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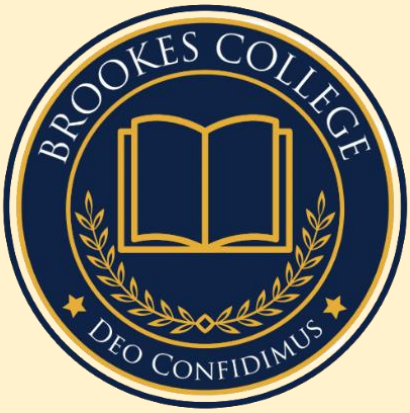

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Abstract

This study estimates the effect of economic crisis on child labour in Nigeria using quantile regression. The study employs Multiple Indicator Cluster Survey, Annual Abstract of Statistics and data from the Central Bank to analyse the shock effect. The study found that food-poverty, household-size, and agricultural credit loans are positive predictors of child labour in Nigeria, the study also found parental education to be very robust in curbing child labour. In addition, we found that unemployment had a substitution-effect on child labour in Nigeria. There is, therefore, the need for policy that will cushion the effect of poverty and income shocks through the introduction of a resilient social safety-net programme targeting the most vulnerable in the society. There is also the need to use household characteristics such as household-size and parental education as a policy instrument in reducing child labour by improving awareness on family planning and adult-education in Nigeria.

Keywords: Economic Shocks, Child Labour, Poverty, Unemployment, Quantile Regression.

JEL Classification: C31, D13, D15, D91

Word count of the Manuscript: 7309

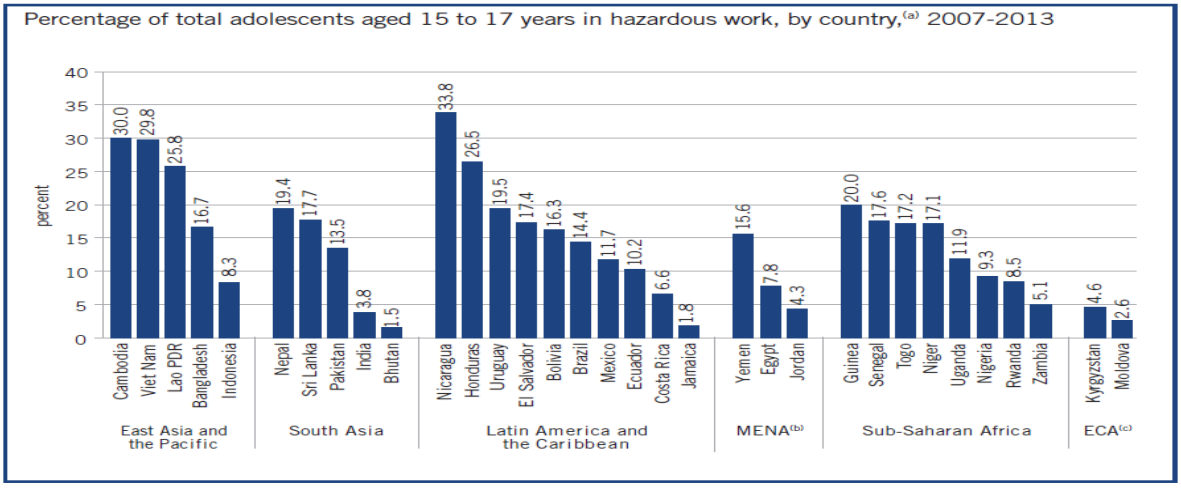
1.0 INTRODUCTION

Over the last decade, moderate progress has been made in the quest to eliminate child labour around the world and particularly in sub-Saharan Africa, which has one of the highest prevalence rates in the world (ILO, 2015). Whilst there was a 31.7% decline in the global incidence of child labour, Sub-Saharan Africa only recorded a 6% drop in the proportion of economically active children engaged in child labour, with Nigeria having some of the largest absolute numbers of children engaged in child labour in the region (UNICEF, 2016). An estimated 15 million child labourers, accounting for 28 percent of school age children between the ages of 5 and 14 are trapped in child labour in Nigeria (UNICEF, 2016). Therefore, the need for concerted action aimed at eliminating child labour cannot be overemphasized. Child labour is a public health concern due to the detrimental effect it continues to have on children's health and psychological development with wide-ranging socioeconomic implications, as well as perpetuating the cycle of poverty.

Financial crises and other forms of economic shocks tend to have large and long-lasting adverse effects on a myriad of sectors in an economy including household living standards, access to credit, public transfers and international aid, and labour wage with concomitant effect on

household decision on children's engagement in either schooling and/or labour. This is why there are concerns amongst policymakers and stakeholders that the recent global oil price shock which plunged oil dependent countries like Nigeria into recession could either reverse the moderate gains achieved in the fight against child labour or even exacerbate the phenomenon (UNICEF, 2016).

Figure 1: Percentage of total adolescents aged 15 to 17 years in hazardous work by country (2007-2013).



Notes: (a) Countries selected on the basis of data availability. (b) MENA - Middle East and North Africa region. (c) ECA - Eastern Europe and Central Asia region.

Source: ILO, 2015

According to the International Labour Organisation (ILO), there are currently about 168 million children between the ages of 5 and 17 routinely engaged in fulltime paid work, many of whom work under hazardous conditions (ILO, 2015) (see figure 1). It is an established fact that much progress has been made in eliminating child labour around the world, as evident in the 31.7% decline in global prevalence rate, in less than two decades. This resulted in bringing the figure from 246 million in the year 2000 down to 168 million child labourers in 2015. The recent estimates obtained from ILO database indicate that sub-Saharan Africa is still prevalent with the highest rates of child labour in the world. Sub-Saharan Africa has an estimated 59 million children engaged in hazardous work, representing a prevalence rate of 30% of the world child labourers between the ages of 5-17, implying that one in every five children in sub-Saharan Africa is forcefully working in farms, mines and stone quarries (ILO, 2015).

It is imperative to note that child labour is not a new problem but rather an intergeneration issue with historical links spanning several civilizations. Indeed, several historical studies suggest that large numbers of children were economically active participants, working in factories during the industrial revolution in Europe and post-industrial revolution in the mid-nineteenth century North America (Cunningham and Viazzo, 1996). Currently, evidence suggests that developing countries have the highest incidence of child labour in the world with sub-Saharan Africa and in particular West Africa, having the largest proportion of children involved in child labour (28% of children between the ages of 5 and 17) (UNICEF, 2016).

However, there have been dramatic improvements in the level of awareness and concern for the detrimental effect of child labour on children health and psychological development due

partly to the increased influence of technology and globalization, which has availed academics and social activists around the world with ample information on the hazardous conditions that child labourer often faces. Therefore, several initiatives and interventions have been advanced to stem the tide against child labour, ranging from introducing international labour standards targeting elimination of child labour, to outright banning of imports that is tarnished by child labour, as well as labelling goods that are produced with child labour in order to give willing customers the option to boycott such goods (Basu, 1999).

Extant literature has highlighted the simultaneous relationship between economic shock induced household poverty and child labour and vice versa (Ranjan, 2001; Bhalotra and Tzannatos, 2002; Edmonds, 2005; ILO, 2015). Bhalotra and Tzannatos, (op. cit.) reported that household poverty trap is one of the determinants of child labour, as it compels parents to send their underage children into the labour market sometimes as the only means of household survival. Conversely, child labour, in turn, often leads to poverty trap amongst low income households as children engaged in child labour instead of schooling, and thereby unable to grow into successful adults that could help their families break the vicious-cycle of household poverty (ILO, 2015). It is in this light, that this research work will be investigating the impact of the economic shock (decline in the commodities price in the international market) on the child labour in Nigeria.

It is also imperative to acknowledge the immense contribution that has been made in the existing literature on the dynamics of child labour in Nigeria (Oloko, 1993; Okpukpara and Odurukwe, 2003; Omokhodion *et al*., 2005; Omiyinka, 2009; Inyang and Raph, 2015). However, very few of these studies have sought to explain the effect of economic recession on child labour in Nigeria. Furthermore, a great number of the empirical evidence on child labour in Nigeria are mere qualitative and descriptive in nature and does not involve a deep econometric analysis that will give an in-depth impact analysis of the socioeconomic problem of child labour, specifically during the economic recession. This paper aims to contribute to the literature by constructing a model on the economic effect of the recent economic recession on the child labour in Nigeria with a view to providing policy recommendations to policymakers and the development agencies.

The rest of the paper is organized as follows. Section 2 explores both the theoretical and empirical literature relevant to the effect of the economic recession and child labour. The description of the empirical model, data, and estimation methodology are provided in Section 3. Section 4 presents an analysis of the estimation results along with diagnostic checks of our results. Section 5 concludes with policy implications of our findings.

2 LITERATURE REVIEW

The literature explores relevant concepts and theories concerning children human capital development as well as child labour and economic recession. The section also reviewed empirical evidence from a wide spectrum of countries.

2.1 Conceptual Literature Review

2.1.1 Child labour

According to International Labour Organisation (2011), child labour can generally be defined as economic activities engaged by children who are deemed below the designated minimum age of 18 as stipulated in ILO child labour Convention No. 138 and 182. However, the provisions in the conventions are quite flexible, as it leaves the prerogative to designate age brackets to individual countries as well as provides an exception to some categories of work such as artistic performances, domestic house chores, supervised apprenticeships, etc. According to Article 32 of the United Nations convention on the Rights of the Child (CRC), "member states are obliged to recognise the right of the child to be protected from economic exploitation and from performing any work that is likely to be hazardous or to interfere with the child's education, or to be harmful to the child's health or physical, mental, spiritual, moral or social development. Child labour can be clearly defined as economic activities that rob children of their childhood, potentials, self-esteem, and work that is harmful to their physical and mental development. Child labour interferes with children schooling by depriving them of the opportunity to attend school, forcing them to leave school prematurely or requiring them to attempt to combine school attendance with excessively long and heavy work which will inevitably jeopardize their academic performance, and how well their human capital and potentials can be developed. Whether or not a particular form of labour can be called child labour depends on the child's age, the type of work and the hours of work performed, the conditions under which it is performed and the objective pursued by individual Countries. Although the term child labour is quite clear, however, there is some level of ambiguity in the age bracket under which child labour should be classified. Whilst some authorities such as United Nations and International Labour Organizations employs the age classification between 5 and 17, others such as UNICEF and a number of studies classify child labour within the age bracket between 5 and 14 years (Basu and Van, 1998; Basu, 1999). In Nigeria, the Child Rights Act, (2003) defines 'child' as a person who has not attained the age of 14 years and 'young person' as one who has attained the age of 14 years but has not attained the age of 17 years.

2.1.2 Economic Recession

The economic recession is a significant decline in economic activity that spread across the whole economy, lasting for a minimum of two quarters (6 months). It is normally visible in the real GDP (Gross Domestic Product), real income, employment, industrial production, and wholesale-retail sales. In another light, a recession is a business cycle contraction which results in a general slowdown in economic activity. Macroeconomic indicators such as GDP, investment spending, capacity utilization, household income, business profits, and inflation fall, while bankruptcies and the unemployment rate rise. In the United Kingdom, it is defined as a negative economic growth for two consecutive quarters, as defined by an economic statistician Julius Shiskin in his book titled "Signals of recession and recovery: an experiment with monthly reporting", NBER Books 1961, who suggested several rules of thumb for defining a recession, one of which was two down consecutive quarters of GDP. In time, the other rules of thumb were forgotten.

Recessions generally occur when there is a widespread drop in spending (an adverse demand shock). This may be triggered by various events, such as a financial crisis, an external trade shock, an adverse supply shock or the bursting of an economic bubble. Governments usually respond to recessions by adopting expansionary macroeconomic policies, such as increasing the money supply, increasing government spending and decreasing taxation.

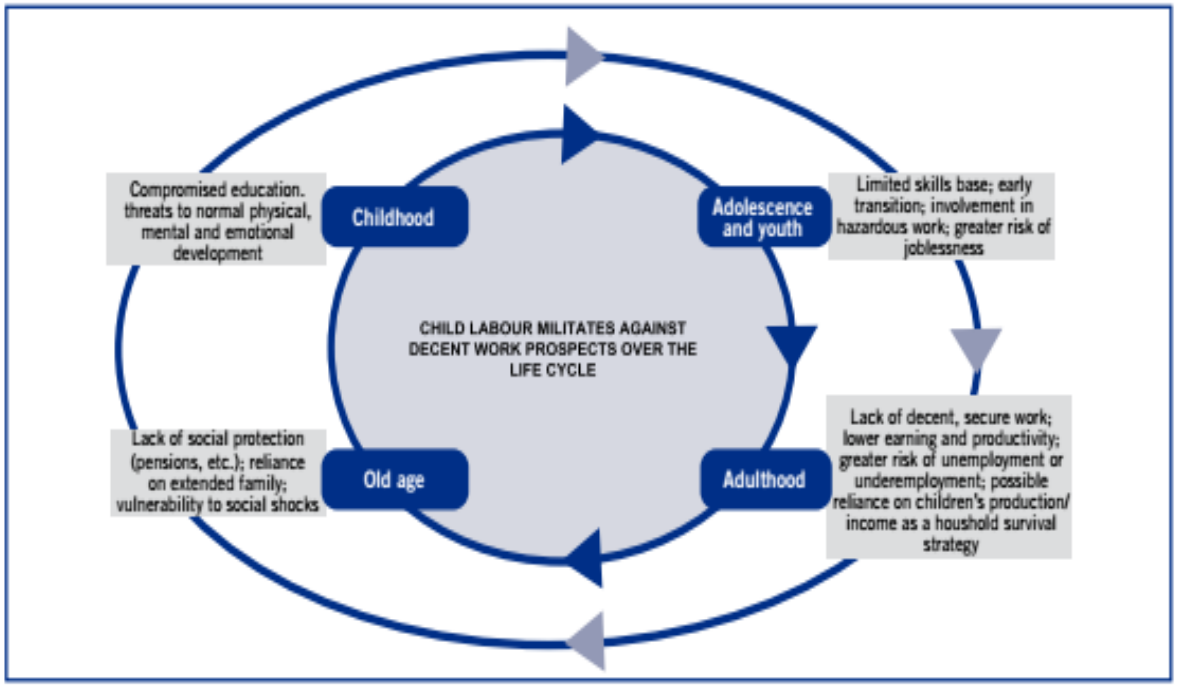
2.2 Theoretical Literature

The endogenous growth theory propounded by Lucas (1988) emphasizes the socioeconomic importance of human capital accumulation as a driver of economic growth and development. He assumes that the transmission channel through which human capital accumulation spur economic growth is twofold: firstly, at the micro level, human capital via research and development (R&D) stimulates firm level growth through increases in firm productivity, which will lead to increase in income and growth. Secondly, at the macro level, the benefits of human capital accumulation on firm productivity eventually spills over to the entire economy and therefore, having a greater impact on society than at a micro level. It, therefore, follows that whatever affected the development or accumulation of this human capital will be perpetuating poverty cycle at the micro level and retarding the economic growth at the aggregate or macro level.

Human capital theory proponents such as Becker (1964) and Lydall (1968) argued that variations in personal incomes are a function of the amount of investment in human capital; that is, education and skill acquisition undertaken by individuals or groups of employees. Machin (2009) observed that much of the poverty in developing countries are as a result of gross underinvestment in education by poor households, all things being equal. The policy prescription stemming from this human capital perspective is that by increasing spending on education, poor households can improve their earnings potential.

The theoretical framework underpinning the child labour-poverty cycle is well established in the literature (ILO, 2013). Child labour perpetuates poverty by destabilizing children education and psychological development which in turn undermines their decent employment prospects over their life cycle (ILO, 2015). The life-cycle framework emphasizes the socioeconomic importance of quality education as well as a healthy environment that offers the physical, mental and emotional stability necessary for children's upbringing as a prelude to a decent employment over their life time. In other words, childhood education and healthy development environment are important to equip children with the necessary life skills and competencies required for children to transit into successful adolescents and young adults with gainful employment (ILO,2015). Children whose normal life development cycle has been distorted by child labour may not be adequately prepared for a decent working life during adolescence and early adulthood as they are much less likely to possess the necessary skills and competencies required to secure decent work, and much more vulnerable to spells of unemployment, job insecurity, and low-wage earnings, and at worse, taking to crime and/or becoming a drug addict.

Figure 2: Child Labour militates against decent work prospects over the life cycle



Source: Understanding Children's Work (UCW) 2009.

John Maynard Keynes theory of aggregate demand is one of the most referred theories on the causes and consequence of the economic recession. He argued that economic recessions are episodes in an economy that is characterized by low economic output stemming from deficient aggregate demand leading to a depressed production and consumption by both governments, private businesses, and households with a concomitant effect on high inflation and excessive unemployment, declining average income, and worsening inequality.

The Keynesian perspective on recession offers the best explanation for the effect of the recession on household welfare with a resultant effect on child labour. The squeeze in household income occasions by the recession has a social impact on household's decision on whether to invest in children education or enlist them into economic activities to augment recession-induced declining household income. However, the opportunity cost of sending children to school becomes higher during the economic downturn.

2.3 Empirical Literature

Empirical evidence stemming from previous economic recession suggests an important link between the recession and rising income poverty. Table 1 shows a spike in the incidence of poverty during the East Asian and Latin American financial crisis of the 1990s. For instance, the poverty levels rose in Indonesia by more than 50% from 11.3% to 18.9%, and marginally in Thailand. The incidence of urban poverty nearly doubled in Argentina, where the national poverty rose from 25.2% to 47.3%. The story was the same in Russia where the incidence of poverty increases from 22% to 33% between 1996 and 1998 (World Bank, 2001).

Table 1: Effect of Economic Crises on the Incidence of Poverty in Selected Countries

Country	Before Crisis	During Crisis	After Crisis
Argentina (Hyperinflation and Currency)	25.2 (1987)	47.3 (1989)	33.7 (1990)
Argentina (Contagion)	16.8 (1993)	24.8 (1995)	26 (1997)
Indonesia (Contagion and Financial)	11.3 (1996)	18.9 (1998)	11.7 (1999)
Mexico (Currency and Financial)	36 (1994)	…. (1995)	43 (1996)
Russia Federation (Financial)	21.9 (1996)	32.7 (1998)	....
Thailand (Currency and Financial)	11.4 (1996)	12.9 (1998)	....

Notes: Based on national poverty lines and per capita household income. For Indonesia (per capita expenditure), Mexico (household income), Russia (household expenditure per equivalent adult). Data for Argentina refer to Greater Buenos Aires. For Indonesia, poverty estimates before and during the crisis are based on the full SUSENAS (the national socioeconomic survey) conducted in February 1996 and 1999; estimates after the crisis are based on a smaller sample. Figures are not comparable across countries because classification of poverty lines differ.

Source: World Bank 2001

Economic shocks on household income have been linked in the literature to have a conflicting effect on child labour. On one hand, a decrease in household income might either compel households to rather withdraw children from school and send them to work or make them combine work with schooling in order to support the household (income effect). On the other hand, a worsening labour market through a reduction in labour demand and or reduction in labour wage might lead to decrease in the supply of labour and might induce households to keep their children in school (substitution effect). Therefore, the empirical evidence on the impact of economic recession on children schooling and child labour can be classified into two broad categorical outcomes; studies with finding suggesting income effect (Edmonds and Pavcnik, 2002; Beegle, Dehejia and Gatti, 2003; Ferraz, 2003; Blanco and Valdivia, 2006; Guarcello, Mealli and Rosati, 2010) and studies with findings indicating substitution effect (Schady, 2002; Skoufias, 2003; Duryea and Arends-Kuenning, 2003; Maluccio, 2005). Therefore, the empirical literature for the current study will be organized based on these two categorical outcomes.

2.2.1 Empirical studies suggesting Income effect

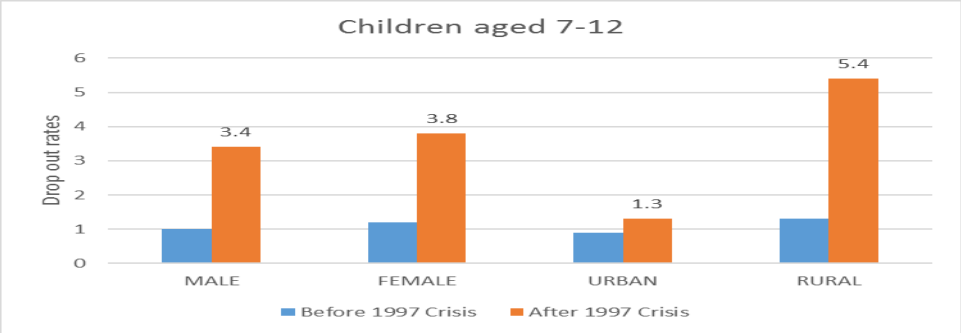
Income effect occurs when there is a consequential squeeze in household income stemming from financial shock or economic recession that compels households to withdraw children from schooling and rather send them to work. Edmonds and Pavcnik (2002) are one of the pioneering works in this regard. They developed an econometric model using logit regression to examine the effect of fluctuations in the household budget and labour market opportunities-stemming from changes in rice prices, which is the dominant export commodity in Vietnam, as well as a major determinant of child labour. Using data obtained from two rounds of the Vietnamese Living Standards Survey (VLSS) spanning between 1992-1993 and 1997-1998. The study

found a significant reduction in child labour during spells of the boom in rice commodity prices and vice-versa.

Beegle, *et al.*, (2003) is another seminal work suggesting income effect of economic shocks. The study shows how households react to transitory income shocks with an increase in child labour supply in Tanzania. Using a panel of household's survey, they examine the average hours' children spend in economic activities in a particular referenced week with income shock arising from crop loss. Their findings show a positive effect of income shock on increase on child labour, a 10 percent increase in the average hours' children spent at work is associated with a one percent increase in the standard deviation of an income shock.

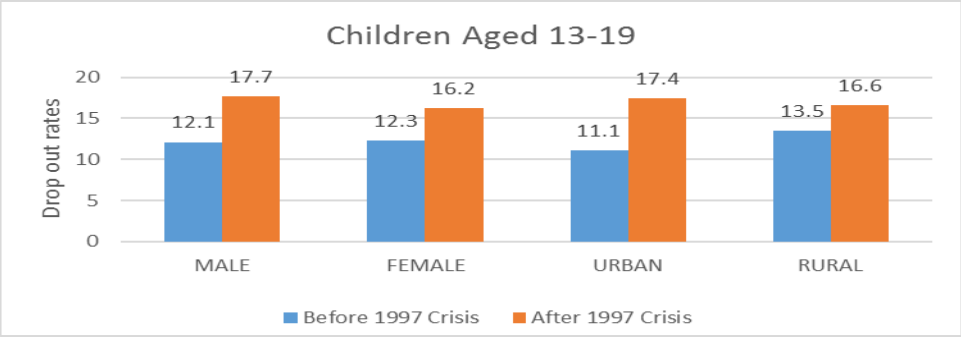
Also, Beegle, *et al.*, (1999) also found an income effect in Indonesia economic and financial crisis of 1997. The percentage of children not enrolled in school rose after the 1997 crisis. They also found a positive and high incidence of children dropping out of school prematurely as depicted in figure 3a and 3b.

Figure 3a: Dropout rates in Indonesia, before and after the 1997 economic crisis (Children aged 7-12)



Source: Beegle, Frankenberg and Thomas, 1999

Figure 3b: Dropout rates in Indonesia, before and after the 1997 economic crisis (Children aged 13-19)



Source: Beegle, Frankenberg and Thomas, 1999

Furthermore, Rucci (2003) also reported evidence of a positive association between aggregate shocks and the proportion of children between the ages of 14 and 17 engaged in child labour in Argentina for the period spanning between 1998 and 2002.

The work of Ferraz (2003) used a panel of household data to examine the effect of economic recession-induced income shocks and unemployment on child labour in Brazilian households. The study suggests that there is a long run positive effect between economic shocks and the average hours' children worked to cope with declining household income. Using data obtained from Venezuela during the economic recession period between 2002-2003, Blanco and Valdivia (2006) result show an over four percent increase in the proportion of children engaged in child labour to a one percent decrease in GDP. The increase in child labour stems from an increase in the school dropout rates, as well as an increase in the number of children combining work and school. In a similar vein, Guarcello, et al. (op. cit.) showed that in Guatemala, households affected by both collective shocks (earthquakes, floods, and fires, etc.) and individual shocks (loss of employment, bankruptcy, etc.) increase the children engagement in child labour, while reducing children school attendance rates. In specific terms, income shocks increased child labour participation by 5.5 percentage points, most of them coming from children combining work and school. The study also reported a 5-percentage point increase in child labour incidence for households affected by collective shocks on the average. In another study, Guarcello, Kovrova, and Rosati (2008) analysed the effect, income shocks induced by crop failures on child labour and school completion rates in many Cambodia villages and found that the referenced villages recorded a high incidence of children joining the labour market and school dropout rates.

2.2.2 Empirical studies suggesting Substitution effect

Substitution effect occurs when a fall in aggregate growth and productivity stemming from financial shock or economic recession with a resultant squeeze in household income rather motivates households to withdraw children from child labour and send them back to school. Likewise, evidence of substitution effect was found in Peru during the 1991 national economic crisis than in other years, where children were found to have a much higher probability of being enrolled in school than participating in child labour (Schady, 2002). Similarly, Duryea, et al. (op. cit.) using cross sectional data obtained from several rounds of households' surveys from Brazil spanning over 20-year period between 1977 to 1998, examined the factors that determine household decision to send their children to school and/or work during spells of crisis induced reduction in employment opportunities. They found that a reduction in employment opportunities appears to offset household income generated from children labour supply.

Finally, Maluccio (2005) equally showed evidence of substitution effect in Nicaragua during the 2000 - 2001 coffee crisis in Central America. Nicaragua experienced a sharp improvement in primary school enrolment rates and a moderate reduction in the number of children participating in child labour during the coffee price induced economic crisis period. The study concludes that households in coffee-growing areas with social safety net initiatives were better prepared to cushion the effect of the income shock induced by the coffee crisis as evidenced by the improved school enrolment rates and reduced incidence of child labour during the crisis.

In summary, the impact of the economic recession or any aggregate income shock on the incidence of child labour is expected to have two outcomes. Aggregate economic shock can have a directly proportional and positive effect on the incidence of child labour, especially for low income developing countries. In other words, evidence of the presence of income effect is more severe and prevalent in low income economies with poorer households' worst affected. Conversely, an economic recession can have a substitution effect where the loss in employment opportunities induced by the income shock can sometimes offset the incidence of child labour. Middle-income countries with well-functioning social safety net programmes are expected to witness more evidence of substitution effect. This was certainly the case in Nicaragua during the Central America coffee crisis.

3. DATA AND EMPIRICAL METHODOLOGY

This research work analysis employs GRETL (GNU Regression, Econometric, and Time-series Library) software. This software is a cross-platform and open-source econometrics package that is freely available. GRETL is a high-quality, feature-rich, and accurate econometrics package and very precise in terms of numerical accuracy compared to other widely used alternative packages (Yalta and Yalta, 2007)[1].

The approach of this research work analysis is based on quantile regression estimations. This is because standard least squares regression techniques only provide summary point estimates that calculate the average effect of the independent variables on the average dependent variable. However, focusing on average values hide important underlying features of a relationship (Mosteller and Turkey, 1997; Coad and Rao, 2008). Mosteller and Turkey (op. cit.) further reiterate the flaws inherent in the least squares regression by suggesting that OLS regression curve only gives a grand summary of averages for a set of distributions and thus presents an incomplete picture for the set of distribution. Quantile regression techniques can, therefore, help us obtain a more complete picture of the underlying relationship between child labour and the economic shocks. In this case, estimation of linear models by quantile regression is preferred to the other regression methods for a number of reasons: First, the standard least-squared assumption of normally distributed errors might not hold for our database because the individual or family response to economic shocks is not the same, so it might not follow a similar pattern of Gaussian distribution. Second, the optimal properties of standard regression estimators are not robust enough to cater for departures from normality, quantile regression results are characteristically robust to outliers and heavy-tailed distributions. In fact, the quantile regression solution $\widehat{\beta_0}$ is invariant to outliers of the dependent variable that tend to $\pm\infty$ (Buchinsky, 1994). Third, another advantage of quantile regression is that, while the conventional regressions focus on the mean, quantile regressions are able to describe the entire conditional distribution of the dependent variable. Quantile regression estimates the effect of explanatory variables on the dependent variable at different point of the dependent variable's conditional distribution (Eide and Showalter, 1997). Quantile regressions is used simply to get

[1] We also estimated all regressions using stata 14 and the results were all similar to those reported in this work

information about points in the distribution of the variable other than the conditional mean (Buchinsky, 1995; Eide and Showalter, 1997).

We are using the quantile regressions to examine the effect of economic shocks across the child labour quantiles conditional distribution, with the presence of some control variables. Our regression specification follows the standard approach of the effect of economic shocks on households that will lead to increase or decrease in children participation in economic activities. According to literature (Anker, 2000; Basu and Tzannatos, 2003; Edmonds, 2005; Okpukpara and Odurukwe, 2006; Koseleci and Rosati, 2009), negative economic shocks would result into increase in poverty level, unemployment, inflation, which will lead to lower standard of living and thereby encouraging the option of family sending their children into the labour market in the absence of social security to cushion the effect of the economic hardship.

As described by Koenker and Bassett (1978), the estimation is done by minimizing Equation 1:

$$\frac{Min}{\beta \epsilon K^k} \sum_{t\epsilon\{t:y_t \geq x_t\beta\}} \theta|y_t - x_t\beta| + \sum_{t\epsilon\{t:y_t \geq x_t\beta\}} (1-\theta)|y_t - x_t\beta| \quad (1)$$

Where y_t is the dependent variable, $x_t$is the k by 1 vector of explanatory variables, β is the coefficient vector and 1 is the quantile to be estimated. The coefficient vector β will differ depending on the particular quantile being estimated.

3.2 Data

This analysis sourced its cross-sectional data from the Multiple Indicator on Cluster Survey (MICS) for 2011 conducted by the National Bureau of Statistics with sponsorship from the United Nations International Children's Emergency Fund (UNICEF). It measures key indicators that allow countries to monitor progress towards the Millennium Development Goals (MDGs) and other internationally agreed upon commitments. Although fourth and latest MICS in Nigeria was conducted six years ago-2011, it is still the most recent database on child labour available in Nigeria. Other sources of data are the annual household survey statistics by the National Bureau of Statistics (NBS) and Central Bank of Nigeria. The variables used in this research work are informed form the literature (Duryea et. al., 2007; Beegle et. al., 2003; Ferreira and Schady, 2008) and the availability of data. There are other control variables that were not used in this analysis due to data limitation and issues of multicollinearity.

In this analysis, we employed child labour as the dependent variable. Child labour is defined for the purpose of this study as the headcount of children engaged in only child labour and therefore not attending school at all. A child is considered to be participating in child labour if, during the week preceding the survey, he/she meets the following criteria: for aged between 5 and 11, that engages in at least 1 hour of economic work or 28 hours of domestic work per week; and aged between 12 and 14 that engages in at least 14 hours of economic work or 28 hours of domestic work per week. This definition allows for the differentiation between child labour and child work.

For the independent variables, our economic factor variables would be food headcount poverty, unemployment and agricultural loans obtained from the Agriculture Credit Guarantee Scheme (ACGS). The agricultural credit loans are employed as a proxy for financial security because

agriculture is the biggest employer of labour in Nigeria. We expect agricultural credit to impact child labour both positively and negatively due to the large proportion of the population living in a rural area where the major source of livelihood is subsistence farming. The other control variables are the average household size (we believe that the higher the number of children in a household, the higher the poverty level and the more prevalence will be child labour). Finally, parental education is also used as a control variable. The a priori expectation is that educated parents are more likely to value children's education over child labour and also more likely to have higher income earnings stemming from higher productivity in relation to their human capital.

Table 2: Variables, Sources and the *a-priori* expectation in the analysis

Variable (2010)	Source	*A-priori* Expectation
Child Labour	MICS, 2011	Dependent Variable
Head Count Food Poverty	NBS Annual Abstract of Statistics, 2012	+
Unemployment	NBS Annual Abstract of Statistics, 2012	+
Average Household Size	NBS Annual Abstract of Statistics, 2012	-
Agric Credit Guarantee Scheme	CBN Annual Report, 2011	+/-
Parent Education	NBS Annual Abstract of Statistics, 2012	-

Source: Computed by the Authors

The descriptive statistics gives information concerning the mean, median, minimum and maximum value of each variable, as well as the standard deviation for each of the variables. It also tells about the skewness and the kurtosis distribution.

Table 3: Descriptive Statistics

Summary Statistics, using the 37 observations (states and the Federal Capital Territory)

Variable	Mean	Median	Minimum	Maximum	Std. Dev.	Skewness	Ex. kurtosis
ChildL	263.935	231.018	85.1880	744.088	123.914	1.78825	4.44554
FPoverty	2.90270	2.50000	1.10000	9.20000	1.60442	2.14977	5.31362
Unemploy	23.3676	23.9000	3.00000	42.6000	10.6186	0.0477793	-0.956293
AvPHH	4.53784	4.50000	3.10000	6.60000	0.951125	0.213040	-1.13499
ACGS	5.22688	5.32750	4.15570	6.03631	0.438199	-0.520644	-0.501638
ParentEd	78.5503	78.2041	75.0001	89.2129	3.36922	1.24504	1.43108

Sources: Computed by the Authors.

4.0 RESULT

In this section, the estimates of our quantile regressions on the effect of economic shocks on child labour are presented. We estimate the model by first presenting the OLS and then the 0.05, 0.25, 0.5, 0.75 and 0.95 quantiles estimate. The results are presented in table 4.

The quantile regression results suggest some important differences across different points in the conditional distribution of child labour in Nigeria.

Table 4: The Result of the Effect of Economic Crisis on Child Labour in Nigeria

Variable	**OLS**	**0.05**	**0.25**	**0.50**	**0.75**	**0.95**

const	571.94*	316.76***	209.84***	245.93**	326.17***	321.74*
FPoverty	37.54***	11.41***	60.51***	75.88***	87.87***	73.47***
Unemploy	−3.40**	−0.93*	−2.17***	−1.09**	−2.25***	−2.63***
AvPHH	71.33***	29.13***	32.96***	30.94***	37.88***	73.33***
ACGS	77.20**	65.96***	51.91***	37.24***	18.48***	14.97
ParentEd	-13.55***	−8.00***	-6.54***	-6.43***	-6.41***	-7.02***

***, **, * signifies 1%, 5% and 10% level of significant respectively

Source: Computed by the Authors.

The OLS analysis shows the adjusted R^2 to be 0.65 which signifies that the estimated model explains 65% of the variation in the Child Labour in Nigeria, while the F-Statistics at 14.48 shows that the overall OLS regression is significant at 1% level, with a P-Value of 0.0000 (the raw result is in the appendix).

Food Poverty: This result shows that food poverty affects the likelihood of engaging in Child Labour in Nigeria, it found a positive relationship across the OLS and through the quantile regressions. Both OLS and Quantile regressions show that the result is robustly significant at 1% level of significance across the board. This result confirms our a-priori expectation of a positive relationship between poverty and child labour engagement, and it is also consistent with the extant empirical evidence. (Blunch and Verner (1999); Guarcello et al. 2008; Guarcello et al. 2010). Additionally, the quantile shows a consistent increasing impact of poverty on child labour until the 95th quantile, where the impact dropped. This shows that in the upper quantile, the effect reduces.

Unemployment: This result suggests that unemployment is a negative predictor of child labour in Nigeria and this result is statistically significant across the board. It is 5% significant for the OLS, 10% significant for the 5th quantile and 1% significant for all the rest quantile regressions. However, this is not in tandem with our a-priori expectation where we expected unemployment to be a determinant of child labour. This might be explained by the fact that unemployment is really a problem in Nigeria which is even affecting the youth disproportionately. This also explains the substitution effect theory which shows that income shock stemming from unemployment might result in a decrease in child labour against all expectation. This is especially true in the presence of socio safety net (traditional safety net), which is prevalent in Nigeria. This is in line with similar studies who have found substitution effect in the wake of economic crisis such as in Brazil (Duryea et al, 2003), Peru (Schady, 2002) and Nicaragua (Ferreira and Schady, 2008).

Average Person per Household: This result suggests that large family size is a predictor of child labour in Nigeria. This result is robustly significant at 1% both at the OLS and across the whole Quantile regressions. The result correlates with our a-priori expectation and is consistent with empirical evidence from Peru (Patrinos and Psacharopoulos, 1997), which says that with a large family size, the older children might have to support the parent by taking up economic activities.

Agricultural Credit Guarantee Scheme: The result suggests that the agricultural credit is a predictor of child labour in Nigeria. The result is also robustly significant. For the OLS, the result is statistically significant at 5% and 1% significant across the quantile regressions with

the except of the 95th quantile where the result was not significant. This result is in line with our a-priori expectation and also in tune with empirical evidence found in ILO (2010), which says that in Africa, the greater child labour is found in the farm. ILO (2010) obtained that if agriculture is doing well (no drought and high agricultural yield), it will attract more child labour.

Parent Education: The result suggests an inverse relationship between the parental education and child labour. It shows that parent that are educated will rather not allow their children to engage in child labour and this result is robustly significant at 1% both for the OLS and across the whole quantile regressions. This result is also in tandem with our a-priori expectation of a negative relationship between parent education and child labour. The result is also in line with empirical evidence suggesting the principle of parental altruism which emphasizes that parents know and want what is best for their children and would therefore rather send them to school than to work (Basu and Van, 1998) as well as empirical evidence suggesting parental education as a proxy for parental income and highly correlated with household income (Bandara, Dehejia and Lavie-Rouse, 2015). Therefore, educated parents will not resort to using child labour as a buffer against income shock.

4.1 INCORPORATING SIMULATION

We simulate by increasing the value of poverty and unemployment by 2.5% and see what will happen to the model.

Table 5: The Result of Simulation in Poverty & Unemployment

Variable	OLS	0.05	0.25	0.50	0.75	0.95
const	551.93*	316.76***	168.16	245.93*	326.17***	160.50***
FPoverty (↑2.5%)	29.73***	9.12***	45.42***	60.70***	70.29***	56.87***
Unemploy(↑2.5%)	−3.34**	−0.91*	−2.33***	−1.06	−2.19***	−3.00***
AvPHH	70.98***	29.13***	27.75**	30.94***	37.88***	78.72***
ACGS	77.79**	65.96***	58.82***	37.24**	18.48	19.44***
Parented	−13.29***	−8.00***	−5.96**	−6.43***	−6.41***	−5.30***

***, **, * signifies 1%, 5% and 10% level of significant respectively

Source: Computed by the Authors.

A shock increase of 2.5% in food poverty rate shows an increase in child labour throughout the analysis, and the result is significant at one percent. While a shock increase of 2.5% in unemployment reduces child labour in tandem with our analysis result.

5. CONCLUSION

In conclusion, this study has identified food poverty, average person per household, and Agricultural Credit Guarantee Scheme as the predictor of child labour in Nigeria. The study also found parental education to be very robust in curbing child labour. In addition, we found that unemployment had a substitution effect on child labour in Nigeria. There is, therefore, the need for policy that will cushion the effect of poverty and income shocks through the introduction of a resilient social safety net programme targeting the most vulnerable in the society. There is also the need to use household characteristics such as household size and parental education as a policy instrument in reducing child labour by improving awareness on

family planning and adult education in Nigeria as large household sizes are good correlates of child labour and parental education a good buffer. While we cannot advocate for policy that will reduce agricultural credit due to its adverse influence on child labour, we hope and believe that increase in agricultural credit and support programmes, will increase farmers' sophistication leading to mechanized farming which will eventually eradicate the prevalence of child labour in the agricultural sub-sector of the economy in Nigeria.

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