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14 May 2014

Online at <https://mpra.ub.uni-muenchen.de/55708/>

MPRA Paper No. 55708, posted 14 May 2014 20:23 UTC

Child labour among Horticultural Households in Bauchi State, Nigeria: A gender perspective

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Abstract

The study examined the gender dimension of child labour among horticultural households in Bauchi State, Nigeria. Data were collected on child, household and community characteristics. The data was analysed using descriptive statistics and the multinomial logit regression model at $p=0.05$. Results showed that more female children were attending school only (29.30%) than males (18.85%). Male children participated more in work outside the home such as work on family farm (74.62%) while females were involved in household chores (56.69%) they also spent more time in these activities than in school. Increasing age of both male and female children increases the likelihood of their involvement in child labour. Household ownership of farmland increases the likelihood of male children being in all the activity options. For female children, increasing number of preschool aged children (0-4 years) in the household increases the likelihood of their working full time. The study therefore appeals that considering both gender, children in horticultural households of Bauchi State should be encouraged to stay in school to achieve at least the specified nine years of basic education.

Keywords: Child labour, Horticultural households, Gender perspective, Schooling, Bauchi State, Nigeria.

1. Introduction

Children contribute to household labour supply when reserves of labour are essential at critical periods of the production process, supervision of labour is costly, and household production by children frees other household members to pursue remunerative market activities. While some children do contribute income directly to households through formal wage labour, most often children perform a

combination of market activities and/or domestic activities, especially in Africa. These market activities include unpaid agricultural production on the family farm and formal or informal family businesses. Domestic activities include household public goods such as food preparation, household cleaning, and provision of childcare for other siblings. Without children's work, poor households lose one of the few mechanisms they have to increase incomes or smooth consumption in the face of economic shocks (Dillon, 2008). In the rural sector of the Nigerian economy characterized by smallholder farm proprietorship and an imperfect labour market, allocating household labour optimally is a crucial economic problem. Obasi (1999) and Nwaru (2004) opined that households count more on their family members than hired workers as sources of farm labour. It is within this context that farm households have found children highly useful in agricultural production, processing and marketing activities (Ukoha *et al*, 2007).

In addition, many third world countries (of which is Nigeria) are experiencing economic crisis, and children being one of the vulnerable groups, suffer tremendously the impact of poverty. The circumstances in which children in these countries find themselves form part of the explanation for their involvement in economic activities. Their participation in informal activities such as vegetable production is thus an important issue for investigation (Lawal and Akintayo, 2007). Fruits and vegetables (horticultural crops) feature prominently in the farming systems of the North East geopolitical zone of Nigeria (which Bauchi State belongs) as it has the largest concentration of fruits and vegetables production. Horticultural crop production creates jobs; and because of its intensive nature, it provides twice the amount of employment per hectare compared to cereal crop production (Alli *et al*, 2002). These horticultural products (fruits and vegetables) require intensive cultivation requiring more labour than needed for the production of staple crops. They demand extra-care from land preparation to sowing of harvest thus, often about two to four times more labour is required compared to the production of cereal crops (DAWN, 2007). Children have been found to participate in paid employment in the Northeast zone

of Nigeria than any-other region (Badmus, 2008). Thus, there is an urgent need to pay more attention to the early years of children's lives in the Northeast region (of which is Bauchi State) prompting the need to look into the participation of children of horticultural households in agriculture (horticulture).

Gender and development programmes are finding their way into the institutional arena but little has been achieved in terms of mainstreaming gender concerns into specific institutional responses to child labour. There is a need to ensure that initiatives for the elimination of child labour are equally effective in reaching boys and girls in child labour. Both boys and girls deserve to go to school and to be protected from work that is damaging to their health or development. Disaggregating data on child labour according to sex is an important starting point for identifying gender dimensions of the child labour phenomenon (Guarcello *et al*, 2006).

Furthermore, Nkamleu (2009) attested to the fact that it is important to understand the joint participation behavior of the household in their decision to send a child to school and/or to work. This understanding could help to formulate more appropriate education and labour policies to remove obstacles to one of the most important long term objectives of any poverty-conscious economy; the training of tomorrow's human resources. Therefore based on the aforementioned, this study addresses the following objectives: (1) Profile incidence of child labour in horticultural households by gender of child (2) Profile types of child activities, time spent and reasons for engaging in work by gender of child and (3) Examine factors that determine child labour among children of horticultural households by gender.

2. Methodology

Study Area: Bauchi State became a distinct state in 1996, has a population of 4,676,465 according to 2006 estimate. Located in the North-Eastern part of the Nigeria, it covers 45,837 square kilometers representing about 5.3 per cent of the country's total land mass. Bauchi state is one of the states in the Northern part of Nigeria that span two distinctive vegetation zones, namely, the Sudan Savannah and the Sahel Savannah. With respect to Sudan savannah, the vegetation gets richer and richer towards the south

but it is less uniform as grasses are shorter in the forest zone of the middle belt. The sahel savannah is also known as semi-desert vegetation which becomes manifest from the middle of the state from the south to the north. The climatic condition of Bauchi State is very hot in the months of April and May, while December and January are the coldest months

Sampling procedure

A multistage sampling procedure was employed in the collection of data. The first stage is a purposive selection of Bauchi State as one of the States in North East Nigeria a region reported to have the highest incidence of child labour in the country (Okpukpara *et al*, 2006 and Badmus, 2008). The next stage the random selection of one local government from each Agricultural zone in the State; followed by a random selection of 3 villages from each local government area selected. A maximum number of 25 households were selected from each village. In all, 143 household units were visited with the households containing 417 children. Well structured questionnaire was used to obtain information from the households on some socio-economic / demographic characteristics, children's labour and schooling activities and community characteristics.

Method of Data Analysis

Descriptive statistics was used to profile the incidence of child labour in the study area and types of activities children participate. This included the use of frequencies, percentages and means.

Multinomial logit regression was used to examine the factors affecting child labour in the study area. The Multinomial Logit model (MNL) has an advantage in that it permits the analysis of decisions across more than two categories – allowing the determination of choice probabilities for different categories of child exploitation. Apart from the well-known draw backs of Independence of Irrelevant Alternatives (IIA), this approach is more appropriate than the probit or logit models that have been conventionally used.

In this analysis, the four categories considered are:

1. Going to school and not working (School only)
2. Working and going to school (School and work)
3. Working and not going to school (Work only)
4. Neither schooling nor working (Idle) (base or reference category)

The multinomial logit for choice across S states (s=1, 2, 3) can then be specified as:

$$P(Y = s) = \frac{e^{\beta_j Z}}{1 + \sum_{j=2}^s e^{\beta_j Z}} \text{ for } s \text{ not equal to } 1$$

$$P(Y = 1) = \frac{e^{\beta_1 Z}}{1 + \sum_{j=2}^s e^{\beta_j Z}}$$

The parameters β_i will be estimated. An iterative maximum likelihood algorithm will be used to estimate the empirical models in order to obtain asymptotically efficient parameter estimates (Greene, 1992). The log-likelihood function for the multinomial logit model is

$$\ln L = \sum_i \sum_j d_{ij} \ln P_{ij}$$

Where P_{ij} is the probability

X_i include these child, household and community characteristics:

Child characteristics

X_1 = age of child in the household (in years) (age)

X_2 = relationship of child to household head (biological=1, 0 otherwise)(Relhh)

Parents'/ Household characteristics

X_3 = number of pre-school-aged children in the household (Presch)

X_4 = number of school-aged children in the household (Schage)

X_5 = age of household head (in years)(agehh)

X_6 = years of schooling of household head (Nyhhsch)

X_7 = Ownership of land-assets by household (farm-owing household=1, 0 otherwise) (Ownfarm)

X_8 = access of household to credit (yes=1, 0 otherwise) (Creaces)

X_9 = household's monthly expenditure (in Naira) (Hhmexp)

Community characteristics

X_{10} = distance to primary school (in Kilometers) (Distpri)

X_{11} = access to potable water (1=access, 0 otherwise) (water)

3. Results and Discussion

Incidence of Child Labour

Table 1 reveals the incidence of child labour. The result shows that more male children (62.35%) were involved in child labour when compared with females (37.65%). Most of the children combine school with work (48.68%), however male children are more (50.77%) in this activity option than their female counterparts (45.22%). There were also more working males (25.38%) than females (15.92%). In contrast, the result showed that more female children are involved in school only (29.30%) than males (18.85%) also there were more idle females (9.55%) than males (5.0%). This result is in consonance with the findings of Okpukpara and Odurukwe (2006) that in terms of gender-specific activity options across zones in Nigeria, male participation in full-time schooling dominates that of females except in North East Nigeria (of which is Bauchi State) where there is a marginal difference in favour of female child education. Two things could be responsible for this. First, there may be less evidence of discrimination in the zone which could be attributed to the effect of Conditional cash transfer (CCT) programmes targeted at the poor to invest in the human capital of their children especially females. Secondly and more importantly, nomadic influences may be more prominent in the zone, which favours the migration of

male children to other zones. The finding of this study is also supported by Guarcello *et al*, 2006, which opines that girls appear slightly more likely than boys to be inactive (neither schooling nor working).

Table 1: Incidence of Child Labour by gender

Activity options	Male		Female		Total	
	frequency	Percentage	frequency	percentage	frequency	Percentage
School only	49	(18.85)	46	(29.30)	95	(22.78)
School and work	132	(50.77)	71	(45.22)	203	(48.68)
Work only	66	(25.38)	25	(15.92)	91	(21.82)
Neither school nor work	13	(5.0)	15	(9.55)	28	(6.71)
Total	260	(62.35)	157	(37.65)	417	(100.00)

Source: Field survey, 2011

Activities of Children by Gender

The study showed that most male children worked on the family farm (74.62%); 26.92% of them worked on plantation and 26.62% were involved in household chores. On the other hand, most females performed household chores (56.69%), 43.31% worked on the family farm. This result implies that male children are involved in activities outside the home than the females.

Table 2: Types of Child Activities By Gender

Activities	Male		Female	
	Frequency	Percentage	Frequency	Percentage
Work on family farm	194	(74.62)	68	(43.31)
Work on non-family farm	32	(12.31)	6	(3.82)
Work on plantation	70	(26.92)	25	(15.92)
Household chores involving cleaning, cooking, splitting logs, etc	77	(29.62)	89	(56.69)
Processing of horticultural crops	52	(20.00)	32	(20.38)
Marketing of horticultural crops	33	(12.69)	10	(6.37)

Source: Field survey, 2011

Time spent in activities of children by gender

The result on Table 3 further confirms the earlier findings that male children are more involved in work outside the home than females. It shows the time spent by the children in the different activities weekly. It has been observed that twenty hours of work per week has been considered as the critical threshold beyond which the education of the child starts being significantly affected (Fallon and Zafirir, 1998). This implies that time children spent in work on family farm and specifically the female children in household

chores significantly affect their education. For male children, the effect of work on family farm (37.76 ± 38.05) is more than that of the females (23.18 ± 37.28 hours). However, for female children, the time they spend in household chores weekly (28.85 ± 31.31) does significantly affect their education than the males (1.56 ± 10.63). This agrees with the findings of Haile and Haile (2008) that male children spend longer hours on market activities (work on farm) than their female counterparts and the female child labourers spend more time in domestic work (household chores) than their male counterparts. In addition, the result shows that girls (17.80 ± 24.32 hours) spend more time in school weekly than boys (14.18 ± 10.82 hours).

Table 3: Time spent in child activities by gender

Activities/Time spent	Male		Female	
	Mean	Standard deviation	Mean	Standard deviation
Work on family farm	37.7615	38.0508	23.1847	37.2786
Work on non-family farm	3.8769	16.2067	1.2484	6.6077
Work on plantation	6.5692	18.0463	3.7338	8.0806
Household chores involving cleaning, cooking, splitting logs, etc	1.5615	10.6343	28.8535	31.3084
Processing of horticultural crops	8.2769	23.9262	7.9363	26.5576
Marketing of horticultural crops	5.3846	23.0853	2.2675	11.9252
School attendance	14.1808	10.8198	17.7962	24.3233

Source: Field survey, 2011

Reasons for participating in work by gender

Reasons why children of horticultural households work include need to care for siblings at home, work on family farm, perform household chores and to help fulfil parent's or other household members' piece of work contract. Specifically, most male children (53.85%) work because they need to help on the family farm and 47.13% of the female children work because they need to take part in household chores. This further buttresses earlier findings that more male children are involved in work outside the home than the females.

Table 3: Reasons for working by gender

Reasons	Male		Female	
	Frequency	percentage	Frequency	Percentage
Need to care for siblings at home	38	(14.62)	46	(29.30)
Take part in household work	99	(38.08)	74	(47.13)
Need to help at family farm	140	(53.85)	67	(42.68)
Work needed to fulfill parent's or other household member's piece of work contract	15	(5.77)	6	(3.82)

Source: Field Survey, 2011

Determinants of Child Labour by Gender

The Table 4 and 5 summarises the gender estimation results of the multinomial logit of children schooling alone, combining school with work and working only compared to those who are neither schooling nor working. The dependent variable takes the value of 1 if a child attends school only, 2 if a child combines school with work, 3 if a child works only; those who are neither schooling nor working are the excluded/base category (taking value of 4) for comparison. The odd ratios represent the impact of each explanatory variable holding all other variables constant, on the dependent variable. An odd ratio equals to 1 suggests that the explanatory variable leaves the dependent variable unchanged. If it is greater (less) than 1, it implies that the effect of explanatory variable is to increase(reduce) the dependent variable.

Determinant of Child Labour by male Children

Table 4 shows that when boys who participate in school only are compared with those neither schooling nor working, their age and household's ownership of farmland are positive and significant at one percent level respectively. This implies that as boys grow older, the likelihood of their participating in school only increases by 6.78 units relative to the base category of neither school nor work. However, this result negates the findings of Patrinos and Psacharapoulous (1997) in Peru where a negative relationship was found between age and schooling.

Also household's ownership of farmland increases the likelihood of boys participating in school only by 1947.96 units. Senbet (2010) affirms that higher wealth as measured by productive asset holdings (such as farmland) implies higher income of the household which tends to increase the child's schooling time. Wealthier households are more likely to send their children to school rather than work. Ownership of assets indicates that a household is relatively wealthy and should decrease the likelihood of child labour and increase the likelihood of schooling (Chamarbagwala, 2004).

In addition, household's monthly expenditure is positive and significant at five percent level relative to those in the neither school nor work activity option. However, the odds ratio is 1.000 thus; increasing household's monthly expenditure does not change the activity option for boys in horticultural households.

Boys who combine school and work have their age and household's ownership of farmland as positively and significantly determining the likelihood of being in this activity option relative to the neither school nor work group. The implication of this result is that as boys grow older, the likelihood of combining school with work increases by 9.11 units ($p < 0.01$).

Also, boys in households that own farmland, the likelihood of combining school with work is 609.33 units. The effect is smaller than that obtained for schooling boys (1947.96 units). This implies that for households that own farmland, boys attending school also work; this agrees with the observation of Ravallion and Wodon, (1999) that parents with larger holdings (such as land) may well have larger demand for boys' labour time in helping to supervise hired labour- an activity that is unlikely to be seen as appropriate for girls in rural Bangladesh.

Boys participating in work full time have age, household's ownership of farmland and number of preschool aged children (0-4 years) in the household as positively and significantly determining the odds of being in this activity option.

As boys grow older, their participation in full time work increases by 9.06 units ($p < 0.01$). Furthermore, household's ownership of farmland increases the likelihood of boys being full time workers by 1003.33 units ($p < 0.01$). This variable determines the probability of being in all activity options however, has the largest effect on boys who are schooling alone.

A unit increase in the number of preschool aged children in a household increases the likelihood of boys working alone by 2.01 units. Theory also assumes that the additional number of pre-school children tends to withdraw school-age children from schooling to work by the increased demand for child care time or by the increased cost of raising pre-school children (Khanam, 2008). Thus, the observed result may be due to the increased cost of raising pre-school children which predisposes boys to full-time work.

Table 4: Determinant of Child Labour by Male children

Explanatory variables	School only		School and work		Work only	
	Coefficient	Odds ratio	Coefficient	Odds ratio	Coefficient	Odds ratio
Relhh	0.252	1.2863	1.0608	2.8887	-0.9799	0.3753
Agehh	-0.116	0.8905	-0.0405	0.9603	-0.0314	0.9690
Nyhhsch	-0.0007	0.9999	-0.0151	0.9850	-0.0206	0.9796
Ownfarm	7.5745***	1947.9550	6.4124***	609.3296	6.9111***	1003.3330
Hhmexp	0.0002**	1.0002	0.0001	1.0001	0.0000	1.0000
Creaces	-1.2614	0.2832	-1.1253	0.3246	-0.7673	0.4642
Distpri	1.7515	5.7635	2.8014	16.4681	3.2062	24.6849
Water	-0.1907	0.8264	-0.5019	0.6053	-0.1958	0.8221
Schage	-0.1311	0.8771	-0.2727	0.7613	-0.4517	0.6365
Presch	0.4091	1.5054	0.5964	1.8156	0.7007**	2.0151
Age	1.9135***	6.7767	2.2095***	9.1119	2.2040***	9.0615
Constant	-15.9547		-20.5169		-19.5327**	
Log likelihood	-230.6866					
LR chi2(33)	140.00					
Prob>chi2	0.0000					
No. of observations	260					

Source: Computations from Field survey, 2011; (***)significant at 1%; **significant at 5%)

Determinant of Child Labour by Female Children

Table 5 shows that age of the girl child positively and significantly determines being in the school only option ($p < 0.01$). On the contrary, age of household head negatively and significantly determines girls being in the school only option ($p < 0.05$). This implies that an additional year to the age of girls increases their likelihood of being in the school only activity option by 1.96 units relative to being idle. This finding agrees with Cockburn (2001) who reported that the probability of a child attending school increases rapidly with age relative to the probabilities of the child working or being inactive.

A unit increase in the age of the household head reduces the likelihood of girls attending school only by 0.92 units. This is contrary to the findings of Grootaert (1998) who observed that the older the head of the household, the more likely it is that a child will be attending school and not working. However, the result obtained from the study could be due to the increased uncertainty of enjoying the returns from child schooling as the household head grows older (Senbet, 2010). This result implies that age of household head determines girls schooling and not boys, which may be due to the fact that such household heads may not realize the benefits of girl-child education.

Age of the child, her relationship to the household head and number of years of schooling of household head all positively and significantly determines the likelihood of girls combining school with work in the study area.

The results show that a unit increase in the age of girls increases the likelihood of combining school with work by 2.51 units ($p < 0.01$). The results agree with Khanam (2004) who found that the probability of combining school with work increases with the age of the child.

For a girl who is a biological child of the household head, the probability of her combining school with work increases by 32.99 units ($p < 0.05$). This agrees with the fact that a son and or daughter of the household head is likely to combine study and work as opposed to the children of other relatives of the household head. This reflects that household head favours his/her own child with schooling or at least to combine school and work (Khanam, 2004).

A unit increase in the number of years of schooling of the household head increases the probability of girls combining school with work among horticultural households in the study area. This is consistent with the findings of Nkamleu and Kielland (2006) which observed that household head education had a positive effect on a combination of work and school, at 10% level of significance. This suggests that educated household heads have a better knowledge of the benefits of child education.

Girls who work only have age, number of preschool aged children in the household and number of school aged children significantly determines their likelihood of being in this activity option relative to being idle. This implies that an addition to the age of girls increases their likelihood of working only by 2.76 units ($p < 0.01$). This implies that as girls grow older, the probability to work or to do housework significantly increases (Bonsang and Faye, 2005).

A unit increase in the number of preschool aged children in the household (0-4 years), increases the likelihood of girls working only by 1.88 units ($p < 0.01$). The study corroborates findings of Cockburn (1999) which revealed that presence of infants (children aged 0-4 years in the household) significantly and strongly increases the likelihood of a child working (roughly 6.2% for each additional infant), probably due to increased household demand for domestic work or in order to substitute for the mother's other activities. This is further supported by the findings of Moyi (2011). The effect of this variable (preschool aged children in the household) is higher for boys than girls.

On the other hand, a unit increase in the number of school-aged children (5-14 years) in the household reduces the likelihood of girls working only by 0.57 units ($p < 0.05$). This finding could be due to the fact that other school-aged children in the household will help girls in their work portion (household chores or farm work) thus allowing these girls more time to attend school.

Table 5: Determinant of child labour by Female children

Explanatory variables	School only		School and work		Work only	
	Coefficient	Odds ratio	Coefficient	Odds ratio	Coefficient	Odds ratio

Relhh	1.7533	5.7734	3.4963**	32.9936	21.1166	1.48e+09
Agehh	-0.0822**	0.9211	-0.0102	0.9898	-0.0185	0.9817
Nyhhsch	0.1575	1.1706	0.3000***	1.3499	0.2354	1.2655
Ownfarm	2.6712	14.4579	0.0773	1.0803	19.9395	4.57e+08
Hhmexp	0.0000	1.0000	1.14e-06	1.0000	-0.0000	0.9999
Creaces	-1.2032	0.3002	0.1967	1.2174	-0.3026	0.7388
Distpri	0.0203	1.0206	0.1858	1.2043	0.4730	1.6048
Water	0.2142	1.2388	-0.2817	0.7545	-0.3259	0.7219
Schage	-0.1586	0.8533	-0.1766	0.8381	-0.5574**	0.5727
Presch	0.2676	1.3068	0.3384	1.4027	0.6295***	1.8767
Age	0.6719***	1.9625	0.9220***	2.5144	1.0144***	2.7578
Constant	-5.1973		-0.5078***		-47.6336	
Log likelihood	-144.1763					
LR chi2(33)	99.59					
Prob>chi2	0.0000					
No. of observations	157					

Source: Computations from Field survey, 2011; (***- significant at 1%, **- significant at 5%)

Conclusion and Recommendations

The study was carried out among children aged 5-14 years of horticultural households in selected areas of Bauchi State. Three Local Government Areas were randomly selected and all children in the specified age range were involved in the survey. The result shows that boys are more involved in work on family farm than girls while girls perform more of household chores. The reasons the children gave are in agreement with the type of work they are engaged in. Thus, it was observed that boys work more outside the home while girls are involved with work inside the home. Factors that influenced male children involvement in child labour and schooling were different from that of their female counterparts except age of the child. Hence, age of both boys and girls was a significant factor increasing child labour and schooling among horticultural households in Bauchi State.

Based on the aforementioned findings, the study recommends the following:

1. Both boys and girls aged 5-14 years should be allowed to stay in school till Junior Secondary School 3 to achieve at least Basic education because the International Labour Conference report of 2010 says that beyond the Millennium Development Goal (MDG) of universal primary education

by 2015, there is increasing and convergent understanding that the aim must be, at least, basic education for all – primary plus two or three years of secondary education. That is required for two key reasons. First, to ensure that youth can enter the workforce with the basic skills required to pursue a decent working life. Second, because if the minimum school leaving age is lower than the national general minimum age for entry into employment, child labour will be an inevitable result.

2. Girls have been observed to perform more of household chores than on the family farm; thus, households should be sensitized on the need to reduce the workload of these girls in the home so that they can better face their studies. Boys spend less time in school than girls and are more involved in child labour in the study area; thus, households should be sensitized on the need to allow them more time in school and less time in work on family farm. Lastly, households owning farmland should be encouraged to keep their boys in school as much as possible instead of allowing them to work on the family farm in such a way that will keep them away from school.

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