

IMPLICATIONS OF CHILD LABOUR EARNINGS FOR HOUSEHOLD WELL-BEING IN CAMEROON

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Abstract: This study attempts to evaluate the implications of child labour earnings for household well-being in Cameroon, using individual records of the 2007 Cameroon household consumption survey. Specifically, the study aims at investigating how child labour earnings affect both subjective and objective household well-being. In order to control for potential endogeneity, heterogeneity of responses to well-being, and intra-household correlation problems, use is made of an ordered probit model and a control function econometric approach. This study has policy implications as it informs us whether or not child labour is necessary for household subsistence and enables us to start understanding why parents continue to ignore conventions against child labour.

Keywords: child labour, subjective and objective household well-being.

JEL Classification: J13, O15, D60

1. INTRODUCTION

According to World Bank (2006), the fraction of people living with less than a US dollar per day rose from 45% to 46% from 1990 to 2000 with most of them located in SSA. Being a sub-Saharan African country, Cameroon does not in any way escape from this depicted poverty image. Whereas, ten years before the middle of the 1980's, she registered a sustained annual average growth of 7% (Government of Cameroon, 2003), it should however, be noted that since then, this has not always been the case, due to severe economic and social crises that affected the country after 1986. This crisis was caused by several factors among which the fall in world prices of agricultural products and other commodities (Epo, 2010), the

depletion of income generation resource (oil), and the overvaluation of the franc CFA against the US dollar¹ (Baye, 2006).

This led to the deterioration of several economic indicators as the 40% drop in per capital consumption between 1985/86 and 1992/93 that accompanied the fall in income (Baye, 2010), the rise in external debt between 1984 and 1992 (Mbanga and Sikod, 2002) and turn down of investment in the same period from 27% to about 11% of GDP (Government of Cameroon, 2003). The freeze in increments and recruitment in public services, increase unemployment rates and underemployment (Baye, 2010) which perpetrated poverty among households. HIV/AIDS compounded the issue by either increasing adult death rate (NIS, 2008) or rendering adults economically less productive. All these, further deteriorated the well-being of households in Cameroonian.

In order to augment the well-being of her citizens, Cameroon adopted the World Bank and the International Monetary Fund (IMF) Structural Adjustment Programme (SAP) which turned out to aggravate an already worst situation. Several other poverty reduction strategy plans that could fit the context of Cameroon were initiated and activated (Government of Cameroon, 2003) such as the poverty reduction strategy paper (PRSP) and the 2009 growth and employment strategy paper (GESP).

Despite all these strategies, poverty remains a hard nut to crack (NIS, 2008; Epo et al., 2011). According to the 2007 Cameroon household consumption survey (CHCS) about 40% (7.1 million) of the population still live below the minimum necessary for survival. The poverty depth² is associated with a poverty intensity of nearly 31 %, indicating, a shortfall of 83 500FCFA per year for an average poor person. In this light poverty could have been eradicated by the government in 2007 if she could transfer a sum of roughly 433 billion FCFA³ to the poor. Such a mechanism to eradicate poverty is elusive in the context where the government had barely been coping with budgetary deficit that once led to the slashing of civil service salaries by 60%⁴.

¹Reference here is made to the 1985 exchange rates.

²Which measures the gap between the average annual expenditure per adult equivalent consumption of poor households and the poverty line is 12.3%.

³Since the 7131 000 poor within the entire territory in 2007 corresponds to 5211 000 when the adult equivalent scale is considered

⁴This occurred in 1993.

Being aware of the impossibility for public authorities to transfer the annual shortfall of 83 500FCFA to an average poor person in each poor household, the poor households have turned to the informal sector by employing coping strategies irrespective of whether they are legal or illegal. Among these, they have considered all the members of the household as an important asset in the eradication of household poverty (Guarcello et al., 2006). Children are no longer considered as 'passive objects', but as active members of the household who can influence both household conditions (Ben-Arieh, 2006) and those of their own peers (Manacorda, 2006).

In such a context, some parents no longer considered child labour as a delinquent activity, but as training the child with survival skills (Grootaert and Kanbur, 1995) with immediate benefit in cash or kind that contribute to household well-being (Basu and Van 1998). Such convictions have increased the incidence of economically active children in Cameroon. Economic activity in children covers most of the work done by them, for the labour market or not, paid or not, part-time or full-time, casual or regular and legal or illegal and it do not include work done at home or at school. While ILO estimated the incidence of child labour to be 23.7% in 2000, in 2010 the rate was 31% according to the UNICEF statistics.

While Psacharopoulos (1997), Menon et al. (2005) and Basu and Van (1998) consider child labour resources as a vital component for household survival⁵ and are sometimes used as a strategy to minimize the risk of interruption of the income stream of the household, authors like Canagarajah and Coulombe, (1997), Nielsen (1998), Canagarajah and Coulombe (1997) and Levison et al. (1996) reject this idea. They consider child income to be too small to affect well-being as children in most cases are paid less than adult for the same task. In addition, Bhalotra and Heady (2003) showed that in Peru and Pakistan the well-being⁶ improving hypothesis was not confirmed.

On the bases of the above background and variety of findings, it is evident that the effect of child labour on household well-being is inconclusive, suggesting that results are certainly context specific. The key question tackled, in this study is: What is the effect of child labour resources on both objective and subjective household well-being in Cameroon? From this research question, the major objective of this study is to evaluate the effects of child labour

⁵With this reaching 50% in some areas as noted by Cockburn 2002

⁶Well-being was implicitly considered through poverty.

resources on both objective and subjective household well-being in Cameroon. Specifically, it scrutinize the possible influences of:

- child labour wage on household objective well-being.
- child labour wage on household subjective well-being.

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

- Child labour wage enhances household objective well-being.
- Child labour wage enhances household subjective well-being.

The importance of such a question is policy wise relevant as responses will inform us whether or not child labour is necessary for household subsistence and will enable us to start understanding why parents continue to ignore conventions against child labour. If the subsistence argument is binding, then policies that advocate the total eradication of child labour from child's rights perspective need to be reconsidered in the Cameroon context. Otherwise, child labour is more of a cultural than economic problem. If this is the case, then human right arguments based on the enforcement of child labour laws is necessary. In addition, the deprivation theory, argues that the employed can be assimilated with higher well-being while the incentive theory asserts they have lower well-being as they may not voluntarily decide to work. Answers from the present research will reveal the maxim that matches the context of Cameroon, especially as more than half of the population is made up of the under 18 (NIS, 2008).

Finally, despite the growing awareness on the link between child labour and household well-being in international agenda, to the best of our knowledge no study has endeavoured to empirically investigate this nexus in the context of Cameroon. This study will, therefore, address this research gaps in Cameroon and will set an academic springboard for future studies.

The rest of the paper is organized as follows. Section 2 reviews the literature; Section 3 presents the measurement issues and model specification, while Section 4 highlights the estimation related issues. Section 5 describes the data. Expected results and the dissemination strategies are presented in Section 6.

2. LITERATURE REVIEW

While there are remarkable empirical literatures on child labour, especially those focusing on descriptive statistic (Bequele and Boyden, 1988; Addison et al., 1997; and the reference therein), they can, however, be criticized for being unable to provide adequate information on why children work. This may result from insufficient data on working and non-working children, as well as on household and community characteristics.

These shortcomings have, however, been resolved with the advent of household survey data, which facilitates empirical investigations. Among child labour studies that exploit household surveys are Lloyd (1994), Cigno et al. (2000), DeGraff et al. (1993), Kambhampati and Rajan (2004), and Bonnet (1993). These authors, however, did not lay emphasis on household assets nor on household poverty which is an important problem in developing countries. For instance, Lloyd (1994) and Cigno et al. (2000) laid emphasis on household size, while DeGraff et al., (1993) focused on fertility related issue and Bonnet's (1993) centre of attention was the debt incurred by parents. Nonetheless, with the exception of debt incurred, household size and fertility related issues are relatively pertinent in the developing countries context. This notwithstanding, poverty has remained the most important and most substantial problem in developing countries (Ravallion and Chen, 2000; NIS, 2008; Epo et al., 2011) and could be at the root of child labour.

Getting closer to address issues relating child labour to poverty, is Bhalotra and Heady (2003), Yunita (2006), Sharif (1994), Basu and Tzannatos (2003) and Basu et al. (2007) who all explore the issue of poverty while focusing on household land wealth in the context of child labour. Considering the absence or smaller quantity of land as an indicator of poverty, Yunita (2006) and Bhalotra and Heady (2003) found out that the quantity of land was positively associated with child labour. Sharif's, (1994) study however, did not confirm this and he argued that as the amount of household wealth (land) increases the family ceases to operate their own lands and rent them out. For Basu and Tzannatos (2003), this relation was neither positive nor negative as they observed an inverted U-shaped relation between land, wealth and child labour. Using the quantity of land as a measure of poverty, does not sound pertinent in the context of our research question. This is because while a working child can contribute to household subsistence resources that can enhance household well-being, child labour resources are likely not to be enough to acquire more land.

Studies that explicitly pick up the poverty hypothesis can be classified into two main categories. Those that stress that resource from child labour are vital for family survival, hence justifying child labour to be poverty driven, and those that reject this claim. In the first category, Chiwaula (2010), Okpukpara and Odurukwe (2006), Blunch and Verner (2000), and Ray (2000) all found a positive relation between poverty and child labour in Malawi, Nigeria, Ghana and in Pakistan, respectively. This clearly shows as indicated by Chiwaula (2010) that the likelihood of participating in child labour increases as household consumption falls. This suggests that children work to enhance household well-being.

While in Paraguay, child labour contributes to about one-third of household income an amount definitely not negligible, in Bolivia it contributed to 13% to total household income on average (Patrinós and Psacharapoulos, 1994). In the same vein, and using a survey of 110 households, Sharma and Mittar (1990) for India showed that child labour income was very substantial as they contributed above 20% in two-thirds of household and more than 40% in one-fifth of the households. In effect, it was found out that the number of households below or on the poverty line having the minimum necessary for survival was increased when the child labour income was retrieved from household income. As such child labour income is capable of uplifting a household from below the minimum necessary for survival to this minimum or even above (Sharma and Mittar, 1990).

In the same context, the self-insurance strategy was tested by Jacoby and Skouas (1997), Jensen (2000) and Beegle et al. (2006). They confirmed the self-insurance strategy. In effect, children were all removed from schools and sent to the labour market when an unanticipated crop failure due to insect or fire accident occurred. This confirms the result of Basu and Van (1989) in which child labour contributions are necessary and substantial. In Brazil, while child labour contribution lies between 10 to 30% for approximately 50% of the sample (Kassouf, 1998), in Paraguay, Myers (1989) showed that child labour income contributed at least, half of the household income for 50% of the household. The question remains whether these contributions in cash or in kind effectively ameliorate household well-being.

The second category of literature regroups authors who fail to affirm that child labour resources can augment household well-being. In this direction, Grootaert and Kanbur (1995), Nielson (1998), Bhalotra and Heady (2001), Beegle et al. (2006), Kassouf (1998) and Jensen (1999), challenge the conventional wisdom that child labour emerges from poverty. Evidence exists to which children may work just to gain independence and not because of family

poverty. This is explicit in the work of Delap (1998) in urban Bangladesh as cited by Bhalotra (2000). In such a context child labour cannot increase household income and has nothing to do with household well-being.

Most studies that find household incomes uncorrelated with child labour are confronted with some unresolved estimation issues (Ray⁷, 2000). First, child labour income may not contribute to household income simply because children may be paid in kind rather than in cash. This is evident in Cameroon where children work sometimes for 18 hours per day for payment in kind (LUTRENA,⁸ 2003) with some of them receiving 3,000 CFA francs⁹ per month according to the 2003 LUTRENA study. Secondly, most studies in their specification consider household income or household poverty as being exogenous. As noted by Bhalotra (2000), this can create a positive bias in the OLS coefficients. This problem, can be solved if appropriate instrumental variables are used Bhalotra (2000) or by tracking children in the same house over time (Edmonds, 2007). An attempt will be made in view to resolve these problems in the present study.

3. MEASUREMENT ISSUES AND MODEL SPECIFICATION

3.1 MEASUREMENT ISSUES

Child wage to be used in the estimation is the imputed wage from child labour activity extracted from the 2007 CHCS. As child labourers, we shall consider only economically active children. Economic activity in children covers most of the work done by them, for the labour market or not, paid or not, part-time or full-time, casual or regular and legal or illegal. It does not include work done at home or at school. To capture the outcome variable household well-being, two indicators will be used.

First, we propose to use an objective measure of well-being, in which well-being is considered as “a measure or degree of people security with the vital blessings, means of existence” (Akhmedjarova, 2007; Pigou, 1985 and Whit, 2008). This is what is referred to in the literature as economic household well-being with annual consumption expenditure per adult equivalent acting as its proxy (Slesnick 1998) and includes purchase and auto consumption.

⁷ He tried to solve this by retrieving child income from household income.

⁸ A survey by the Sub Regional Project for the Fight against the Trafficking of Children in West and Central Africa, (LUTRENA).

⁹ 1 US dollar = 500 CFA F on average.

This economic household well-being will be constructed at three stages; first, it is calculated at the household level. Then, in the second stage it is normalized by dividing by the number of adult equivalence in the household so as to account for the differences in household composition. Finally, the resultant is then divided by a spatial deflator that takes into account differences in the cost of living between regions. This indicator is better than household income (Sullivan, 2011) and permits the rating to be objective hence adequate for comparison across individuals, households or regions.

Nevertheless, the consumption-based proxy considered by economists to be the best, has been criticized by Alkire (2010), Sen (1999/1973), Diener and Seligman (2004), Ryff (1989), Diener (2000), and Perry (1995). Sen (1999; 1973) and Perry (1995) argue that it relies on means than on well-being itself. A life well lived is linked to personal happiness or feeling and must be evaluated based on a subjective approach (Ryan and Deci, 2001; Crisp, 2005; Whang, 2006 and Kammann, 1983). The merit of the subjective indicator is that it is multidimensional as it involves social, psychological, economic, cultural, physical and environmental dimensions. This indicator is important, as calculated annual consumption expenditure per adult equivalent might be high, while the household believes they are not better off (Sen, 1999). In this light we shall add household subjective well-being indicator which is related to how individuals themselves, judge their own well-being.

3.2 MODEL SPECIFICATION

We depart from the general specification in the child labour literature in which child working status or hours worked is modelled as the dependent variable (Baland and Robinson, 2000; Patrinos and Pscharopoulos, 1994; Okpukpara and Odurukwe, 2006; Sasaki and Temesgen, 1999).The estimation of the relationship between household well-being (objective and subjective) and child wage will be based on the following empirical model of household well-being determination.

$$W_{cf} = X\delta + \beta CW + \varepsilon \dots\dots\dots(1)$$

where W_{cf} represents well-being which could be subjective (self-assessed well-being) or objective (captured by annual consumption expenditure per adult equivalent) during estimation. X is a vector of exogenous covariates such as individual, household, community and regional characteristics and δ a vector of parameters including the constant term and

those of exogenous explanatory variables that correlate with W_{cf} . β is the parameter associated to the endogenous “treatment variable”¹⁰ child labour wage (CW) while ε is the error term. In order to estimate equation 1, we propose to use an econometric technique that takes care of potential estimation issues.

4. ESTIMATION ISSUES

Regressing equation 1 by OLS will yield biased estimates and hence err policy recommendations if endogeneity, heterogeneity and intra-household correlation problems are not considered and handled with care. Endogeneity can emerge from the likelihood that well to do households may have children who are well equipped calorie wise and therefore able to handle income generating tasks in family firms or even out of home. A well fed child can participate in child labour for longer hours and if payment is linked to number of hours worked, they will definitely generate sufficient income. In the same vein, a working child, due to payment in kind or cash, can contribute in the amelioration of the household well-being (Basu and Van, 1998; Edmonds, 2007; Manacorda, 2006 and Edmonds, 2006b). This suggests a bidirectional link between household well-being and child labour wage hence posing the problem of simultaneity.

Further, the difficulties and complexities in understanding and defining child labour and hence child wage can be another source of endogeneity. In such a case, respondents especially children are likely not to give precise values of child wage leading to measurement errors¹¹ that can further compound the endogeneity issues. To handle these endogeneity problems, Dammert (2005) and Duryea and Arends-Kuenning (2003) applied a mechanical approach that retrieves from household well-being any child labour income. While this approach can deal with mechanical endogeneity, Edmonds (2007) however, highlight that this does not solve broader endogeneity problems.

Another estimation problem that is likely to surface is heterogeneity bias from unobserved preferences that influence the choice of current household well-being inputs (Schultz, 2008; Rosenzweig and Wolpin, 1980). In the household well-being production function, the issue of heterogeneity may originate from exogenous well-being factors that are not observable by a researcher but are however, known to the individual household (Rosenzweig and Schultz, 1983; Kabubo-Mariara et al., 2009). For instance, the observation that family current well-

¹⁰ See Strauss and Thomas (2007).

¹¹ The measurement error that causes endogeneity in this case is that link to child labour.

being input is a choice variable is likely to introduce heterogeneity bias in the household well-being function.

In addition, self-assessed well-being depends on respondent assessment and hence on factors specific to the individual. Further, the link between household well-being and child wage is such that poor household will differ from rich ones in several ways and disentangling these is difficult (Edmonds, 2007). Finally, the amount of wage contributed by each child for household well-being will be rule by his instincts which can be egoistic or altruistic. In this case, individual specific covariates are intended to incorporate observation specific effects (Green, 1993). As noted by Kabubo-Mariara et al. (2009) and Rosenzweig and Schultz (1983),this exogenous well-being heterogeneity definitely will produce deceptive results as well as policy inference.

Intra-household correlation is another potential problem as members belonging to the same household are more likely to be similar than non-members with regard to several measures. This does not only reduce the effective sample size but influence the standard errors of the estimates hence rendering significance tests invalid. Arceneaux (2005) points out the need to correct the standard error by accounting for the idea that individuals within clusters share unobserved characteristics. If one fails to account for endogeneity, heterogeneity and intra-household correlation issues, in the estimations, estimates will be unreliable (Mwabu, 2009 and Rosenzweig and Schultz, 1983). In the midst of all these, ample effort will be allocated to deal with these issues.From equation1, to resolve these estimationproblems we propose to make use of a reduced form equation of the form:

$$CW = Z\gamma + \xi \dots\dots\dots(2)$$

Where Z is a vector of exogenous variables that includes X covariates in equation 1 and a vector of instrumental variables. γ represents a vector of parameters including the constant term and those of exogenous explanatory variables that correlate with child wage, while ξ is the error term. The reduced form equation 2 will be run using the OLS estimator and the resultant residual, $\hat{\xi}$, predicted.

In this context, equation 1 will be augmented with the fitted residual, $\hat{\xi}$, from equation 2 and run as the two-stage least squares (2SLS). This approach will yield consistent estimates if unobserved variables are linear in $\hat{\xi}$. Nevertheless, this approach does not take care of any potential non-linear interactions of unobservable variables with the household economic well-being hence the advantage of the control function approach over the IV technique.

Regarding the heterogeneity related problem, we shall employed the control function approach (CFA) used for the first time by Garen (1984) in the schooling context. The standard IV approach does not eliminate the influence of the heterogeneity in all situations (Garen, 1984). The IV technique produces biased and inconsistent estimates when the unobservable in the economic well-being function conditional on the instruments does not depend on the instruments (Kabubo-Mariara et al., 2009).

In this light, we employed the CFA (Garen, 1984; Mwabu, 2009; Baye and Fambon, 2009) which is not only based on inserting the residual from the child wage reduced form equation into equation 1¹², but equally on the insertion of the interaction of the fitted residuals with the potential endogenous variables CW . This will then purge any effect of the unobservable and permits child wage to be treated as an exogenous variable in the household well-being function. This gives rise to the control function in equation 3.

$$W_{cf} = X\delta + \beta CW + \lambda \hat{\xi} + \nu CW * \hat{\xi} + \mu .. \quad (3)$$

λ and ν are the parameters associated to the fitted residual and the interaction term, while μ is the error term. The term $\hat{\xi}$ represents the estimated residual from the child wage treatment equation in equation 2 and $CW * \hat{\xi}$ represents the interaction term portraying the idea that the unobservable varies none linearly with child wage. All these are control function variables because they control for any effect from unobservable factors that would otherwise bias the coefficients of the structural parameters (Ajakaiye and Mwabu, 2007). As noted by Card (2001) the interaction term purges any endogeneity bias if the unobserved component is linear in the child wage residual. The non-linear indirect effect of child wage on well-being is captured by $\nu \hat{\xi}$.

Different estimation techniques will be used to run equation 3 depending on whether we are dealing with objective or subjective well-being. In the case of objective well-being, equation 3 is run using the OLS approach when well-being is captured by the annual consumption expenditure per adult equivalent. In the case of subjective well-being, using the popular multinomial probit or logit model, fails to account for its ordinal nature, while the ordinary regression will err in the opposite direction (Green, 1993). In addition, because subjective well-being depends on respondent's assessment and hence on factors specific to the individual, and can be ordered, we shall privilege an ordered response model for the

¹² As in the case of the IV approach.

estimation (Stutzer and Frey, 2003 and Zonoina and McElvey, 1975) which had its origin in bio-statistics (Aitchison and Silvey, 1957). It appears reasonable to use ordered probit, assuming that “very satisfied with life” is better than “not very satisfied” which is in turn better than “not just satisfied with life”.

With subjective well-being, equation 3 is therefore run using an ordered probit technique. In both cases estimation of equation 3 will be done in a stepwise fashion: (i) resolving no econometric problem, (ii) addressing the problem of endogeneity and (iii) addressing both the endogeneity and unobserved heterogeneity biases. In the initial version, the control function variables are ignored. In the IV version, the interaction term is ignored. In the control function version, all the variables in equation 3 are included.

5. PRESENTATION OF DATA

The data used for this analysis is the 2007 Cameroon household consumption survey (2007 CHCS) collected by the government statistics office (National Institute of Statistics). This survey covers the national territory and involves all regular¹³ households and its individuals. It includes among others, housing characteristics, socio-demographic characteristics¹⁴, economic activities, perception of poverty, household consumption and most importantly child labour related data. Though two other surveys had been carried by the NIS in 1996 and 2001, we however, shall privilege the 2007 survey, not necessarily because it is the most recent survey, rather, because: 1) the number of household surveyed increased to 11 391 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. 3) The 1996 survey had 300 nomenclature consumer products against at least twice for the 2007 survey. The advantage of this is that it incorporates nearly all items necessary for household well-being.

In addition, while most child labour studies focused on child working status partly because child labour data failed to account for child labour intensity, the 2007 CHCS gives a value added to this study as it explicitly explores the issue of child wage and hours worked. As concern instrument, we shall use children employment rate per region which will be gotten from the survey on Employment and the Informal Sector (SEIS) carried out in 2005.

¹³ This is used in order to oppose it from collective households that include boarding, barracks, hospitals, and convents.

¹⁴ Household composition, health, education and employment of household members

6. EMPIRICAL RESULTS

6.1 DESCRIPTIVE STATISTICS

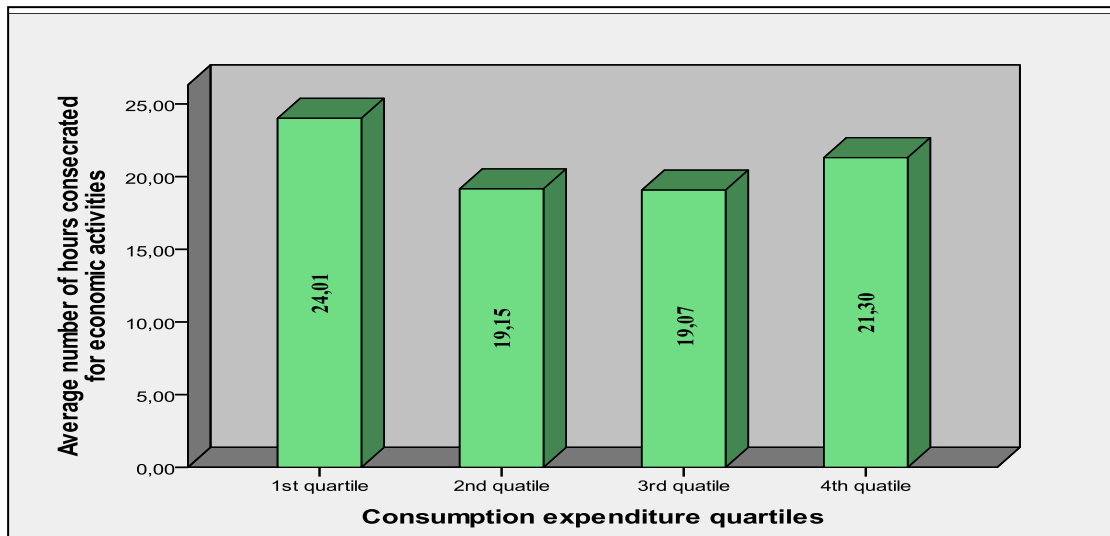
Table 1: Child activity options and household subjective poverty status

Poverty status	Child activity options			
	No activity	Study only	Work only	Work and study
Very poor	3.48	58.11	6.57	31.84
Poor	2.68	61.58	6.07	31.84
Rich	2.75	74.85	3.65	18.75
Total	2.85	65.63	5.31	26.21

Source: from author's calculation using the CHCS 2007.

Table 1 reveals the relationship between subjective poverty status and child activity options. It is evident from the table that the incident of participating in the work only option increases as a family feels she has become poorer. This is in confirmation with Basu and Van (1998) study. This may suggest that when income falls below the minimum necessary for survival the likelihood for children to work in order to augment household income which ameliorates household subjective well-being is increased. In addition as postulated by the literature (Patrinos and Psacharopoulos, 1995 and Neilsen, 1998) the proportion of children combining school and child labour is higher in very poor households than in rich ones. In the same vein, the proportion of children who study only is increased as the family feels they are better off further suggesting that children are likely to be retrieved from work places when the family goes above the minimum necessary for survival.

Graph 1: Average number of hours worked by children, age 5-17 years by household consumption expenditure quartiles



Source: from author's calculation using the CHCS 2007.

The seminal work of Basu and Van (1998) postulate that, the main reason behind child labour is poverty and that its contribution is substantial for family survival. The present data, to some extent seems to confirm that child labour is poverty driven as the numbers of hours worked by children in household located in the first quartile of consumption expenditure is the highest (24.01%). If work performed by children generates payment in cash or in kind, then longer hours worked will certainly imply enough resources for survival for these families. Compared to other households in other quartiles, the importance of these resources is certainly vital for the household belonging to first quartile of consumption expenditure. This might justify the longer hours work for this category. Nevertheless, because the trend does not persist, the effect of the contribution from these longer hours worked to household well-being remains a major reason for econometric analysis.

The indicator of how much collinearity that a regression analysis can tolerate (tolerance) and the indicator of how much of the inflation of the standard error could be caused by collinearity (VIF) suggest in table 5 that interrelationships among the various variables is not a cause for concern as both tolerance and VIF value pass the rule of thumb (Statistical Consulting Group)¹⁵ of 0.1 or less and 10 or greater respectively¹⁶. This suggests that resulting coefficients are free from inflated standard errors due to multicollinearity.

¹⁵Introduction to SAS UCLA: Statistical Consulting Group from <http://www.ats.ucla.edu/stat/sas/notes2/> (accessed November 24, 2007).

¹⁶ It is a call for concern if tolerance is 0.1 or less and when VIF is 10 or greater. Respectively.

Household objective well-being and child wage results

The results of the various models are presented in Table 3 and their respective Chi-squared values indicate that the predictors are significant. From table 3, it is evident that the size of the effect of various predictors on household well-being is not independent of the method used. For instance the effect of child wage, child age and livestock ownership varies as we move from the OLS model to the IV model. In effect, the estimated effect of child wage on household well-being increases greatly from the OLS method, to the IV technique and from the IV model to the CFA. In this light appropriate care needs to be taken to select the right model if reliable policies are to be inferred.

Table 2: Descriptive statistics of outcome, regressor and instrumental variables

Variables name	Definition	Obs.	Weight	Mean	Std. Dev.	Min	Max
Outcome variables							
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
Subjective well-being	= 1 if very poor; 2 if poor and 3 if rich.	17537	5997608	2.08	0.70	1	3
Independent variables							
<i>Child's characteristics</i>							
Child gender male	= 1 if male child, = 0 otherwise	17550	5999053	0.50	0.50	0	1
Age of child	Age of child (year)	17550	5999053	10.59	3.74	5	17
Muslim	= 1 if Muslim child, = 0 otherwise	17550	5999053	0.23	0.42	0	1
Child labour	= 1 if a child has ever work, = 0 otherwise	17550	5999053	0.26	0.44	0	1
Sector of activity	= 1 if working in agricultural sector, 0 = otherwise	6002	2427973	0.85	0.36	0	1
Log Child wage	Log child annual wage in local currency	4628	1809404	8.77	0.87	4.12	11.93
<i>Parental characteristics</i>							
Household head gender	= 1 if female household head, = 0 otherwise	17550	5999053	0.24	0.43	0	1
Household head age	Age of the household head (year)	17550	5999053	45.76	13.33	11	95
Household head education	= 1 if household head has never gone to school, = 0 otherwise	17485	5979615	0.34	0.47	0	1
Working status household head	= 1 if the household is not working, = 0 otherwise	17550	5999053	0.10	0.31	0	1
<i>Household characteristics</i>							
Household size	Number of household members (person)	17550	5999053	7.41	4.10	1	43
Household owns a farm	= 1 if they owns a farm, = 0 otherwise	17532	5996374	0.75	0.43	0	1
Stability of income	= 1 if income is very unstable, = 0 otherwise	17537	5996423	0.52	0.50	0	1
Livestock	= 1 if a member of the family owns livestock, = 0 otherwise	17539	5997978	0.47	0.50	0	1
<i>Community variables</i>							
Zone	= 1 if the child live in the urban area, = 0 otherwise	17550	5999053	0.68	0.46	0	1
<i>Instrumental variables</i>							
Child employment rate	Child Employment rate	17550	5999053	42.55	20.65	8.80	75.20

6.2 REGRESSION RESULTS

Table 3: Determinant of child wage and household objective well-being under different assumptions

	Well-being: endogenous Child wage	Instrumental variable model		Control function approach	
		Instrumented child wage	Well- being	3 a	3 b
Child's characteristics					
Male child	-0.039 (2.34)**	0.417 (16.13)***	0.153 (2.71)***	0.153 (3.46)***	0.149 (3.29)***
Child's age	0.003 (0.67)	0.068 (12.12)***	0.033 (3.47)***	0.033 (4.30)***	0.032 (4.06)***
Muslim	0.213 (6.02)***	0.141 (3.73)***	0.289 (6.81)***	0.289 (7.53)***	0.289 (7.52)***
Log(child's wage)	-0.015 (1.22)		-0.469 (3.72)***	-0.469 (4.78)***	-0.459 (4.57)***
Parental characteristics (Household head)					
Female	-0.013 (0.41)	-0.000 (0.01)	-0.031 (0.79)	-0.031 (0.95)	-0.030 (0.94)
Age	0.005 (5.41)***	0.002 (1.43)	0.006 (4.93)***	0.006 (5.93)***	0.006 (5.94)***
Never gone to school	-0.204 (6.99)***	-0.007 (0.14)	-0.161 (4.33)***	-0.161 (5.34)***	-0.162 (5.36)***
Not working	-0.068 (1.04)	-0.104 (1.47)	-0.114 (1.54)	-0.114 (1.81)*	-0.114 (1.81)*
Household characteristics					
Household size	0.072 (8.12)***	0.006 (1.31)	0.075 (8.63)***	0.075 (8.27)***	0.075 (8.26)***
Income very unstable	-0.109 (4.29)***	-0.210 (5.96)***	-0.211 (5.36)***	-0.211 (6.28)***	-0.210 (6.25)***
Owens livestock	-0.013 (0.54)	-0.194 (4.50)***	-0.076 (2.10)**	-0.076 (2.71)***	-0.076 (2.69)***
Household owns a farm	0.060 (1.10)	-0.233 (4.15)***	-0.016 (0.25)	-0.016 (0.27)	-0.014 (0.24)
Urban areas	-0.131 (3.95)***	-0.316 (7.81)***	-0.260 (4.82)***	-0.260 (5.85)***	-0.258 (5.75)***
Constant	12.788 (83.99)***	7.787 (62.58)***	16.454 (16.11)***	16.454 (20.69)***	16.368 (20.11)***
Control function variables					
Child's employ. rates		0.008 (5.60)***			
Child's wage residual				0.466 (4.63)***	0.407 (3.03)***
Log(child's wage) *residual					0.007 (0.72)
Estimation statistics					
Observations	1801827	1801827	1801827	1801827	1801827
R-squared	0.36	0.19		0.37	0.37
F test of excluded instruments:				F(1, 2653) = 31.34 Prob > F = 0.0000	
Underidentification test Ho: underidentified: Kleibergen-Paap rk LM statistic				Chi-sq(1) = 25.29 P-val = 0.0000	

Robust t statistics in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

3a: Model with other controls with reduced form child wage residual

3b: Model with other controls with reduced form child wage residual interacted with child wage

Table 4: Determinant of household subjective well-being and child wage under different assumptions

	Well-being: endogenous Child wage	Instrumented child wage	Well-being: exogenous Child wage
	(1)	(2)	(3)
<i>Child's characteristics</i>			
Male child	0.036 (0.85)	0.417 (16.13)***	0.178 (1.55)
Child's age	0.011 (1.14)	0.068 (12.12)***	0.033 (1.68)*
Muslim	0.172 (2.35)**	0.141 (3.73)***	0.228 (2.74)***
Log(child's wage)	-0.006 (0.17)		-0.340 (1.36)
<i>Parental characteristics</i>			
Female	-0.130 (1.80)*	-0.000 (0.01)	-0.143 (1.95)*
Age	-0.001 (0.36)	0.002 (1.43)	-0.001 (0.26)
Never gone to school	-0.167 (2.40)**	-0.007 (0.14)	-0.136 (1.90)*
Not working	-0.085 (0.71)	-0.104 (1.47)	-0.119 (0.96)
<i>Household characteristics</i>			
Household size	0.035 (2.64)***	0.006 (1.31)	0.038 (2.76)***
Income very unstable	-0.558 (9.20)***	-0.210 (5.96)***	-0.634 (8.56)***
Owens livestock	0.097 (1.53)	-0.194 (4.50)***	0.051 (0.70)
Household owns a farm	-0.139 (1.44)	-0.233 (4.15)***	-0.194 (1.82)*
Urban residence	-0.301 (4.22)***	-0.316 (7.81)***	-0.396 (3.92)***
Constant		7.787 (62.58)***	
<i>Control function variables</i>			
Child's employ. rates		0.008 (5.60)***	
Child's wage residual			0.342* (1.85)
<i>Estimation statistics</i>			
Observations	1801535	1801827	1801535
Prob > chi2(F)	0.0000	0.0000	0.0000
Reset test (3)	chi2(1) = 1.72 : Prob > chi2 = 0.1899		
/cut1	-1.177		-3.872
/cut2	0.466		-2.227

Robust z statistics in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

Table 5: Collinearity Diagnostics Test using Tolerance and VIF indicators

	VIF	SQRT VIF	Tolerance	R-Squared		Eigenval	Index
Male child	1.07	1.04	0.9305	0.0695	1	10.7805	1.0000
Child's age	1.08	1.04	0.9292	0.0708	2	0.9680	3.3372
Muslim	1.23	1.11	0.8136	0.1864	3	0.8995	3.4620
Agriculture sector work	1.74	1.32	0.5761	0.4239	4	0.7313	3.8394
Log(child's wage)	1.18	1.09	0.8485	0.1515	5	0.5820	4.3038
Female household head	1.15	1.07	0.8707	0.1293	6	0.4554	4.8656
Household age	1.25	1.12	0.7973	0.2027	7	0.4256	5.0329
Household head never gone to school	1.54	1.24	0.6478	0.3522	8	0.3422	5.6129
Household head not working	1.04	1.02	0.9631	0.0369	9	0.2844	6.1570
Household size	1.16	1.08	0.8640	0.1360	10	0.1614	8.1729
Household owns a farm	1.66	1.29	0.6035	0.3965	11	0.1507	8.4581
Income very unstable	1.04	1.02	0.9659	0.0341	12	0.0895	10.9728
Owens livestock	1.24	1.12	0.8042	0.1958	13	0.0629	13.0885
Urban areas	1.41	1.19	0.7076	0.2924	14	0.0471	15.1351
Child's employment rates	1.33	1.15	0.7532	0.2468	15	0.0154	26.4559
					16	0.0041	51.1897
Mean VIF	1.27						
			Condition Number			51.1897	
			Det(correlation matrix)			0.1457	

Eigenvalues and Cond Index computed from scaled raw sscp (w/intercept)

SQRT means Square root

The coefficients associated with the reduced form child labour wage in both 3 (a) and 3 (b) of CFA are statistically significant with t-ratio = 4.63 and 3.03 respectively. This indicates that child wage is endogenous to well-being. From these coefficients it is evident that both the IV model and the CFA have a value added compared to the OLS method. In addition, as we move from the OLS model the R-squared which measures how the independent variable explains the variation in the dependent variable is increased, further fortifying the superiority of the IV and CFA over the OLS estimator.

We employ the CFA of column 3 (b) so as to address any heterogeneity related issues (Wooldridge, 1997 and Mwabu, 2009). The interacted term, child wage and the reduced form child wage residual, meant to purge the estimate of any effect of heterogeneity is statistically insignificant, suggesting that heterogeneity issues arising from interaction of child wage with unobserved determinants of household well-being is not a serious problem. In addition, the by hand insertion of the residual and the interacted term into the household well-being function can greatly influence the estimates due to collinearity between the correction terms from the reduced form child wage equation and other

regressors (Shawn et al., 2007; Moffitt 1999). The consequence of this is the resultant inflated standard errors of estimates from both 3 (a) and 3 (b).

As expected the coefficients from the IV model are identical to those in 3a suggesting that we could interpret any of the models. Nevertheless, we privileged the results of the IV model for two reasons. Apart from accounting for endogeneity problem the adjustment of the inflated standards errors of estimates is automatically accounted for in the IV estimator in stata statistical package. This is not the case in 3a. While the difficulty of having completely valid instruments remains an issue in the literature, our instruments used though not strongly valid, they are however, sufficiently strongly correlated with child wage and the under identification test suggest that there is no need for further instruments.

Results from the IV model justify the idea that when the household head is a female, the well-being of the household is lower compared to households headed by a male. This does not challenge conventional wisdom as it is often believed that men in a traditional society are physically stronger hence capable of carrying out very difficult tasks to take care of the family. This is why in traditional societies widow's headed families are often regarded as needing more help than any other family. In addition families whose heads had never been to school or are not currently working have lower household well-being. These results are consistent with previous research indicating the importance of education for the family well-being (UNESCO, 1994; Romer, 1986; Lucas, 1988; Becker, 1993 and Behrman et al., 1999 and the references therein). As indicated by Cain and Mozurnder (1980), our results confirm the idea that household income instability is another important issue that can put household well-being at stake.

While several researches have indicated the significant importance of child labour resource in contributing to household well-being, (Sharma and Mittar, 1990; Patrinos and Psacharopoulos, 1994 and Basu and Van, 1989) our results seem not to confirm this in the case of Cameroon. The results show that child wage is not sufficient to augment household well-being. On the contrary it diminishes household well-being. This rejects the hypothesis of the deprivation theory, which argues that the employed can be assimilated with high well-being. Nevertheless, the results support the incentive theory which argues that workers may have lower well-being as they may not voluntarily decide to work.

This suggests that though children work for long hours as adults, what they receive as payment in cash or in kind is far less than that of adults for the same work done¹⁷. This is evident in Cameroon where the ILO and the Cameroon government study of 2003 showed that children work for very long hours for only 3,000 CFA francs¹⁸ per month for most of them. This sum is certainly unable to cover even the calories lost from child labour and therefore unable to improve household well-being. Another reason for this result could likely be that working children do not bring the obtained resources home for the entire household.

Though our results do not corroborate those of Sharma and Mittar (1990), they however, similar to those of Delap (1998), Bhalotra and Heady (2003) and Menon (2005). This result reject the illusive believe by parents that child labour resources contribute to household well-being. Hence results support evidence in Delap (1998) to which children may work just to gain independence and not because of family poverty.

Household subjective well-being and child wage results: Ordered probit model

Results in table 4 indicate that the size of the effect of child wage on household subjective well-being is method dependent. Nevertheless, the significance of child wage residual suggests that child wage is endogenous in the household subjective well-being function. The estimates from the IV estimator therefore seem appropriate, for policy implication. In addition to test for model specification we applied a regression error specification test (RESET). To implement this, we saved the predicted values from the regression in column 3, took it square and re-estimated the model with this new variable added as an extra explanatory variable. This test gave a chi-square statistic of 1.72 with a p-value well above conventional significance levels ($p=0.1899$) indicating that there is no evidence of miss-specification. This further fortifies the results for policy implications.

As in the case of objective well-being, results suggest that individuals in households where parents are females and uneducated are likely to report very poor self-assessed well-being. In addition, the more the household income is unstable, the higher the likelihood of reporting very poor well-being status. Child labour wage does not augment subjective household well-being. The result shows that the effect of child wage is insignificant. This result questions the veracity of the theoretical framework of Rosati and Rossa (2001) in which parents compare the maximum utility under the regime when the child is only working to the regime where he is only schooling and select the one that yields the highest welfare.

¹⁷ This is evident in Cameroon where children work sometimes for 18 hours per day for 3,000 CFA francs per month ((LUTRENA¹⁷, 2003).

¹⁸ 1 US dollar = 500 CFA F on average.

7. CONCLUSION AND POLICY IMPLICATIONS

Investigating if child wage contributes to family well-being is vital for formulating policies to curb child labour especially when the effect is positive, as a legal ban of child labour in the context of poverty, may push children out of their families into the streets. The objective of this chapter was to empirically exploit the claim that child labour resources is well-being enhancing. Nevertheless, in order to avoid any unreliable policy implication we used two indicators of well-being and after addressing potential endogeneity and heterogeneity we came to a conclusion that heterogeneity is not a serious issue in our data. Conscious of the fact that miss-specification can err our result, we used the RESET test and found out among others that child wage does not in any way increase the well-being of the family.

Policy wise these results suggest that a legal ban of child labour is likely to be more beneficial than harmful to the families. Therefore the hypothesis postulated in the literature according to which a legal ban of child labour may on one hand push children out of their families onto the streets and on the other hand put families at starvation risk is not confirmed in the context of Cameroon. On the bases of these results, the 1992 Cameroon Labour code placing a legal restriction on the employment of children needs to be reinforced. In addition, to ameliorate household well-being in the future, today's children who are tomorrow's family heads should be encouraged to go to school as household well-being significantly depend on whether the household head attended a school or not.

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