

# **LONG-TERM HEALTH CONSEQUENCES OF CHILD LABOUR IN CAMEROON**

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## **ABSTRACT**

Most child labour research, interested in the health consequences, focus on the contemporaneous effects. However, the potential gestation period require for some effect to be noticeable renders such analysis partial. This study therefore attempts to investigate the effect of child labour on their health at adulthood in Cameroon, using individual records of the 2007 Cameroon household consumption survey. In order to pursue this objective; use was made of a standard probit and the ordered probit models. Among the several econometric results, both the standards

probit and ordered probit models showed that adults, who worked as children, did not report poor self-assessed health status as they were on the contrary more likely to report better self-assessed health status. This result seems to be comforting, and might justify why parents continue to ignore the legal restriction on the employment of children as stated by the 1992 Labour code and the 1996 constitution of Cameroon.

**Key Words:** *child labour, adulthood health, self-assessed health state and long-term effect*

## **CONTEXT AND SCENE SETTING**

Conventionally, economic theory laid emphasis on physical capital accumulation as the most robust source of economic growth. However, because of diminishing returns to physical capital, empirical verifications have proven this theory inappropriate (Schultz, 1997) hence the emergence of the endogenous growth models developed by Romer (1986), Lucas (1988) and Becker (1992) emphasizing the role of human capital accumulation. The literature on the importance of human capital for economic development is enormous (Behrman et al., 1999 and the references therein). Any factor whatsoever, which adversely affects the accumulation of human capital, is considered as a bad (ILO, 2006).

According to ILO (2006), child labour is considered as a bad since it is harmful in many ways. It interferes with human capital accumulation as it may affect the health and the education of the child. It is in this light, that child labour is looked up to as a barrier to good health and well-being (Richard and Marco, 2005). Theoretical and empirical studies have shown that child labour can lead to adverse work related health effects on children. A clinical evaluation, performed in Indonesia by Bose-O'Reilly et al. (2008) revealed that the symptoms of intoxication for non-working children were 0% and 8% for working children. This was confirmed in USA, where children working on farms on full time bases were medically proven to be pesticide poisoned Kishk et al. (2004). The effect of child labour on health is however mitigated.

Health gains instigated by child work are not inconceivable (Rosati and Straub, 2006). Wages earned from child work can improve the living standard of poor households (Basu and Van 1998). The resultant improved food intake coupled with better living style can improve the health of the child (Roy, 2009) as nutrient intake contribute more in building young bones than matured once. This is affirmed by the result of Steckel (1995), Appleton and Song (1999), and Smith (1999) who revealed the existence of a positive impact of child work on

household living standards thus on their health. Ralston (1997) employing intra-house allocation mechanisms confirmed this as allocation of calorie was strongly related to child labour contributions. These studies are nevertheless, limited because today's work may only affect health in future as many of the consequences of child labour might only develop and manifest at adulthood O'Donnell et al.(2003) such that immediate health damage of childhood labour becomes a small portion of the real consequences of childhood work.

Cameroon, which is the focus of our study, has a children-dominated population. Her total population is estimated at 19.4 million and more than half of it is made up of the under 18, estimated by UNICEF statistics of 2010 at 9,261, 000. Cameroon is made up of 250 different ethnic groups and each group has a slightly different culture. Child labour is engrained in certain cultural practices. Muslims for example see women as having a low social status and find no need of sending female children to school.

While in 2000, the ILO estimated that 23.7 percent of children aged 10 to 14 years were involved in child labour in 2010 the figure was to 31% according to the UNICEF statistics of 2010 indicating that the incidence is likely increasing. Curiously, Adamawa region with the highest rates of economically active children is identified to have the highest illiteracy rates coupled with poor health status (NIS 2008). This suggests that child labour is likely to affect health.

Most child labour research interested in its health consequences focus on the contemporaneous effects. However, the potential gestation period required for some effect to be noticeable renders such analysis partial. Hence, questioning the veracity of the contemporaneous results according to which child labour has a positive or no effect on health. The positive effect of child labour on contemporaneous child health might not be consistent when long-term analysis is considered, as longer gestation period may be needed for the negative effect to be manifested. Due to this potential gestation period, it therefore remains important to empirically determine in the context of Cameroon whether child labour really affects future health.

In the light of the above background, the key question that arises is: What is the long-term health effect of child labour in Cameroon? In line with this question, the objective of this study is to investigate the effects of child labour on their future health.

Specifically, the study seeks:

- to examine the extent to which child labour affects long-term health.

In order to achieve these specific objectives, all other things being equal, we test the following hypotheses:

- Adults who had worked as child labourers have poorer health state than adults who had never worked as child labourers.

The present study is motivated by the non-existence, to the best of our knowledge of any empirical evidence linking childhood labour to future health in Cameroon. The vacuum to be filled by this study, will permit it to act as, a reference point for further research in this domain in Cameroon and other developing countries.

Secondly, the positive effect of child labour on contemporaneous child health might not be consistent when long-term analysis is considered. Fassa et al., (2000) holds that most of the effects may only occur in adulthood, due to longer gestation period required for them to be noticeable. Hence, investigating the future effect of child labour on health is vital in the context of Cameroon as parent continues to justify their decision in favour of child labour by the absent of any contemporaneous negative health effect. Policy wise, this study is vital as the gestation period could postponed it effect to some later period. If this is the case, then policy could still be formulated to control child labour even in the absent of a contemporaneous negative effect.

The rest of the study is structured as follows: The next Section is aimed at reviewing the literature, Section 3 presents the theoretical and empirical framework while Section 4 describes the data. Empirical results are presented in Section 5 and Section 6 concludes the paper.

## **LITERATURE REVIEW**

From literature, it is evident that the effects of childhood labour on health can either be positive, negative or neither. This effect could pass through child labour income, occupational hazards and through forgone education. According to Roy (2009) and ILO (2002) Child work often leads to chronic illnesses and/or fatal injuries. A clinical evaluation, performed in Indonesia by Bose-O'Reilly et al. (2008) revealed that the symptoms of intoxication for non-working children were 0% and 8% for working children. This was confirmed in USA, where children working on farms on full time bases were medically proven to be pesticide poisoned Kishk et al. (2004). In the same vein, Mamun et al. (2008) discovered that, health complications were increased as hours worked increased, as children worked in hazardous sectors and as they enter into the labour market at very early age. This result is in conformity with those carried in Lebanon and Brazil by Nuwayhid et al. (2005) Carusi-Machado et al. (2005) respectively.

Nevertheless, the result by which child labour affect health negatively was not confirmed by Fentiman et al. (2001) in Ghana as there existed no growth differences among working and none working children. In addition, Francavilla and Lyon (2003), found no causal relation between childhood labour and body mass index.

Health gains instigated by child work are not inconceivable (Rosati and Straub, 2006). Wages earned from child work can improve the living standard of poor households (Basu and Van 1998) through improved food intake (Roy, 2009) as nutrient intake contribute more in building young bones than matured once. This is affirmed by the result of Steckel (1995), Appleton and Song (1999), and Smith (1999) who revealed the existence of a positive impact of child work on household living standards thus on their health. Ralston (1997)

employing intra-house allocation mechanisms confirmed this as allocation of calorie was strongly related to child labour contributions.

These studies are nevertheless, limited because today's work may only affect health in future as many of the consequences of child labour might only develop and manifest at adulthood O'Donnel et al.(2003) such that immediate health damage of childhood labour becomes a small portion of the real consequences of childhood work. Working children are doubly vulnerable to chronic health damage (Fassa et al., 2000) as exposure to dust, pesticide and chemicals may develop health problem many years later (Forasterie, 1997 and ILO, 1998). Child work might indirectly impact health in the long-term through forgone education as lower educational attainment means less human capital, which can impact negatively on health both through lifetime earnings and knowledge of health production mechanisms (Grossman, 1972; Schultz, 1984). Childhood health has been viewed as most vital (McCain and Mustard, 1999) because adulthood health depends largely on childhood health since damage from childhood disease may be hard to undo (Hoyt, 2010).

In order to consider any dynamics in child labour analysis, the two periods models, which can be overlapping<sup>1</sup> or not was introduced. Here it is assumed that each individual lives for two periods, first as a child then as an adult. In this scenario the child labour effect passes through forgone education which is likely to reduce revenue at adulthood, and through the gestation period required. In this case, working children in their adulthood will likely remain uneducated and might be in poor health. This has been the analysis of Satyanarayana et al., (1986); Fassa et al., (2000); Parson and Goldin, (1981); Kassouf et al., (2001); Baland and Robenson, (1998); Diallo, (2001); Lachaud, (2005); Giuffrida et al., (2005) and Rosati and Rossi (2001).

As evidence, Satyanarayana et al. (1986) found out that, adults who enter the labour market as children had height and weight deficit 17 years later. In Brazil, Kassouf et al. (2001) show that each time the labour market entry age is low the probability of reporting poor health status in adulthood is increased. This coefficient was weakened when they controlled for education. In the same light, Giuffrida et al. (2001) found that those who entered the labour market while being less than 10 years had a negative and substantial effect on their health at adulthood. This result was confirmed for those who started working while they were less than 9 years by Giuffrida et al. (2005). Nevertheless, payment in cash or in kind from child labour may help to provide the necessary resources for school and nutrition which can enhance adulthood health as has been proven by Wagstaff (1993). Therefore, the question of the long-term health effect of child labour remains an empirical issue.

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<sup>1</sup> The overlapping generation's model is developed by Glomm (1997) and Basu (1999). Here, in the second period the individual give birth to a child.

## THEORETICAL AND EMPIRICAL FRAMEWORK

### Theoretical Model

The contemporaneous theoretical framework is often constructed based on the health production function. Though not originally constructed for children health, its application to children's health status is gaining popularity (Behrman and Deolalikar, 1988; Arif, 2004). As in Grossman (1972), the health production function depends on several factors as child, community and household characteristics, market-purchase input as health services and food intake. Though, such a specification is important in revealing the causal effect of child labour on child health, it is nevertheless limited because it does not bring to light all the health consequences of child labour as some health outcomes often require longer gestation period than others (Forasterie, 1997).

To overcome this shortcoming, we considered a long-term analysis by constructing a two period framework. As Chanyoung and Orazen (2010), Becker (1964), and Basu and Van (1998), we assumed a household made up of a single child and a single parent who work full time and receive  $Y$  as remuneration. As in Chanyoung and Orazen (2010), child's time can be used for child labour ( $C^1$ ), leisure ( $L^1$ ) and schooling ( $S^1$ ) with the superscript indicating childhood period. Hence the normalized child's time function is of the form:

$$1 = C^1 + L^1 + S^1 \dots\dots\dots (1)$$

If the child worked in wave one, then he receives  $W^1$  as wage, and if on the contrary, he attends school,  $Z^1$  will indicate access to school input. The utility from child's future wealth ( $W^2$ ) obtained by parent is of the form:

$$W^2 = W^2(C^1, S^1, Z^1, SW^1, a, h, H^2) \dots\dots\dots (2)$$

Child's future wealth depends on time spent in period one, which may be at school  $S^1$  or at work ( $C^1$ ), on the sector where the childhood work was performed ( $SW^1$ ) on child's personal ability ( $a$ ) and health ( $h$ ) and on his health at adulthood ( $H^2$ ). The future health of the child in adulthood equally depends on child labour time in wave one, schooling in wave one, the sector where he had worked while a child and on his ability and health endowment.

$$H^2 = H^2(C^1, S^1, SW^1, a, h) \dots\dots\dots (3)$$

We assume that the working sector is not a choice variable since a child born in a mining zone often characterized by poor soil condition is obliged to engage in mining activity and not in agricultural activity for instance. In Cameroon, for example, coastal children often practise fishing activity and less farming as coastal soil is typically less productive. This hypothesis facilitates the first order condition.

If we equally assume that parents derives utility from child leisure ( $U_{L1} > 0$ ) and from the consumption of goods  $X, (U_x > 0)$  then the general objective of parents in wave one is to

choose the level of consumption, child labour time, child school time in order to maximize a utility function of the form:

$$U[X(1 - C^1 - S^1), W^2(C^1, S^1, Z^1, SW^1, a, h, H^2)] \dots \dots \dots (4)$$

subject to a budget constraint of the form:

$$Y + W^1 * C^1 = P * X \dots \dots \dots (5)$$

where  $P$  is the price of consumer goods purchased by parents. The first order condition under the hypothesis that there exist an interior solution and that working sector is not a choice variable is given by:

$$\frac{U_x}{P} W^1 + U_{w^2} \left( \frac{\partial W^2}{\partial C^1} + \frac{\partial W^2 \partial H^2}{\partial H^2 \partial C^1} \right) = U_{w^2} \left( \frac{\partial W^2}{\partial S^1} + \frac{\partial W^2 \partial H^2}{\partial H^2 \partial S^1} \right) \dots \dots \dots (6)$$

The marginal utility derived by parents from child labour is indicated in the left-hand-side. As indicated by Basu and Van (1998) and Bhalotra and Head (2003), wages earned from child work can improve the living standard of poor households. This occurs as a result of improvement in food intake (Roy, 2009). Nevertheless, child labour might, in the long-term, affect the future wealth of the child through a fall in future earning ( $\partial W^2 / \partial C^1 < 0$ ) as a less educated adult will earn less as well, and through its harmful effect on long-term health ( $\partial H^2 / \partial C^1 < 0$ ) as an adult with poor health will certainly be less productive. The marginal utility obtained when time is allocated for school is indicated on the right-hand side of equation 6. The impact of childhood work on adult health outcome will be given by the health production equation 3.

**Measurement Issues and Empirical Model**

Child labour in this study regroups all children who are carrying out an economic activity in the sense of the System of National Accounts (SNA 1993)<sup>2</sup> in accord with Guarcello et al. (2006). This definition excludes household chores performed by children in their own household and school work (ILO 2000 p1 and NIS, 2008).

As concern health state, while anthropometric indicators have the advantage of being objective, they tend to be more closely correlated with health as age advances and also might be rather insensitive to some work related health problems, such as injury (Owen et al; 2004). To capture the morbidity of children, the World Bank (2002) proposed illness and injuries as proxies. The literature on epidemiological studies shows that self-reported health status based on the answer to the question as; *how do you judge your health status?* , is to be considered as one of the best indicators (Guarcello at al., 2004).

Nevertheless, Allen and Velden (2005) maintained that self-reported health status may be filled with intentional or unintentional error problem due to the ambiguous content of the question, limitations to respondents' comprehension or memory, rationalization endogeneity<sup>3</sup>

<sup>2</sup> As adopted by the Thirteenth International Conference of Labour Statisticians (Geneva, 1982).

<sup>3</sup> This is the situation where respondents have the tendency of rounding up figures.

or finally from the so-called anchor problem<sup>4</sup>. In this case, there may be a discrepancy between the real and the reported value. Nonetheless, Falchikov and Boud (1989), Gordon (1991) reported strong correlations between self-assessed and external measures. This was confirmed in Kaplan and Camacho (1983), with Guarcello et al. (2004) arguing and pointing self-assess health as the best measure of health.

In this light, to minimize measurement error-related problems, we used both subjective and objective measure of health. As subjective measure we used the self-assessed health (SAH) status, ranging from 1=poor health, 2=fair health, 3=good health, to 4=excellent health. Such an indicator is interesting because an individual who is suffering is well placed to tell how he feels than a third party or a tool that might not reveal feelings. Moreover, the SAH status by virtue of involving feeling, indirectly incorporate injuries and hence adequate as an indicator of general health. As exposure to dust, pesticide and chemicals may develop health problem many years later (Forasterie, 1997 and ILO, 1998) the second health measure (which is objective) relies on whether the individual suffers from respiratory infection or not.

The estimation of adult health outcome in period 2 conditioned on childhood labour and schooling decisions carried out by the household in period 1 is given by the following empirical models:

$$H_i^2 = D_i \alpha_1 + \lambda C_i^1 + \kappa S_i^2 + \varepsilon_i \dots\dots\dots (7)$$

With  $H_i^2$  representing adult  $i$  health outcome (captured by subjective self-assessed health or by an objective health state represented by a dummy variable indicating if the adult is suffering from respiratory problems or not) in period 2.  $D_i$  is a vector of variables explaining the health status of adults<sup>5</sup>  $i$ ,  $C_i^1$  the age of labour market entry of adult  $i$  while he was a child that has been converted to a dummy variable which take as value 1 if the adult started working while he was less than 18 years old and 0 otherwise.  $S_i^2$  is a dummy variable indicating if adult  $i$  attended school or not, and  $\alpha_1$  a vectors of parameters associated to  $D_i$ .  $\lambda$  and  $\kappa$  are parameters to be estimated and  $\varepsilon_i$  the error term. The direct effect of child labour on adult health results from exposure to illness and injury and is captured by  $C_i^1$ . Child labour equally, can jeopardized health indirectly through the education that is likely to be forgone. This can be captured by  $S_i^2$ .

### **Estimations Issues**

Estimating the effect of child labour on both childhood and adulthood health is complex, in both the short-and long-term (Guarcello et al., 2004). The main estimation problem is that of potential endogeneity which will absolutely lead to inconsistent results (Rosenzweig and Schultz, 1983). In the contemporaneous relation between child labour and child health, endogeneity problem is likely to be enormous due to double simultaneity.

<sup>4</sup> This is a situation of ambiguity where respondents lack clarity of the measurement scale used.

<sup>5</sup> Follusing Grossman (1972) we included adult present salary.

Our data, as in Guarcello et al. (2004), do not provide information on both the family and individual level measures for adult, while they were children in period 1 hence limiting the feasibility of the two-stage residual inclusion (2SRI) estimator (Terza et al., 2007) to resolve endogeneity. Nevertheless, we do not consider this as a serious short come in our study. Estimating the long-term effect of child labour on adulthood health presents a major advantage of diluting bias due to simultaneity, hence reducing potential endogeneity. This avoids the risk of working with weak instruments (Heady, 2000) as the health shock that arose in period 2 does not in anywhere affect the decision to enter the labour market nor the year a child will start working in period 1.

The only exogenous covariate provided in period 1 by our data set is the age of adult when he/she started working. Following Datt and Ravallion (1994) equation 7 was estimated using an ordered probit model when subjective outcome was considered because the categories of self-health assessments are inherently ordered. Equation 7 is equally estimated by employing a probit model as propose by Ravallion and Wodon (2000) when objective health outcome is considered.

### **PRESENTATION OF DATA**

The data used for this analysis is the Cameroon Household Consumption Survey (CHCS) of 2007 from the INS. The data is representative as it concerns the entire household in the national territory as well as individuals who belong to this household. Though two other surveys had been carried by the NIS in 1996 and 2001, we however, privileged the 2007 survey, not necessarily because it’s the most recent survey, rather, because: 1) the number of household surveyed increased to 11 534 as opposed to 1 700 and 10 992 households in 1996 and 2001 respectively. 2) It incorporates child labour related issues not found in the other surveys. The retrospective investigation is facilitated by the question directed to adult concerning the age they started working for the first time. This makes the CHCS 2007 to uniquely fit our need.

### **EMPIRICAL RESULTS**

**Table 1: Descriptive statistics of dependents and independents variables**

| <b>Variables name</b>    | <b>Definition</b>  | <b>Obs.</b> | <b>Weight</b> | <b>Mean</b> | <b>Std. Dev.</b> | <b>Min</b> | <b>Max</b> |
|--------------------------|--|-------------|---------------|-------------|------------------|------------|------------|
| <b>Outcome variables</b> |  |             |               |             |                  |            |            |
| Adults SAH               | = 1 poor, 2= fair , 3= good and 4=excellent health                 | 25804       | 8986180       | 0.80        | 0.40             | 0          | 4          |
| Respiration disease      | = 1 if the adult suffering from respiration disease, 0 = otherwise | 17501       | 5972899       | 0.04        | 0.20             | 0          | 1          |

| <b>Independent variables</b>                            |   |       |         |       |      |      |       |
|---|---|-------|---------|-------|------|------|-------|
| <i>Child characteristics</i>                            |   |       |         |       |      |      |       |
| Child gender  | = 1 if male child, = 0 otherwise                                      | 17550 | 5999053 | 0.51  | 0.50 | 0    | 1     |
| Age of child  | Age of child (year)   | 17550 | 5999053 | 10.59 | 3.74 | 5    | 17    |
| <i>Parental characteristics</i>                         |   |       |         |       |      |      |       |
| Entry age household head                                | = 1 if he started working at age $\leq$ 17, = 0 otherwise             | 17321 | 5934258 | 0.85  | 0.36 | 0    | 1     |
| Household head education                                | = 1 if household head has ever gone to school, = 0 otherwise          | 17485 | 5979615 | 0.34  | 0.47 | 0    | 1     |
| Working status household head                           | = 1 if the household head works now, = 0 otherwise                    | 17550 | 5999053 | 0.10  | 0.31 | 0    | 1     |
| <i>Household characteristics</i>                        |   |       |         |       |      |      |       |
| Income stability  | = 1 if income is very unstable, = 0 otherwise                         | 17537 | 5996423 | 0.52  | 0.50 | 0    | 1     |
| Log annual consumption expenditure per adult equivalent | Annual consumption expenditure per adult equivalent in local currency | 17550 | 5999053 | 13.37 | 0.64 | 7.12 | 16.69 |
| <i>Community variables</i>                              |   |       |         |       |      |      |       |
| Zone  | = 1 if the adult live in the urban area, = 0 otherwise                | 17550 | 5999053 | 0.68  | 0.46 | 0    | 1     |
| Accessibility to the hospital                           | = 1 if the nearest hospital is not within one Km, = 0 otherwise       | 17550 | 5999053 | 0.37  | 0.48 | 0    | 1     |

**Table 2: The long-term health effect of child labour under different assumptions**

|                                 | Long term            |                            |
|---------------------------------|----------------------|----------------------------|
|                                 | SAH status (2.1)     | Respiratory problems (2.2) |
| <b>Person's characteristics</b> |                      |                            |
| Male                            | 0.236<br>(12.93)***  | -0.012<br>(2.94)***        |
| Age                             | -0.022<br>(32.60)*** | 0.001<br>(7.59)***         |
| Work in wave1                   | 0.062<br>(2.06)**    | -0.002<br>(0.28)           |
| Agricultural Sector work        |                      | 0.002<br>(0.36)            |
| Went to school                  | 0.344<br>(12.12)***  | 0.009<br>(1.90)*           |
| Working                         | 0.219<br>(3.51)***   |                            |
| Income very unstable            | -0.113<br>(4.61)***  | 0.002<br>(0.55)            |
| Log(ACE/AE)                     | 0.046<br>(3.03)***   | -0.005<br>(1.83)*          |
| Urban areas                     | 0.126<br>(4.51)***   | 0.008<br>(1.53)            |
| Hospital not accessible         | 0.023<br>(0.87)      | -0.009<br>(1.93)*          |
| <b>Estimation statistics</b>    |                      |                            |
| Observations                    | 8373578              | 6866277                    |
| Prob >chi2(F)                   | 0.0000               | 0.0000                     |
| Reset test P.V                  | 0.0466               | 0.0541                     |
| /cut1                           | -1.639               |                            |
| /cut2                           | -.61734              |                            |
| /cut3                           | .17220               |                            |

(2.1): Represent the Model of equation 7 with SAH while considering the working status in wave one

(2.2): Represent the Model of equation 7 with objective health (Respiratory problems) while considering the working status in wave one

**Table 3: Collinearity Diagnostics Test using Tolerance and VIF indicators**

|                 | VIF  | SQRT VIF | Tolerance | R-Squared |   | Eigenval | Index  |
|-----------------|------|----------|-----------|-----------|---|----------|--------|
| Child labourer  | 2.65 | 1.63     | 0.3777    | 0.6223    | 1 | 12.0065  | 1.0000 |
| Work sector     | 1.38 | 1.18     | 0.7221    | 0.2779    | 3 | 0.9419   | 3.5704 |
| Child Education | 1.42 | 1.19     | 0.7034    | 0.2966    | 4 | 0.7296   | 4.0565 |
| Male child      | 1.02 | 1.01     | 0.9825    | 0.0175    | 5 | 0.6957   | 4.1543 |

|  |                 |      |        |        |    |        |          |
|--|-----------------|------|--------|--------|----|--------|----------|
| Child's age  | 3.10            | 1.76 | 0.3227 | 0.6773 | 6  | 0.5666 | 4.6032   |
| Household head went to school  | 1.38            | 1.17 | 0.7246 | 0.2754 | 9  | 0.4375 | 5.2389   |
| Household head works   | 1.02            | 1.01 | 0.9762 | 0.0238 | 10 | 0.4140 | 5.3850   |
| Worked in wave one   | 1.15            | 1.07 | 0.8718 | 0.1282 | 11 | 0.3640 | 5.7432   |
| Log(ACE/AE)  | 1.12            | 1.06 | 0.8955 | 0.1045 | 12 | 0.2432 | 7.0269   |
| Income very unstable   | 1.06            | 1.03 | 0.9414 | 0.0586 | 13 | 0.1654 | 8.5204   |
| Urban zones  | 1.38            | 1.17 | 0.7256 | 0.2744 | 14 | 0.1243 | 9.8275   |
| Hospital not accessible  | 1.12            | 1.06 | 0.8894 | 0.1106 | 15 | 0.0713 | 12.9779  |
|  |                 |      |        |        | 19 | 0.0008 | 119.5127 |
| <b>Mean VIF</b>  | 1.47            |      |        |        |    |        |          |
| <b>Condition Number</b>  | <b>119.5127</b> |      |        |        |    |        |          |
| <b>Det(correlation matrix)</b>   | <b>0.0439</b>   |      |        |        |    |        |          |
| Eigenvalues and Cond Index computed from scaled raw sscp (w/intercept) |                 |      |        |        |    |        |          |

*SQRT* means Square root

### Causal effect of child labour on adult health

Column 2.1 and 2.2 of Table 3 capture the direct and indirect effects. Regarding the indirect effect, results point out that individuals who are educated are more likely to report better health status than those who are not. Evidence by Patrinos and Psacharopoulos (1995), Psacharopoulos and Akabayashi (1999); Heady, (2000) and Boozer and Suri (2001) showed that child labour is at the expense of education.

Moreover, early entrance into the labour market under the hypothesis that child labour and schooling are mutually exclusive will mean lower educational human capital, which all things else being equal, will lead to inefficiency in health production (Grossman, 1972). Educated individuals have adequate knowledge on health production mechanism than uneducated ones. This is evident in our results as individuals with no level of education had higher likelihood of being diagnosed with respiratory disease. In addition, lower educational human capital will certainly yield lower lifetime income streams that can again jeopardize health. This is evident as results point out that the likelihood of reporting better self-assessed health status is increased as annual consumption expenditure per adult equivalent rises.

Contrary to the empirical regularity of indirect negative effect of child labour on health at adulthood, results from the direct effect show that adults who worked as children, reported better self-assessed health status. This is true at a 5% level of significance. The effects of having worked in wave one is however, insignificant for specific diseases like respiratory infections. This finding seems to rollout the hypothesis by Forasterie (1997) and ILO (1998) in which sufficient time is required as gestation period for the health effect of child labour to become observable.

The results of this study are not consistent to those carried out in India by Satyanarayana et al. (1986) who revealed that adults who entered the labour market as children had height and

weight deficit 17 years later. The positive and significant relation between early entrance into labour market and adult health might be due to healthier worker selection effect. In conformity to the seminal paper of Grossman (1972), this study shows that older people are more likely to report poor self-assessed health status.

## **CONCLUSION AND POLICY IMPLICATIONS**

The ILO convention 182 calls for the prohibition and elimination of worst forms of child labour. This worst form of child labour involves work likely to jeopardize the health, safety or morale of children (ILO, 1999). Most child labour research, interested in the health consequences, focus on the contemporaneous effects. However, the potential gestation period required for some effect to be noticeable renders such analysis partial. Fassa et al., (2000) holds that most of the effects may only occur in adulthood, due to longer gestation period required for them to be noticeable.

This study therefore attempts to investigate the effect of child labour on their health at adulthood in Cameroon, using individual records of the 2007 Cameroon household consumption survey. In order to pursue this objective; use was made of a standard probit and the ordered probit models. Among the several econometric results, we found out that individuals with no level of education had higher likelihood of being diagnosed with respiratory disease. In addition, both the standards probit and ordered probit models showed that adults, who worked as children, did not report poor self-assessed health status as they were on the contrary more likely to report better self-assessed health status. This result seems to be comforting, and might justify why parents continue to ignore the legal restriction on the employment of children as stated by the 1992 Labour code and the 1996 constitution of Cameroon. While the policy implication of this result could suggest that child labour should be permitted we remain however hesitant to affirm this, since the contemporaneous effect might not be negligible.

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