Azizi (2018) [8], remittances can be a possible solution for preventing child labor. With the econometric model, he proves that remittances sent by parents working abroad increase the overall wealth of a particular family. Remittances increase the family budget: thus, apart from food consumption and other necessities, families can afford education for their children (Azizi, 2018) [8]. The results showed that receiving remittance is positively related to school enrollment and graduation, which postpones the labor participation of children. Consequently, completing more advanced education classes can help gross human capital formation (Azizi, 2018) [8]. Better-educated children become more qualified workers who can get well-paid jobs. It, in turn, affects their future children; they also can follow the steps of their parents. Thus, migrant remittances may also solve intergenerational child labor (Azizi, 2018) [8]. Alcaraz *et al*. (2012) [5] are proponents of the positive effects of migration and remittances. The authors conducted an impact evaluation analysis of remittances sent from the USA to Mexican children on the background of the Great Recession 2008-2009. The recession cut working opportunities for migrants; it became difficult to find a job. As a result, the number of sent remittances and their dollar amount declined (Alcaraz *et al*., 2012) [5]. The crisis also damaged the Mexican economy and consequently raised the poverty level. Reduced financial support and rising poverty caused an enormous increase in the number of working children (Alcaraz *et al*., 2012) [5]. Alcaraz *et al*. (2012) [5] conclude that remittances positively affect suppressing child labor since the opposite case showed the same. Kumar Raut and Tanaka (2018) [17] also argue that remittances can decrease the labor participation of children. They separately study the influence of remittances and parental absence on children's education in Nepal. The remittances positively impact school attendance and decrease child labor (Kumar Raut and Tanaka, 2018) [17]. However, the results also describe that parental absence has an equivalent adverse influence on families' income. Due to parental absence, some children without being monitored do not attend school and instead engage in working activities, feeling themselves as adults, even with remittance reception. Another cause can be that remittance is still not enough to cover all living necessities and migration expenditures (Kumar Raut and Tanaka, 2018) [17]. Thus, children still have to work, and the impact of remittances is unclear. Acosta (2011a) also finds migration as a possible countermeasure to child labor. Though, the researcher’s findings about child labor and schooling in El-Salvador are also not completely positive. There is a gender discrepancy in the results. Girls from household recipients have more advantages and are less likely to work. These girls study more and reduce their operational activities. However, boys from remittance-receiving families do not engage in academics more, and their labor does not reduce (Acosta, 2011a) [2, 3]. In his next paper, Acosta (2011b) [2, 3] added the gender of a migrant to the analysis. Both domestic and non-domestic labor of children reduces if the migrant is female only, their mother. Girls and boys decrease their workload and substitute it with studying. On the other hand, there are sufficient adverse effects of migration and receiving remittances on the domestic and non-household labor of children if the migrant is a father (Acosta, 2011b) [2, 3]. In the case of male migrants, remittances do not positively influence the non-household labor of children. Furthermore, it stimulates the housework of children. Regardless of the gender of migrants, remittances increase the overall income level of households. Antman (2011) concludes the same outcomes for male migration. The immediate response to the father's migration is that children skip classes or stop attending schools. Antman (2011) explains this situation with children, particularly boys, now considered income generators for their families instead of their fathers. Migration is not only prospective remittances but also significant expenses. Collecting necessary documents, visa fees, immigrant registration, and other procedures are quite a large sum. Apart from expenditures, a household may receive financial help only if a migrant finds a job immediately. If the father cannot start working immediately, his family must maintain the children's employment (Antman, 2011). Nguyen and Nguyen (2015) [18] have dedicated their paper to investigating the influence of remittance on working children in Vietnam. The higher number of received remittance transfers is associated with more children

completing their primary and secondary education. However, their analysis shows that the number of working children from remittance-recipient households is almost equal to those from non-recipients. The only proven effect of remittances is encouraging children to study but not discouraging them from work. Most children combine work with studying (Nguyen and Nguyen, 2015) [18]. They find remittance as an insignificant factor in reducing child labor. Koska *et al*. (2013) [16] ensure that gains from remittances sufficiently exceed losses. As the previous researchers concluded, remittance receipts do not guarantee that children will not enter the labor market. However, remittances have a strong influence on the overall wealth of the household, the lack of which is the main reason for child labor (Koska *et al*., 2013) [16]. Dimova, Epstein, and Gang (2015) [13] found no shortcomings in remittance preventing child labor in Tanzania. Tanzanian children from household recipients are less prone to employment regardless of their gender, the gender of a migrant relative, or the destination of migrating. Regarding the disadvantages of migration, Binci and Giannelli (2016) [11] have conducted research comparing the effects of internal and international migration on child labor in Vietnam. The possible negative outcome for the family may occur if a household member migrates to a foreign country. It does not extend to within-country migration. Wages and salaries in the capital are quite high, and being native simplifies job-search rather than being a foreigner in another country. It is not required to pay high fees and traveling expenses to migrate to the capital or any other big city. Migrants can start working faster and send money to their families without sharing expenditures with children. The authors also refute the findings of economists who state that in-country remittances are insignificant compared to those from abroad. Their results prove that internal remittances reduce child labor on the same scale as international.

Data and methodology

NGHS data description

There have already been several LSMS surveys describing the life of Nigerian households. The primary data for this research comes from the Nigerian General Household Survey 2018-2019, Panel 4. The National Bureau of Statistics of Nigeria has conducted this survey as part of the Living Standard Measurement Surveys program of the World Bank. The purpose of the survey is to present the sources of income for rural and urban households. The survey presents records of the living conditions of the households, such as food consumption, access to public services, medical institutes, TV, internet, and other facilities. Age, gender, working status, educational attainment, marital status, source of income, and other factors, are recorded in the part of the individual questionnaires.

In contrast to previous research, NGHS 2018-2019 has more information about migration and remittances as a source of income. The data contains information from 5,000 households living in both urban and rural areas of 37 states of Nigeria. Overall, 30,337 individuals participated in the survey: 16,508 adults and 13,829 children younger than 18. Though the survey design has not aimed at the employment status of children, it still allows us to identify whether a child works or attends school or does both.

Methodology

The youths in Nigeria can be legally employed if he or she is at least 18 years old. There are some exceptions: for example, a child can work with their parents' consent even if he or she is younger than 14 depending on the employment field. The sample includes fewer households for the current paper to meet its area of interest. The households with children between 5 and 18 years old partake due to 18 years being the internationally accepted minimum working age threshold. Azizi (2018), Binci and Giannelli (2016) [11], Acosta (2011b) [2, 3], and other scientists in their works set the minimum age of the child to be five since the occurrence of less-than-5 child working is small. With these age boundaries, the initial NGHS sample consists of 6,238 children. All children of this range 5-18 are part of the following research, regardless of working status.

$$Y_{ih} = a_0 + a_1R_{ih} + a_2U_{ih} + a_3C_{ih} + a_4H_h + \varepsilon_{ih} \text{ (eq 1)}$$

Equation 1 is the econometric formula representing the general idea behind the relationship between child labor, remittances, and other variables. Y_{ih} is the target-dependent variable and represents the functional outcome of a child from household *h*. R_{ih} is the main regressor and states if household *h* receives migrant remittances. U_{ih} expresses community, like region of residence and neighborhood. C_{ih} is a set of a child's factors, like age and gender. H_h is a vector of the household's *h* background characteristics: parental education and household head's characteristics. ε_{ih} serves as an error term.

According to the previous studies related to remittances and child labor, there are several criteria by which we can define whether a child is working. The questionnaires provided for Nigerian GHS address a child being in labor if he or she is engaged in household and non-household agriculture, non-agriculture, business, sales, and other activities for more than 2 hours daily. If a child answers positively that he works for more than 2 hours per day regardless of paid or unpaid, the sample considers them working. For STATA analysis, *Childlabor* describes a dependent dummy variable Y_{ih}; thus, it equals 1 if the child works and 0 if not. The independent variables are *Remittance, Region, Gender, Literacy, Childage, Childedu1, Childedu2, Childedu3, Childedu4, Childedu5, Childedu6, Hheadage1, Hheadage2,* and *Hheadage3, Fatheredu1, Fatheredu2, Fatheredu3, Motheredu1, Motheredu2, Hheadgender*.

Remittance is binary and takes 1 if a household has received a remittance transfer from internal regions or foreign countries in the past 12 months. It equals 0 if a household has not received it, 1 in the opposite case. *Region* stands for where a household resides. Value is 1 when a child comes from an urban household and 0 from a rural one. *Gender* stands for the sex of the child. If the child is male, *Gender* is 1; if female, then 0. *Literacy* represents whether the child can read and write in at least one language. It equals 1 if he can read and write and 0 if he cannot. *Childage* is a continuous variable and stands for how old the child is in completed years by the day of the interview. It is also the only unchanged variable extracted from the original NGHS survey data. Other independent variables are dummy variables. *Childedu* variables are separate dummy variables describing the schooling of children. They do not describe the highest educational attainment of the child. It is not easy

to verify if the stated highest educational level is what a child is studying right now.

The child could get this level and withdraw before the interview. *Childedu* variables express the child's enrollment level and can explain if the child continued studying from the 2017-2018 to 2018-2019 academic years. Hence, it can help assess whether continuing studying reduces child labor since the child cannot enroll at a particular level without completing the previous one. *Childedu1* is for preschool studying, like nursery and kindergarten. *Childedu2* symbolizes if the child continues studying and enrolls in primary school level I-III. *Childedu3* is for primary school levels IV-VI. *Childedu4* is 1 if a child is enrolled in junior secondary school. *Childedu5* is 1 if the child is enrolled in senior secondary classes.

Childedu6 if a child enrolls at other non-governmental schooling facilities, except for professional and higher degrees. It is doubtful that underage people can enter higher-degree institutions. *Hheadage* addresses the household head's age divided into three separate age groups. *Hheadage1* is for if the head is younger than 30, *Hheadage2* if he or she is 30-50, and *Hheadage3* if he or she is over 50. *Fatheredu1*, *Fatheredu2*, and *Fatheredu3* are variables describing the educational attainment of a child's father. The first variable is 1 if the father has at least any primary education class. *Fatheredu2* and *Fatheredu3* are for secondary and higher education, respectively. This division occurs due to sufficient withdrawals from grade to grade. In the same manner, variables of the mother's level of education are present. Finally, *Hheadgender* is a binary variable representing the sex of the head of the household. It equals 1 if the household has a male head and 0 if there is a female head. The list of utilized variables and their definitions appear in Appendix 1.

Binomial logistic regression was applied first to check the relationship between child labor and the aforementioned independent variables. The research adopted the model based on a paper about the relationship between remittances and child labor in Vietnam developed by Binci and Giannelli (2016) [11]. The literature review recommendation also suggested probit regression and instrumental variables techniques. Apart from the regression, the analysis provides appropriate tests for endogeneity and goodness-of-fit and tests for the appropriateness of instruments.

Results

Logistic regression results

Logistic regression identifies the effect of previously mentioned estimators on the probability that a child will be employed in domestic and non-household activities. Child labor as a variable of interest takes values of 0 and 1, for not working and working.

Appendix 2 presents results from logistic regression for the whole sample of children. 15 independent variables out of 20 show a significant impact on child labor. First, estimation results regarding migrant remittances satisfy pre-experiment expectations and previous papers' findings. Remittances show a discouraging effect on the working of children. Children from households-recipients are 1.196 less likely to be employed than their peers from non-recipient households.

To summarize, migrant remittances can be quite an effective tool in fighting child labor. It is especially relevant for boys. For the boys' case, remittances show adverse effects: there is a 0.90 less chance that boys from remittance-recipients families will start working than those from non-receiving families. Remittances also sufficiently reduce the likelihood of rural children entering the labor market. Rural households receiving remittances are 1.57 less likely to send their children to work than households non-recipients.

The outcomes of the independent variables describing community and individual child characteristics also support the perception of child labor indicators. The sector of residence is crucial in determining child labor. Coming from urban regions reduces the likelihood of employment by 0.82. The ability to read and write also significantly reduces the likelihood of a child working. The literacy variable supports previous studies and reduces the probability of child employment by 35%. Being able to read and write reduces boys' probability of entering the labor market by 0.38, in general. For urban children, this chance is highest, with an 86% probability of not to start working underage. A child's age remains one of the most significant factors in regressing child labor. Child age is positively related to the working of children. As children grow up, they are more likely to start working. With each extra year of age, Nigerian children are 11% more prone to employment. Older boys are more insecure about working in terms of age than older girls. Nigerian boys have a 12% higher probability of working while becoming older compared to 10% for girls. The difference is not big, but boys still have more risks to starting working than girls their age. The educational attainment is a set of 6 separate variables, depending on which level the child enrolled by the moment of the interview 2018-2019 academic year. They do not represent whether children study in general, but on what level, showing the progress.

When a child enrolls from a nursery and kindergarten to primary school as *childedu2*, he or she is 99% less likely to enter the labor market. The same significant adverse effect happens if children continue schooling from primary to secondary classes and from junior secondary levels to senior secondary, *childedu4* and *childedu5*. The likelihood of starting working reduces by -1.10 and -1.20, respectively. For boys, the most significant change not to start working is to continue studying in senior secondary classes, *childedu5*. Enrolling in IV-VI secondary levels decreases the probability of working by 1.45. For overall rural children, it is 1.22. So far, educational variables show the most significant impact on child labor out of all regressors.

The coefficients of household characteristics are not as supportive of the literature. The age of household heads in all three age groups indicates a significant negative relationship with child labor. The older the household head, the lower the probability that children from this household will work. Since the household head's age ranges from three categories, the impact is not a shift by each additional year but a head from young to middle-aged or older. Being from a family with a middle-aged head is most efficient in preventing this child from employment, which is *hheadage2*. Children from these families are 1.34 less likely to start working. Having a middle-aged head increases the chance for the boy not to work by 1.26. For rural children, this probability is increased by 1.63. Household heads' age variables support the general findings from previous research.

On the other hand, parental education level shows unexpected results. Father's educational attainment is

statistically insignificant in reducing child labor. Father's education negatively affects only when the father has a higher degree in education, as in *fatheredu3*. It is similar to the impact of a mother's education. As findings state, only if the mother has a secondary education, regardless of the gender of the child and region, children from her family are less likely to enter the labor market, *motheredu2*. Children with mothers with a secondary education level have 62% more chance of not being employed than children from less-educated mothers. The impact is highest for urban children. The probability of urban children not working is increased by 1.81. The gender of the household head has a pleasing effect on the working of children. There is a higher probability that a child will not work if the head of the household is male. Hence, with the male household head, the probability for children from this family to enter the labor market decreases by 0.22. The Hosmer-Lemeshow test for goodness-of-fit and Link test for model specification was added as post-estimation analysis (see Appendix 3 and 4). They specify and check if the econometric model is suited for thorough data analysis and if independent variables testify correctly. Link test states that the independent variables are correct. Hosmer-Lemeshow test reveals that the logit model fits correctly.

Probit regression results

The second model applied in the current study is probit regression. The model is an additional analysis for the research. Probit results support the literature review and the outcomes of previous logistic regression: migrant remittances reduce the likelihood of Nigerian children entering the labor market. The significance level of all independent variables is the same as in logistic regression, though the coefficients are slightly different.

Migrant remittances negatively influence child labor. Receiving migrant remittances reduces the probability that the child will start working by 0.64 (see Appendix 5). Similarly to results from logit, boys from remittance-receiving households are less likely to work compared to boys from non-receiving households. The probability that the boy from this household will work decreases by 0.048. Migrant remittances discourage child labor, and this impact is more noticeable for rural children, as in the case of logit. With remittances as additional sources of income, the probability for rural children to enter the labor market decreases by 0.80. Since working children mostly come from rural areas, the migrant remittances decrease urban child labor only by 0.26. It generally corresponds to what other authors mentioned in the literature review found.

The findings from other regressors also support results from logistic regression and satisfy the initial expectations about the determinants of child labor. Community characterization and place of residence play significant roles in determining child labor. The difference between rural and urban residences significantly influences child labor. Living in an urban area decreases the likelihood of a child starting working by 0.46. Urban boys are more advantaged than their peers from rural areas. There is a 49% higher probability that urban boys will not join economic activities or domestic labor. The individual characteristics of the child all show significance in estimating child labor. The ability to read and write discourages child labor. If a child is literate, he or she is less likely to be working. Literate children have 0.20 more chances not to engage in economic activities. Literacy reduces a boy's likelihood of entering the labor market by 0.23. Being able to read and write is more effective in preventing child working for urban children than rural ones. For urban children, the threat of entering the labor market decreases by 46%; for rural children, it is diminished by 17%. Age is positively associated with the labor of Nigerian children. The older child becomes, the higher the risk of starting working. Each additional age year adds a 6.31% chance to be employed. All six variables describing children's education significantly negatively impact child labor. Probit results show that schooling decreases the likelihood of working for boys and rural children. Enrolling in primary to secondary schools decreases the probability that children instead will work by 0.65 overall, *childedu4*, by 0.76 for boys, and 0.65 for rural children.

The coefficients of household characteristics support literature and logistic regression results. The age of the household head is negatively related to the working of children. Among household head's age variables, the middle-aged group shows the highest discouraging effect on child labor, *hheadage2*. If the head is 30-50 years old, it reduces the likelihood of a child working by 0.74; for rural children, the decrease is by 0.98. The education of parents is insignificant in preventing children from employment. Fathers with primary and secondary education positively influence the employment of children. Only higher educated fathers diminish child labor, *fatheredu3*. Mothers with primary education increase the risk of working for boys by 0.62 and for rural children by 0.25, *motheredu1*. Secondary education negatively affects the working of children, especially urban children. Urban children from secondary-level educated mothers are 0.99 less prone to labor activities, *motheredu2*. Children from households with male heads are at less risk of working. The probability that a child from this family will start working reduces by 0.12. Male heads sufficiently diminish girls' employment. Being a girl from a family with a male head reduces the chance this girl will be employed by 0.18. Link test and Hosmer-Lemeshow test were also applied for the probit model (see Appendix 6 and 7). Link test does not state that independent variables apply for probit. Hosmer-Lemeshow test states that the probit model fits the analysis properly.

Regression results

The last econometric model implemented in the current analysis is instrumental variables regression IV. The IV model verifies and adjusts the experiment to potential endogeneity problems. The term "endogeneity" means that in the same way the independent variable can influence the dependent variable; this dependent variable affects the independent variable as well. If this phenomenon occurs, the independent variable is endogenous and can lead to inaccurate estimations. The data contains potential endogeneity in the remittance variable. For the research, the hypothesis is that migrant remittances diminish child labor. However, child labor itself may stimulate migration and consequent remittance sending. Parents can migrate to earn more money because their children are already working, and they wish to stop it. For the current regression, zone, local, neighborhood, and household ID codes are instruments to control for prospective endogenous variable remittance. IV technique is a two-stage least square model 2SLS.

Migrant remittances again negatively affect the working of children in Nigeria. Receiving migrant remittances reduces the probability that the child will start working by 0.64, as in probit (see Appendix 8). Contrary to findings from logit and probit, IV shows that girls are affected by remittances as well. Girls from remittance-receiving households are less likely to work than girls from non-receiving households. The probability that the girl from this household will work decreases by 1.04.

Furthermore, migrant remittances discourage the employment of boys on a larger scale than in logit and probit. The likelihood that boys from remittance-receiving households will start working decreases by 1.48. The most feasible impact remittances have on the labor of rural children. With remittances as an additional source of income, the probability for rural children to enter the labor market decreases by 5.088. It generally corresponds to the estimations found from the logit and probit.

The other independent variables show similar results to logistic regression and the probit and support the findings of the determinants of child labor. Regional characteristics have a significant impact on determining child labor. The difference between rural and urban residences significantly affects child labor. Living in an urban area decreases a child's probability of working by 0.11. Urban boys are more likely to not work than their peers from rural areas. There is a 0.13 higher probability that urban boys will not engage in income-generating activities or household work. The characteristics of the child all show significance in estimating child labor. Being able to read and write reduces boys' probability of entering the labor market by 0.07. Literate urban children have the highest advantage and are 0.10 less likely to start working underage. Age is positively associated with the labor of Nigerian children. The older child becomes, the higher the risk of starting working. Each additional year of age adds a 1.82% chance of being employed. The highest risk remains for older boys and rural children, 2.17% and 2.19%, respectively. Child schooling variables show a significant adverse effect on child labor. IV results show that progressing in education decreases the likelihood of working for Nigerian children. For instance, if the child continues education and enrolls in junior secondary to senior secondary classes, the probability child will work reduces by 0.23 overall, by 0.30 for boys, and 0.24 for rural children, *childedu5*.

The household characteristics show similar results to logit and probit as well. The household head's age is negatively associated with child labor. The middle-aged group, *hheadage2*, shows the highest negative impact on child labor. If the head is 30-50 years old reduces the probability of a child working by 0.26. The decrease for rural children is 0.34. IV findings present that parental education is generally insignificant in preventing children from employment. Primary- and secondary-educated fathers positively affect the employment of children, *fatheredu1*, and *fatheredu2*. Father with a primary level of education increases the likelihood of his children working by 0.08. Only fathers with high educational attainment diminish child labor by 0.01, *fatheredu3*. Mothers with primary education significantly increase the probability of boys' labor by 0.19. Secondary education negatively affects child labor, especially for boys and urban children, *motheredu2*. Mothers with secondary education reduce the probability that their sons will be employed by 0.10. Urban children from secondary-level educated mothers are 0.20 less likely to work.

Children from households with male heads are at less risk of child labor. The probability that a child from this family will start working decreases by 0.03. Male heads sufficiently diminish girls' employment. Being a girl from a family with a male head decreases the likelihood that this girl will be working by 0.05. Appropriate tests assess the strength and correctness of extracted instruments. These tests are the endogeneity test, first-stage test, and overidentification test (see Appendix 9, 10, and 11). The results from the endogeneity test do not allow rejection of the null hypothesis; thus remittance variable is exogenous. The first-stage test reveals that the instruments are vital in controlling for the remittance variable.

Conclusion remarks

Child labor is prevalent throughout the world. In developing countries, this problem is especially hazardous. Instead of schooling and spending time with friends, growing up in a proper environment, these children are forced to work and earn money for their families. The majority of employed children work in the worst conditions. Beatings, low wages, and an unhygienic environment are common factors accompanying child labor. The key to solving any problem is to identify the reason. What stimulates children to work instead of studying? It is poverty. For most households, which send their children to work, child labor is the only option to maintain basic living necessities. If adults cannot afford to feed the family themselves, they certainly cannot provide education for their children and instead make them work. Hence, with more money, child employment should occur less. This study examines whether receiving extra funds for migrant remittances can help fight child labor in Nigeria.

The research applied the Nigerian General Household Survey 2018-2019 to identify if migrant remittances negatively affect child labor.

The sample of 6,238 children contains independent variables similar to those used in the literature. Econometric models were implemented for the whole sample and separated by gender and regional groups. This division was applied to verify whether remittances affect working boys and girls and rural and urban children differently. The experiment used the empirical formula of Binci and Giannelli (2016) [11]. The current framework varies from the authors' in defining the remittance variable. Binci and Giannelli (2016) [11] used a log of monetary remittance amounts as a key independent variable. NGHS does not provide this information. The remittance variable was substituted and described if the household received remittance in the past 12 months before the interview. The results from three econometric models from logit, probit, and IV are similar and generally satisfy the pre-experiment expectations and findings from the literature, though with some exceptions.

Remittances reduce the likelihood of Nigerian children entering the labor market underage. Generally, remittances reduce the probability child will start working by 0.64-1.19. Since children work if their families need money, additional income may help them loosen the household's budget. In similar living conditions and places of residence, household recipients may have more money because of remittances compared to non-recipients. These extra funds can be

enough not only for consumption but also for children's education. The statistics also show a less significant role of remittances in reducing urban child labor than in rural ones. It could occur because working children in urban areas are less than in rural areas. Big cities and capital have more job vacancies and higher salaries and wages. For urban families, adults' income can be enough to combine appropriate consumption and education for children. Thus, the impact is fewer. The fact is that the most severe child labor is prevalent in rural areas. In the majority of developing countries, it is a common situation when living in cities and living in rural varies drastically. Rural families, which have more household members than urban ones, have few opportunities for parents to earn enough money apart from agriculture and self-employment as street selling. Remittances reduce the likelihood of child working and disproportionate regional child labor. In particular, rural remittance-receiving households are 80% less likely to send their children to work than non-receiving households. It generally corresponds to what other authors mentioned in the literature review found. These regression results show that migrant remittances are effective countermeasures to child labor and sector child labor disparity. The IV results also reveal that migrant remittances are more significant for boys than girls. Boys are at higher risk of employment than girls. Nigerian boys are often the primary income earners. People hire more boys than girls because boys can do physical tasks. From the sample of Nigerian children, there are 1,204 employed boys and 746 girls. It is almost two times more working boys. The probability that boys from household-recipient will work decreases by 1.48; for girls, it is 1.039. Hence, migrant remittances discourage the gender gap in child labor.

The literacy variable supports previous studies and reduces a child's probability of being employed. The negative effect of literacy on child labor may signalize that if a child can read and write, he probably attends school or study himself rather than work. This circumstance is the highest chance for urban minors not to start working underage. Urban areas have more schools and more opportunities for children to study. Age plays a significant role in determining child labor. Older Nigerian children are more prone to employment. Older boys are more vulnerable to working in terms of age than older girls. With each extra year of age, Nigerian boys have a 12% more chance to work compared to 10% for girls, logit. The difference is not big, but boys still have more risks to starting working than girls their age. It is contradictory to what other authors found. The possible reason for this is that most Nigerian working children from interviewed families are boys. During the interview, women stated their child preference and most wanted a son for the family to have more working hands (World Bank, 2020) [21]. It may explain why there are more working older boys than older girls despite an assumed preference for male children, while in countries like Pakistan and Vietnam, it is vice versa. The findings reveal that education remains the most effective countermeasure to child labor. Hence, progress in schooling can eliminate child labor.

The age of household heads in all three age groups shows a significant negative relationship with child labor. The older the household head, the wiser he or she becomes. Younger parents may tend to be careless regarding children's upbringing and future. Older parents may understand the importance of proper education. While becoming older, household heads can also be more experienced and may work at higher-paid vacancies or self-employment rather than young family heads. However, parental education level shows controversial results. As findings state, only if the mother has a secondary education, regardless of the child's gender and region of stay, children from her family are less likely to enter the labor market. If the mother has only primary education, this variable negatively affects only girls' labor; for boys, it is positive and significant. With a basic level of knowledge and skills from primary school, the mother may be unable to find a job, which can adversely influence her son, making him start working. Father's educational attainment is statistically insignificant in fighting child labor. Primary- and secondary-educated fathers stimulate children to work. Father's education negatively affects child labor only when the father has a higher degree in education. Education is the core component of human capital formation. Higher education means a well-paid job and more money for the family. Low-level educated parents can earn what covers food and other first living necessities only. For some families, it is not enough, forcing the child to employment again. The sex of the household head has a sufficient effect on the working of children. There is a 22% chance a child will not work if the head of the household is male, logit. As mentioned with the father's and mother's education variables, women may have fewer opportunities and skills to work at a well-paid job. A female head may not earn money and rely on her children's income. The majority of men, on the other hand, work and can have a higher income. Hence, with the male household head, the probability of his children entering the labor market decreases.

Final chapter

The current paper is the first attempt by the author to have insight into the child labor problem. Dozens of economists study this phenomenon and search for "a cure." Some experts state that children must have more opportunities to study for free. In countries like Mexico, primary, secondary, and higher education are all free of charge; pass exams and study. However, child labor still exists in these countries. Other scientists assure that the government should ban the employment of underage people. In Vietnam, the law forbids hiring children as workers without any exceptions. In their study, Binci and Giannelli (2016) [11] checked the child labor determinants and found that most Vietnamese children are unofficially employed in agriculture and street begging. Analyzing the impact of migration and remittances on working children is one of the newly assessed methods. The results showed a negative relationship between receiving remittances and the occurrence of child labor. The literature review guidelines helped clarify what variables to choose and what model to apply.

There are some limitations in Nigerian General Household Survey data. As part of LSMS, NGHS contains income factors and describes how governmental and non-governmental in-kind and monetary support helps Nigerian people. The dataset is constructed in a way allowing us to assess the nature of the relationship by regression but not the efficiency of this support. Having a survey structured with control and treatment groups could help evaluate whether the relationship is positive or negative, and the efficiency of in-kind and monetary assistance is the main interest of this research. The impact evaluation models

could be applied, too, like GMM and DiD. Some results of the current study vary from findings from literature papers. The reason may be that not all variables were exact analogs of literature.

Not all variables required for regression combine in the NGHS. These variables are household size, number of children, household income level, the monetary amount of remittances, and the current residence of the migrant. All these variables could also be applied, leading to more accurate estimations. For example, Binci and Giannelli (2016) [11] had household size as a significant variable. Another variable not included in the research is the number of children in the household, all by gender. They also showed a significant impact on working children; the more children are present in the family, the higher the risk of working. The same way is the order of the working child in his family – older children work more frequently than younger ones. The household's income level and monetary amount of received remittances could also be relevant estimators. By applying them, regressions should have been more accurate in evaluating the extent to which child labor is affected. The matter of place from where the remittances come to the household is also essential. Identifying if within-country remittances and from abroad have similar effects would be helpful. Some experts argue that too intense a remittance inflow may hit the economy. If local remittances are equivalent to international fighting child labor, the government may find fewer difficulties in migrant policy-making decisions without harming the economy.

Another issue with limitations is generating variables, which are doubtful variables related to remittances and parental education level. Not all children in the household have the same mother since polygamy is frequent in Nigeria. Not all children from the same household answered questions about their father's and mother's educational background. For example, older boys and girls may answer that their mother has a secondary education, but their younger siblings either did not answer or answered that they do not know. It may have been better to correct that by replacing their missing answers with answers from older siblings, but there was a threat of assuming bias.

In the same way, not all children answered if their household received remittances in the past 12 months. The majority of children did not answer if their families received migrant remittances. Mostly, adults answered this question. Prolonging their answers on the children from the same household could be possible. Again, it could increase errors and bias. It may also have been better to choose another remittance variable. Not the one answering, "did you receive any monetary assistance from the member in the past 12 months?" but another question, "did you ever receive any remittance assistance?". There have been more children who answered that question. Choosing the latter could have led to a more significant result. Without these omitted answers, the results could have been better in estimating child labor.

Another concern that arose after explaining the results is an instrumental variables technique. IV gives a more accurate estimation and solves the endogeneity problem only if it is the right choice for a particular situation. The instrument should influence only endogenous variables and not the variables of interest. The zone code, local code, code of neighborhood, and household ID can solve it. The endogeneity test showed that the remittance variable is exogenous in estimated IV regression. The results did not change the significance of the variables. Hence, these instruments may be effective for the current endogeneity problem. The first-stage test showed that the instruments are robust and control the variable correctly. However, the overidentification test showed that at least one instrument is invalid for this IV regression. It could have been better to search and check for other, more suitable instruments.

Education remains the most effective and accepted countermeasure to the working of underage people. Giving more opportunities to study, like free schools and making education compulsory, is proven to eliminate the employment of children. Even though all primary and secondary educational facilities in Sub-Saharan African countries do not charge fees, child labor remains high in this region. It is not only children who can decide to study even if they have access to education. Parents have more authority in deciding whether to send their children to schools or the labor market. It does not claim that parents are tyrannical and exploit their children. Most households with working children do not have enough money for essential goods like food and medicine. It does not imply that education is weak in eradicating child labor. There could be other methods combined with education to solve this problem more efficiently. Poverty is the root of hazardous child labor. Local governments, international human rights and child protection organizations, and labor organizations should work together and lessen the financial constraints of households, which cause child labor.

However, some alternatives also show a negative impact on child labor. The paper concludes that migration and remittances generally strained child labor in Nigeria. Though the results slightly vary from expectations, remittances still discourage the employment of Nigerian children and adolescents. Further investigation should address the impact of remittances and how much they influence child labor. Furthermore, it may be more relevant to study the impact of local and international remittances separately. Since there are some concerns about how remittances from abroad may affect the country's economy, it will be helpful to check if within-country remittances are equally significant in eliminating child labor. If accurate and internal remittances successfully reduce child labor, as Binci and Giannelli (2016) [11] proved in Vietnam, local governments should consider accelerating internal migration and human capital flow.

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