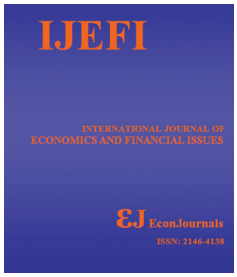

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Effect of Child Labor and Performance on Child Relationship with Head in Rural Areas of Niger State, Nigeria

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ABSTRACT

In assessing the impact of child labor hours and educational performance on child relationship with head, an analytical model was developed based on the theories of Basu and Van (1998), and Fan (2011). Empirical data were obtained from socio-economic survey (SES) 2014, with a sample size of 845 primary school pupils ranging from 10 to 14 years of age from 435 households in Suleja local government rural districts. The result from logit analysis shows that non-biological child engage in more hours of work than the biological child. Equally, children from the households that earn income below subsistence level work more hours, with negative impact on performance than those from households that earn income above subsistence. The use of extra-curricular activities social capital was therefore recommended to curb to reduce child participation in labor and enhance child school performance.

Keywords: Labor, Performance, Foster, Income, Rural
JEL Classifications: D10, J22, J23, J24, O15

1. INTRODUCTION

Child labor activities and low school performance by children are the key issues affecting many African rural societies, as these two issues deter their future academic endeavors. According to IPEC (2015), children's participation in agricultural activities couple with limited access to quality education do leads them to uncertain future. Due to poverty of the household heads, children tend to intensively participate in agricultural sectors of most rural areas (Sackey and Johannsen, 2015). Despite their heavy involvements, the rates of returns on agricultural investment are slow and low, which made many households to diversify by placing their children on other sectors, particularly in the cottage industry. This sector[1] experience large participation of children especially those that are not household biological children, which hampers their access to education as they are mostly seen in rural seasonal markets[2] as head load carriers, wheel pushers, hawkers, vendors, etc.

According to Anadolu Agency (AA) (2013) earlier research, about 48 million engaged in child labor in Sub-Saharan African with 15 million children from Nigeria topping the entire region. Equally, global estimate by AA (2013) shows that sub-Saharan African region are lagging behind in terms of eliminating child labor issues. The region shows a high level of participation of children in labor having 28.4% of children 5-14 years old aside Asia when compared to 14.8% for Asia and the pacific and 9% for Latin America. In clear terms, approximately 58.2 million children of same age group are engage in work in Sub-Saharan Africa. Nigeria is not an exceptional country in the Sub-Saharan African countries as per child labor participation, as AA (2013) earlier pointed out that 31.25% of children engage in labor. Evidence by Kure (2013) shows it prevalence despite it ban in the country, with low school attendance in various rural communities. Constrain in income made household heads to use a cost-free-income-strategy by diversifying their children participation in both labor and education (Todaro and Smith, 2006). Part of the coping strategy is to have a large number of children, or in other way at least to have a foster child. In Nigeria particularly the Northern region, the culture of fostering a

1 Cottage industries,
2 Markets on weekly basis.

child has become part and parcel of the tradition (Case et al., 2004; Schildkrout, 2002). As for every 2-3 household, there are always quite a number of foster children under their care. These children later engaged in more hazardous works with high rate of return to household heads, while they continue to have poor access to education. Previous studies have exhausted a lot of issues on child labor and child schooling (Akabayashi and Psacharopoulos, 1999; Heady, 2003; Goulart and Bedi, 2008, etc.), where both children of other relations and household head do participate in labor.

Early study shows the trade-off between child labor and human capital development, because many children do attend school and as well work on the farm or street (Akabayashi and Psacharopoulos, 1999); though some studies concentrated on the effect of child work on learning achievement (Heady, 2003; Gunnarsson et al., 2006). Most recent was that of the impact of child labor on children's educational outcomes in rural Vietnam with exclusion of child relationship with household head (Le and Homel, 2015). Other studies like Bacolod and Ranjan (2008) concentrated on the household wealth, child ability and school quality in Philippine. Similarly, Bhalotra and Heady (2003) emphasis on wealth paradox by considering land to be store of wealth in the agrarian societies. Despite all efforts by scholars of child labor and child educational performance, enough attention has not been given to the study of children of other relation on both labor and academic performance when compared to children of household head. Some studies thus consider it as a determinant of either child labor or performance (Rosati and Rossi, 2003; Moyi, 2011; Alfa et al., 2012).

In the light of the above issues, this study tends to assess the impact of child fostering on child labor and educational performance when compared to biological children; secondly, to observe the interplay of child contribution to household income at the detriment of performance and hours of work. This issue became paramount as many studies in Nigeria on child labor and schooling ignore the role of child status[3]. For example, studies in Nigeria emphasis on age, gender, marital status of parents in determining the child labor practice in Nigeria (Badmus and Akinyosoye, 2008; Adegun, 2013). But study by Alfa et al. (2012) was lope sided as their findings were only on school attendance. Following this introduction, section two discusses the related literature, section three entails the methodology used; section four analysis the result; and section five concludes the paper.

2. RELATED LITERATURE

In discussing the nature of child relationship with household head in respect to child participation in labor and schooling, the analytical framework of Basu and Van (1998) and Fan (2011) were emphasized on due to some reasons. Firstly, the households have constraint on a given level of income, such that the only opportunity for the household to increase his/her income is by indulging his/her child in labor (either biological or non-biological); secondly, poor educational facilities and prospect after education equally discourage households to invest extensively in child education; and lastly, the ability of parents to maneuver their child time activities between work and schooling. Their model was based on child time for work, time for study and leisure time. Given these three conditions for a child activities per day, a biological child in most cases always attain two of the three conditions by having time for both leisure and schooling. So also, a non-biological child always attain two of the three conditions but on the other hand the time of the non-biological child is that of schooling and work only excluding the leisure time. However, Basu and Van (1998) concludes that once household income is above the subsistence level, households will prefer to send their children to school, which might not significantly hold in Nigerian context though not empirically tested, may be due low income earnings of the populace or those children are not their biological child.

Following the theoretical foundation, several empirical studies have emerged; although, empirical studies on child relationship with household head are relatively scanty in nature especially in Nigerian context. Several studies across the globe found a mix result on child fostering towards their participation in work and school. The centre point of this study is that of Bhalotra (2003) and Bhalotra and Heady (2003) as differences were found between biological and non-biological children in terms of work allocation within the households. But their comparative study of Pakistan and Ghana shows a different result, as result from Pakistan indicates children of household are more likely to work than non-biological children, while Ghana study entails children of household head are less likely to work. Findings by Cockburn (2001) shows that children of the household head are more likely to be in school than work in Ethiopia; also Khanam and Ross (2005) in their Bangladesh study found biological child to significantly increase current school attendance. Equally in Africa, studies like that of Nkamleu (2009) in Cote d'Ivore assumes biological child to be positively associated with work due to inheritance laws, but the finding wasn't significant. But Alfa et al. (2012) in their Nigeria study found child relationship with head to positively influence school attendance, indicating that being a biological child of household head is positively associated with school attendance. Despite efforts by these studies, nature of child relationship with heads were not been influenced by any other determinants.

However, aside child relationship with head, other factors that contribute to fostering of child that results to child participating fully either in labor or school is the child gender. Vásquez and Bohara (2010) used Guatemala 2000 National Survey of Standards of Living and found child labor and schooling to be greater for boys than girls'. So also, study by Ray and Lancaster (2005) were more detailed as they found in their multi-country evidence that child work is more harmful to learning experience of girls than their boys counterpart. Age of a child is also one of the contributing factors of child participation in both labor and school, but these earlier studies do not differentiate between biological and non-biological children (Akabayashi and Psacharopoulos, 1999; Beegle et al., 2006; Chamarbagwala, 2008; Dammert, 2008). Findings by Akabayashi and Psacharopoulos (1999) in their Tanzania[4] study indicates that age tend to negatively affect hours of work, but later study by Beegle et al. (2006) in Tanzania[5]

3 Biological or non-biological.

4 With 542 observations from Human Resource Development Survey in Tanzania.

5 Used 800 household observation from Kagera Health and Development Survey.

used household shocks and found age to be positively affecting child labor and decreasing school participation, though study by Dammert (2008) in Peru was not statistically significant for children in cocoa-growing state.

Also, important variable attached to this study is the household educational attainment and income which plays a significant role on either biological or non-biological. The perception of most individuals in rural areas is that households with high school attainment and income do have high absorption capacity of more family size than those with low educational attainment and income. But in some case low income households do retain larger number of children even within and outside their family which are more likely to work (Chakrabortya and Das, 2015). This made He (2015) in his study to conclude that household income and educational level are the key determinant of children time allocation through household's decision; though Goulart and Bedi (2008) in their Portugal experience found the effect[6] to be considerably lower. But, Alam (2015) in his health analysis of Tanzanian parents and income status in respect to child labor participation and schooling, opined that parent illness significantly decrease household income[7], which reduces the household's tendency to spend on child education. Similarly, Beegle et al. (2006) in their Tanzania study used household shocks[8] and found a negative and significant association between shocks and child education, such that children from households affected by shock are less likely to be enrolled.

Looking at the setting of this study, it's obvious that household shocks are the main causes that lead children to participate in labor; this scenario warrant households with limited number of family size to foster more children, which at the end engage more in labor activities and less in schooling. The emphasis of this study lies on the previous studies, which have not been gravely elaborated on nature of child relationship with head, as the essence of the nature differs in Nigerian context. Because foster children assumes to be spending more hours on labor than schooling when compared to biological children, and as well female children participate more in labor especially during the market days.

3. METHODOLOGY

The analytical model for this study was based on Basu and Van (1998), Fan (2011), and Zapata et al. (2011). Therefore, the household composition consist of parents and children such that a simple family comprises of:

$$h = f(P, x) \tag{1}$$

Where P refers to parents and x denotes child in the household with consumption less than income ($C < I$), but since the culture of having more than one child is paramount couple with large family size, households are faced with the following:

$$h = f(P + x_1 + x_2 + \ldots\ldots + x_n) \tag{2}$$

Where n^{th} signifies number of children per household, the consumption pattern is always $C > I$. Household with limited children will be willing to absorb more up to point n[9] in other to increase his/her income. The child time t is a function of work, school and leisure time

$$t = w + s + l \tag{3}$$

Such that:

$$t_a = S + l \tag{4}$$

$$t_b = S + W \tag{5}$$

Where Equation (4) is for biological child with time for school and leisure, while Equation (5) is for non-biological child engaging in school and work; substituting Equations (4) and (5) in to Equation (2) given the household to be earning below or above the subsistence level. The household will be faced:

$$h = f(Ps + s\,l + sw)\ 0 < i \geq 1 \tag{6}$$

Such that, the household income i will range from 0 to 1 and above. Household with earnings above subsistence level will be the sole earner of income as seen in Equation (7), and Equation (8) therefore consists of household earning below subsistence level (by augmenting income from child labor).

$$h = f(P) \geq 1 \tag{7}$$

$$h = f(P + sw) \geq 1 \tag{8}$$

Combining his income with that of a child (especially income from non-biological), the household can earn an income above subsistence level as seen in Equation (8), and the child will equal have opportunity of schooling.

The data set for this study comes from socio-economic survey[10] 2014. The advantage of this survey was that, it provides a wide range of dataset on different socio-economic class within the state. A total number of 845 primary school pupils of aged 10-14 years from 435 households were purposively extracted with full socio-demographic indicators in Suleja local government rural districts. Suleja has been the economic power of the state due to its proximity with the Federal Capital Territory (Abuja) with a growth rate of approximately 31% (NSBS, 2014). Also, Suleja is the only local government with complete published information on the variables used in the study. However, the influx of labor to the region is high when compared to other local governments, as there is vast opportunity of various commercial activities. Children are widely seen engaging in different economic activities, such as vendors and hawkers, mostly supported by parents or house head.

The response variable for this study is the nature of relationship with the household head taking the value of one if non-biological

6 Effect of parental schooling and household income and wealth.
7 Especially fathers being the main income earners in Tanzania households.
8 An indicator of crop lost to pests and other calamities.
9 Each child has its own characteristics as they comprises of both biological and non-biological.
10 This is a yearly publication by Niger State Bureau of statistics.

child and zero otherwise, this variable has been used as independent variable by various studies notably (Bhalotra, 2003; Bhalotra and Heady, 2003; Khanam and Ross, 2005; Nkamleu, 2009; Alfa et al., 2012). The predictors (were measured based on the studies of Akabayashi and Psacharopoulos (1999), Alfa et al. (2012), Alam (2015), Ray and Lancaster (2005) include child labor measuring number of hours spent working per day; performance entails scores obtained from both English and Mathematics[11]; age of a child measured in number of years spent; gender of a child taking the value of one if male and zero otherwise; education of household head as one literate and zero otherwise, daily expenditure representing household income[12]; and family size measured in numbers. The study also controlled for family size, access to clean water and distance to school.

Following the analytical model explained above, the empirical model for this study is based on binary logistic regression model. Therefore, the theoretical model for logistic regression is:

$$\{P_r(y = 1/x)\} = \beta_0 + \beta X_i \quad (9)$$

Where, $P_r(y = 1/x)$ is the probability of the outcome, Y is the response value, X_i denotes the vector of explanatory variables, β_0 signifies the intercept of the equation, and β entails vector of the parameters to be estimated. The advantage of this model is that the outcome variable is dichotomous, while the predictors can be continuous or categorical with prime relationship explanation; also adjusting for other variables, it equally provide strength of association to values. One of the underlining hypotheses of this study was to ascertain the difference between the threshold of household with income below and above subsistence level, as such household income was treated as variate (Wooldridge, 2013), such that an analogous model simple to linear regression was considered, that is:

$$Logit(\pi_i) = \alpha + \beta x_i \quad (10)$$

However, the model was subjected to Hosmer-Lemeshow test and Pearson Chi-square for goodness of fit test, while the likelihood ratio test to compare the two hypotheses directly on an equal basis. The dependent variable in this study consists of dummy variable, with two categories of either being a biological child or not. The empirical model has been specified as follows:

$$P_r(C_i = 1/0)_i = \alpha + \beta_1 Chdlb_i + \beta_2 Per_i + \beta_3 Hinc_i + \mu_i \quad (11)$$

Where, $P_r(C_i = 1/0)_i$ is probability of not being a biological child; α is the constant parameter of the equation; β_s refers to the coefficient of the independent variables; with $Chdlb_i$ as child labor; Per_i refers to child performance in school, $Hinc_i$ is household income and μ_i denotes error term. The study equally controlled for child and household characteristics as depicted in model (Equation 12).

$$P_r(C_i = 1/0)_i = \alpha + \beta_1 Chdlb_i + \beta_2 Per_i + \beta_3 Hinc_i + \sum_{i=l}^{m} \beta_4 Control + \mu_i \quad (12)$$

Where, $\beta_4 = (1, 2, 3, \text{and } 4)$ and control = (age of a child; gender of a child; education of household head, and family size). Equally since the dependent variable is a non-linear model, the odds statistics were emphasized on. The essence is the constant effect it represents of X predictors, base on the likelihood that one outcome will occur.

4. RESULTS

4.1. Result of Descriptive Statistics and Normality

The result of the study consists of 845 observations with child relationship with as dependent variable. From Table 1, child relationship consists of biological and non-biological child. Out of 845 observations, 617 respondents are not biological children of the household head[13], while 228 respondents are biological children of the household head. The mean of child relationship is 0.2698, which base majority of the respondents to be non-biological child (Figures 1 and 2). The practice is so common such that in every three homes, at least one home will have a foster child within the midst of biological children.

The child labor phenomenon has continued to be on a higher side despite efforts by various government policies. Though, the current child labor practice differs from the traditional system[14] as earlier practice, children nowadays combine work with school. The differences depends on the hours of time been put up by a child. From the observations, 460 respondents do not indulge in any form of child labor[15]. Majority of those children that engaged in work do work for 4-5 h (103 and 105 respondents respectively), while children (26 respondents) do normally work for 2 and 7 h in a day. On average, most children do work at least 2.0462 h a day. With the wide spread of child labor, the adverse effect is more on performance with extreme cases of repeating class and dropout. The performance is base on two categories with 292 respondents performed[16] below 50%, whereas 554 respondents scored 50% and above. The means score for the entire observation is 55.68% with standard deviation of 15.6%, which indicates that if all observations are pulled together, they all perform above average. Household income being one of the determining factors for fostering children is divided into two, with 487 respondents spending their income below #400[17] per day, while 358 respondents household expend above #400 per day. The average income obtained from the respondents is 0.4237, signifying the majority of households to be earning below the stipulated amount.

11 These two subjects are always mandatory everyday when compared to other subjects.

12 The actual value of income are very difficult to obtained as majority of them do not engage in income generating activities, and very difficult for others who do work to reveal the real values.

13 These are foster children from other parents, who are mostly relatives of the foster parents. The aim of this system is to assist the biological parents in up bringing the child especially when they are under resource constraint.

14 A system where most children engaged in work only without attending school.

15 Child labor consists of paid jobs or any form of hazardous work performs by a child (UNDP, 2003).

16 This study only emphasizes on children that combine school and work and those that only school.

17 The exchange rate in Nigerian financial system are volatile ($1 = #198, official rate as at February 2016).

Table 1: Descriptive and normality test statistics

Variable	Obervations=845	Mean±Standard deviation	Min	Max	Skewness	Kurtosis
Child relationship with head						
Non-biological child	617	0.2698±0.4441	0	1	1.0371	2.0757
Biological child	228					
Child labor hours						
0 h	460	2.0462±2.4059	0	7	0.5551	1.7058
2-7 h	385					
Performance						
Below 50%	292	55.68±15.56	1	99.5	−0.0819	3.2109
Above 50%	554					
Household income						
≤#399/day	487	0.4237±0.4944	0	1	0.3089	1.0954
≥#400/day	358					
Control variables						
Age of a child						
10	193	11.90±1.3825	10	14	0.0025	1.7566
11	142					
12	193					
13	187					
14	130					
Gender of a child						
Male	472	0.5586±0.4969	0	1	-0.2359	1.0557
Female	373					
Education of household head						
Literate	469	0.5550±0.4973	0	1	-0.2215	1.0490
Illiterate	376					
Family size						
≤9	310	10.44±3.6460	4	20	0.6425	3.0511
≥10	535					

Figure 1: Probability of child relationship with head, (a) Non-biological child, (b) biological child

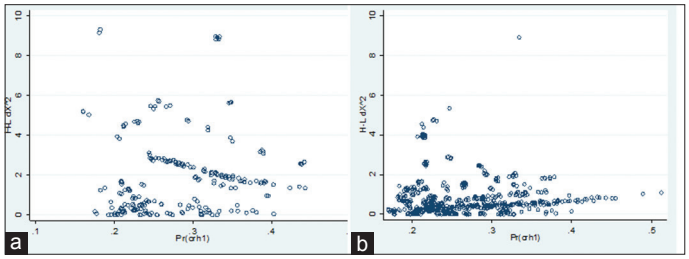
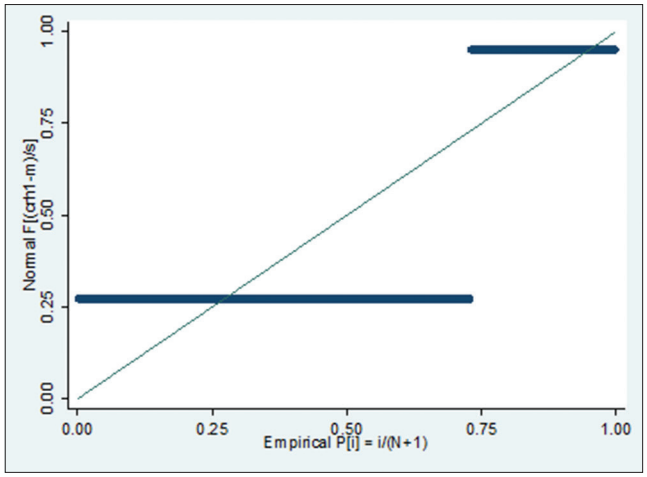


Figure 2: P norm values for child relationship with head



However, the control variables used in this study are constant variables within the child and household characteristics. Therefore, age in this study consist of children ages from 10 to 14 with children aged 14 (130) having a lower representation, while 10 and 12 (193) have the highest representation. The mean of the ages are 11.90 with approximately 1.4 differences within their normal ages. On the gender of a child, male children are 472 and the female children are 373, with a mean of 0.5586 and standard difference of 0.4973. Similarly, the house hold control variables consist of education of household head with 469 being literate and 376 are tagged as illiterate, while their mean was 0.5550 and standard deviation of 0.4973. For family size, those whose household number are below nine stood at 310, while those with large families above 10 are 535, with a general mean of 10.44 approximately, and also the difference between each family was 3.65. From the observation covered, all the variables are normally distributed given the cumulative distributive function, using Skewness and Kurtosis test.

4.2. Estimation Result and Discussion

Following the analytical and empirical model of child relationship with head and other control variables in the study, the dependent variable is based on binary response (Figure 1), with large percentage of child being non-biological child.

The logistic regressions presented in Tables 2 and 3 are base on different models. Model 1entails the effect of child labor, child performance and household income on child relationship with head. The coefficient of child labor shows a positive association with nature of child relationship with head and significant at 1%, indicating that a one unit change in labor hours will leads to 0.116 unit change in the log of the odds. This is line with norms and

Table 2: Logit regression result

Variables	Dependent variable: Child relationship with head							
	1				2			
	Logit	Odds ratio	$P>\|Z\|$	dy/dx	Logit	Odds ratio	$P>\|Z\|$	dy/dx
Child labor hours	0.1163	1.1234	0.000***	0.022	0.1121	1.1186	0.001***	0.022
	(3.55)				(3.43)			
Performance	−0.0053	0.9947	0.357	−0.001	−0.0001	0.9999	0.979	−0.001
	(−0.92)				(−0.03)			
Household income	0.3424	1.4083	0.061	0.066				
	(1.87)							
N		845				845		
Goodness of fit								
Hosmer-Lemeshow test	7.86				5.82			
Pearson Chi-square	605.46				400.68			
Link test								
Hat	0.4323				1.9397			
	(0.29)				(0.65)			
_hatsq	−0.3024				0.5045			
	(−0.39)				(0.31)			
Selection criteria								
AIC	972.76				978.94			
BIC	996.45				993.16			
Likelihood-ratio test (1 nested in 2)			3.51*					

The Logit results * and *** stands for 5%; and 1% significance level respectively. The values in parenthesis are the *z* value. Each regression includes a constant. dy/dx is the marginal effect. Source: Authors Computation (2015)

Table 3: Logit regression result by household income

Variables	Dependent variable: Child relationship with head							
	3				4			
	Logit	Odds ratio	$P>\|Z\|$	dy/dx	Logit	Odds ratio	$P>\|Z\|$	dy/dx
Child labor hours	0.1262	1.1345	0.010**	0.025	0.0903	1.0945	0.048**	0.017
	(2.59)				(1.98)			
Performance	0.0040	1.0040	0.638	0.001	−0.0146	0.9855	0.074*	−0.003
	(0.47)				(−1.79)			
N		358				487		
Goodness of fit								
Hosmer-Lemeshow test	9.33				6.86			
Pearson chi-sqaure	193.28				303.66			
Link test								
Hat	2.9514				1.1279			
	(1.19)				(0.76)			
_hatsq	1.2776				0.0642			
	(0.80)				(0.09)			

The Logit results * and ** stands for 10% and 5% significance level respectively. The values in parenthesis are the *z* value. Each regression includes a constant; dy/dx is the marginal effect. Source: Authors Computation (2015)

tradition of child fostering as non-biological children continue to work more hours with very minimal time for leisure. Also having more of them within the household extends the hours of gaining more income to household. This therefore support the assumption already postulated by the study (Basu and Van, 1998; Fan, 2011), which is in line with the findings of Bhalotra and Heady (2003) in their study of Ghana. Performance has negative influence on child relationship, though not significant, because virtually the majority of respondents captured perform above average (Figure 3), which to some extent those not matter on the nature of child relationship. This result deviated from the findings of Khanam and Ross (2005) in Bangladesh and Alfa et al. (2012) in Nigeria.

The household income shows a positive and significant influence on child relationship with head, indicating that income is one of the key determining factors of child fostering. This shows that the household expenditure is being augmented by the proceeds of child labor, as it implies a one unit increase or decrease in income will increase or decrease the log of the odds ratio by 0.342. This concurs with the centre argument of this study as well as the underpinning theory of Basu and Van (1998), as well as the empirical study of Chakrabortya and Das (2015).

In Model 2, household income was omitted in order to ascertain the level of predictions between child labor hours and child school performance in relation to the nature of child relationship with head. The real life phenomenon is that hours of work and performance exist in an opposite direction in respect to a fostered child; these was equally obtained in this study, as child labor hours indicate a negative prediction, while performance shows a positive

predictions. From the result, hours of work is positively determine by child relationship with head, and significant at 1% level; while performance on the other hand still maintained none significant value with odds ratio of predicted value 0.999. However, Model 1 and Model 2 were subjected to some post estimation test, such as goodness of fit and Link test, both the two model are correctly specified. Although, the Akaike information criterion (AIC) preferred Model 1 to 2, and vice versa in the case of Bayesian information criterion (BIC). But the log likelihood-ratio test is significant as model one is nested in Model 2.

However, Model 3 and 4 explain the influence of household income in respect to child relationship with head on child labor hour and performance (Figure 4). Model 3 consist of households with income above #400[18] on the average. The child participation in labor hours is positively and significantly associated with child relationship with head, while performance of child has no any significant impact though positive. But Model 4 consist of households with income below #400, as the child labor hours continue to be positively and significantly associated with child relationship with head, the performance value indicate a significant and negative association with child relationship with head. The two model are equally specified following the goodness of fit values, and for both the AIC and BIC, Model 3 is more preferable when compared to Model 4. Both Model 3 and 4 explains in critical terms the findings of Beegle et al. (2006), Alfa et al. (2012), and Alam (2015) that use various income shocks as a determining factor of child involvement in work and school.

The result on Tables 2 and 3 also explain the marginal effect for each model in respect to child status. In Model 1, any addition or adoption of more fostering child will increase the hours of work by 2.2%, while the additional income will be 6.6%, though the insignificant rate of child performance will decrease by 1%. After omitting household income in Model 2, any adoption of child will equally increase hour participatory in labor by 2.2%, with performance not being significant. Although Model 3 and 4 differs with Model 1 and 2, as Model 3 and 4 were estimated base on household income. The effect in Model 3 shows that, with adoption of more children, the participation on child labor will increase by 2.5% higher than the scenario in Model 1 and 2; though the performance might rise by 0.8% since the household in this case earn income above the subsistence level. One good observation here is that, some households decide to augment their income with child labor proceeds in order to be leave above subsistence level. In Model 4, for those household with income below subsistence level, only 1.7% increase in hours of work will be able to generate little income to household; but on the other hand, the performance of the children will significantly decrease by 0.3%.

The result in Table 4 shows results of other controlled variables employed in the model. Model 5 consist of repressors' in Model 1 with addition of child and household characteristics. Child labor hours and household income were still positive and significant, in line with the previous results. Other variables such as age of a child,

Figure 3: Child performance distribution

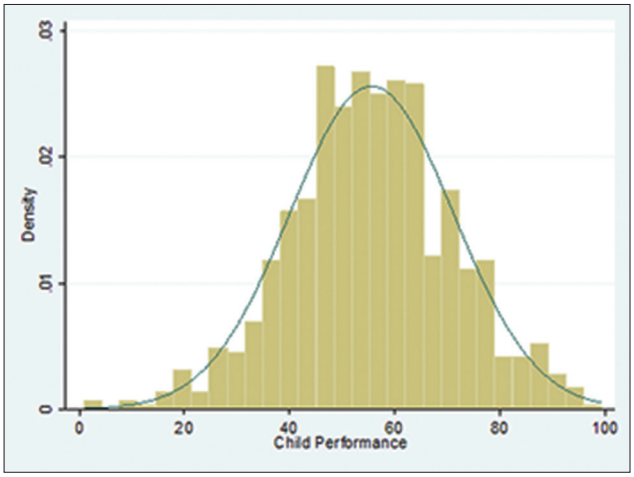
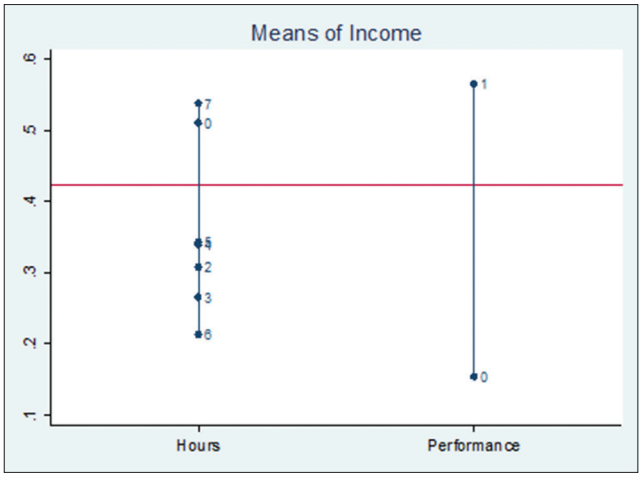


Figure 4: Means of income



family size and household education[19] are positive but not significant, indicating that they cannot be used to predict or determine the difference between biological and non-biological child; because for example, age of a child and household education in real life situation obtained from the field shows virtually all ages are been adopted (or fostered), and both skilled and unskilled workers equally participate in child adoption. The results were therefore in contrary with the findings of Chamarbagwala (2008), Goulart and Bedi (2008), and He (2015). Other variables such as performance and gender of a child are negatively insignificant, which does not concur with the findings of Vásquez and Bohara (2010). However, the introduction of other variables decreases the probability of child labor hours and household income by 1.8% and 6.1% respectively.

For Model 6[20], it difference with Model 5 was that, child labor hours and household income were exonerated from the model to see any further significant variable. As such family size was reported to be positive and significant at 1% level, indicating that

18 The two third of Nigeria population leaves below 1 US dollar, the cut-point of #400 assumes a particular individual is earning above the subsistence level.

19 The expectation in most case is that both household education and income are always correlated, as such a correlation matrix was carried out and 0.1123 value was obtained which shows a weak positive linear relationship.

20 Family size was further removed to see if any other variable will be significant from the remaining variables, but after the estimation, none of the variables were significant.

Table 4: Logit regression result with control variable

Variables	Dependent variable: Child relationship with head (N=845)							
	5				6			
	Logit	Odds ratio	P > |Z|	dy/dx	Logit	Odds ratio	P > |Z|	dy/dx
Child labor hours	0.0945 (2.42)	1.0991	0.016**	0.018				
Performance	−0.0058 (−1.00)	0.9942	0.317	−0.001	−0.0035 (-0.69)	0.9965	0.488	−0.001
Age of a child	0.0206 (0.35)	1.0208	0.727	0.004	0.0335 (0.57)	1.0340	0.567	0.007
Gender of a child	−0.0166 (−0.10)	0.9834	0.917	−0.003	0.0138 (0.09)	1.0139	0.930	0.003
Family size	0.0450 (1.52)	1.0513	0.128	0.010	0.0890 (3.05)	1.0931	0.002***	0.017
Education of household	0.2544 (1.54)	1.2897	0.124	0.049	0.2013 (1.24)	1.2229	0.213	0.039
Household income	0.3162 (1.72)	1.3718	0.085*	0.061				
Likelihood ratio Chi-square	20.90***				12.66**			

The Logit results *, **, and *** stands for 10%; 5%; and 1% significance level respectively. The values in parenthesis are the *z* value. Each regression includes a constant and set of control variables. Source: Authors Computation (2015)

most large families due have the higher tendency of having an adopted child in their households. The probability is seen due increase by 1.7%.

5. CONCLUSION AND RECOMMENDATION

In discussing the nature of child status, the study identified two main class of a child such as biological and non-biological (foster) child. Theoretical models by Basu and Van (1998), and Fan (2011) does not incorporate the difference of child status within the household in their model; while the empirical studies by Bhalotra (2003), and Bhalotra and Heady (2003) showed a cleared distinction between the two, with a mix result from Pakistan and Ghana. Following these two basis, a simple analytical model was developed to show the differences and some preferential treatment that always occur within many households. The study found a clear distinction between the two categories, as the non-biological children are seen working extra hours when compared to biological children, which also affect their rate of performance.

Lastly, the argument of Basu and Van (1998) where centered on the household income. This study equally found the significance of household income on child relationship with head, as households with income below the subsistence level decided to augment their income through child participation in labor at deterrent of their performance.

In essence, since it will be difficult for government to ban child fostering, a systematic way of extending school hours has to be launched particularly by introducing compulsory extra-curricular activities (e.g., games, extra-moral classes, etc.) after school hours. This will enable children to have more access to leisure time (particularly foster children and some biological children who engage in intensive child laboring. Lastly, a social capital scheme[21] in form of household income strategy has to be designed by government to the poor rural households. This will to some extent reduce the burden of acquiring foster children to augment their income.

21 Loans and subsidies to farmers and small scale entrepreneurs in the rural areas

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